Civil Aviation Safety Authority
of Papua New Guinea

Advisory Circular

AC61-6

Pilot Licences and Ratings – Commercial Pilot Licence

Issue 1

31 October 2022

GENERAL

Civil Aviation Safety Authority Advisory Circulars (AC) contain information about standards, practices and procedures that the Director has found to be an Acceptable Means of Compliance (AMC) with the associated rule.

An AMC is not intended to be the only means of compliance with a rule, and consideration will be given to other methods of compliance that may be presented to the Director. When new standards, practices or procedures are found to be acceptable, they will be added to the appropriate Advisory Circular.

This Advisory Circular also includes Explanatory Material (EM) where it has been shown that further explanation is required. Explanatory Material must not be regarded as an acceptable means of compliance.

PURPOSE

This Advisory Circular provides methods, acceptable to the Director, for showing compliance with the Commercial Pilot Licence requirements of Rule Part 61 and explanatory material to assist in showing compliance.

RELATED CAR

This AC relates specifically to Civil Aviation Rule Parts 61 Subpart F

CHANGE NOTICE

This AC replaces Initial Issue dated 1 March 2002.

APPROVAL

This AC has been approved for publication by the Director of Civil Aviation

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INTRODUCTION

This advisory circular supports Rule Part 61, Subpart F, Commercial Pilot Licences

SUBPART F – Commercial Pilot Licences

Rule 61.203 Eligibility Requirements

(a) Rules 61.203(4) and 61.203(5) require an applicant for a CPL to have flight time experience acceptable to the Director. Attainment of the experience requirements detailed in Appendices I and II of this advisory circular is acceptable.

(b) Rule 61.203(6) requires an applicant for a CPL to have passed approved written examinations, or approved equivalents, in air law, flight navigation general, meteorology, principles of flight and aircraft performance (A), (H) or (G) as appropriate, general aircraft technical knowledge (A), (H) or (G) as appropriate, balloon technical knowledge and aerostatics (B) if appropriate, and human factors. Attainment of the written syllabuses given in Appendix III of this advisory circular would meet these requirements.

(c) Rule 61.203(7) requires an applicant for a CPL to demonstrate competency in the appropriate category of aircraft to a flight examiner. Attainment of the flight test syllabuses given in Appendix IV of this advisory circular would meet this requirement.

(d) A current CPL or higher licence issued by a foreign contracting State to the Convention will normally be accepted as meeting the requirements for flight time and for all written examination passes except for air law; and for a flight test, provided the applicant:

- produces evidence of having completed at least 250 hours as pilot-in- command on commercial operations following the issue of the flight crew licence that has been presented for recognition. Such experience is to have been gained in countries under the jurisdiction of the foreign authority that issued the licence, and

- passes a BFR.

Appendix I Commercial Pilot Licence Experience Requirements

1.1 Aeroplane

Total flight experience: At least 200 hours in aeroplanes, or 150 hours in aeroplanes if a full course of approved training has been completed, with appropriate cross-crediting of experience as detailed below.

These times are to include at least the minimum flight time requirements that follow.

Pilot-in-command: 100 hours in aeroplanes.

Cross-country navigation: 30 hours in aeroplanes, which is to include 20 hours training, in accordance with the syllabus set out in Appendix II, except that the holder of a CPL(H) is only required to complete 15 hours cross-country navigation in aeroplanes of which 10 hours is to be dual and 5 hours is to be solo cross-country navigation.

Night flying: 10 hours in aeroplanes which is to include 4 hours dual instruction and 5 hours (including 10 take-offs and 10 landings) as pilot-in-command. An applicant who does not meet this requirement not exercise the privileges of a commercial pilot by night. Pilots should have at least 2 hours instrument flight time in aeroplanes before undertaking night flight training.

Instrument time: 10 hours, of which 5 hours is to be dual instrument flight time in aeroplanes.

Cross-crediting: Where an applicant produces acceptable evidence of piloting experience in aircraft other than in aeroplanes, half the pilot-in-command time experienced within the immediately preceding 12 months, up to the maximums that follow, may be credited towards the total flight experience required, but not to the specific flight experiences.

- for helicopters – 60 hours.
- for gliders or powered gliders – 25 hours.
- for three-axis microlights – 20 hours.
- for all the above categories combined – 60 hours.

1.2 Helicopter

Total flight experience: At least 150 hours in helicopters, or 125 hours in helicopters if a full course of approved training has been completed, with appropriate cross-crediting experience as detailed below. These times are to include at least the minimum flight time requirements that follow.

Dual instruction: 35 hours in helicopters other than in amateur-built helicopters.

Pilot-in-command: 35 hours in helicopters of which not more than 10 hours may be in amateur-built helicopters.

Cross-country navigation: 20 hours in helicopters which is to include 15 hours training conducted in accordance with the syllabus set out in Appendix II. At the discretion of the flight instructor who is carrying out the cross-country training this time may be reduced to not less than 4 hours in helicopters if the trainee is the holder of a CPL(A).

Sling-load flight training: 10 hours in helicopters which is to include 7 hours dual instruction.

Mountainous-terrain flight training: 10 hours in helicopters which is to include 7 hours dual instruction.

For night operations within 25 nm of a lighted heliport or aerodrome: 10 hours night flight time in helicopters which is to include 5 hours dual instruction, and 10 take-offs, translation circuits and landings solo; and 2 hours dual instrument flight instruction in helicopters. However, where an applicant has completed 5 hours night flight time in helicopters including 2 hours dual instruction, 2 hours solo, and 2 hours dual instrument flight instruction

in helicopters, PPL(H) night privileges may be exercised.

For night operations beyond 25 nm of a lighted heliport or aerodrome (night cross- country): 10 hours night flight time in helicopters including 5 hours dual instruction, 2 hours solo, and 10 take-offs, translation circuits and landings solo, 10 hours dual instrument instruction in helicopters of which no more than 5 hours may be instrument time in a synthetic flight trainer; and 3 hours night cross-country training which is to have been conducted in accordance with the syllabus set out in Appendix II.

An applicant who does not meet these requirements does not comply with Rule 61.203(5) and may not exercise those privileges of a CPL(H) at night. Students should have at least 2 hours instrument flight time in helicopters before undertaking night flight training.

Cross crediting: Where an applicant produces acceptable evidence of piloting experience in aircraft other than in helicopters, half the pilot-in-command time experienced within the immediately preceding 12 months, up to the maximums that follow, may be credited towards the total flight experience required but not to the specific flight experiences.

- for aeroplanes -- 50 hours, except that if the pilot-in-command time is in aerial work or air transport operations -- 70 hours.
- for gliders or powered gliders -- 15 hours.
- for the above categories combined -- 70 hours.

Appendix II Commercial Pilot Licence Cross-Country Navigation Syllabuses

2.1 Aeroplane

An applicant for the issue of a CPL(A) is to have satisfactorily completed the following syllabus of cross-country navigation flight training prior to completing the cross-country navigation flight test.

The cross-country navigation flight training syllabus set out below should be adhered to. However, if a flight training organisation wishes, perhaps as a result of terrain or airspace restrictions, to submit specific shorter routes, it may do so. These routes will be evaluated by the Director as to their suitability, having regard to the organisation's overall CPL cross- country navigation training syllabus, and may be approved for use by that organisation.

A maximum of 4 hours of dual cross-country navigation flight instruction, received towards the PPL experience requirements, may be credited towards the 30 hours cross-country flight time requirement, but not towards the 20-hour training requirement. However, if a trainee has completed a full 150-hour course of integrated pilot training all cross-country training may be counted towards the total requirement, of 30 hours, provided that such training was carried out in accordance with this syllabus from the outset.

The syllabus of CPL cross-country navigation flight training is to conform to good teaching practice by commencing with a dual cross-country navigation exercise, followed by dual and pilot-in-command exercises, interspersed at the supervising flight instructor's discretion.

Cross-country flight time may not be accredited simultaneously with instrument or night flying, in any combination, for the purposes of meeting the 30-hour cross-country experience required for CPL issue.

The same route may not be used more than once, for the purposes of meeting the 20-hour cross-country navigation training syllabus, however a route may be flown in the reverse direction.

The 20-hour cross-country navigation training syllabus and the cross-country flight test is to be completed within a maximum of 12 months from the first dual cross-country navigation exercise carried out, in accordance with this

syllabus, as certified in the pilot's logbook by the supervising flight instructor.

The syllabus of cross-country navigation training is to be carried out by day under VFR.

- **Hours of Training**

  At least 10 hours of dual cross-country navigation flight instruction; and At least 10 hours of pilot-in-command cross-country navigation flight time.

  All dual and pilot-in-command cross-country navigation training exercises are to be carried out in accordance with the following:

  The pilot may select, under supervision of a Category B or A flight instructor, the route for each flight; and

  All flights undertaken to meet the requirements of the 20-hour training syllabus are to be:

  - Greater than 100 nautical miles in a straight line from the aerodrome of departure, incorporating 2 landings; or
  - Greater than 200 nautical miles over a route incorporating at least 3 landings; and
  - At least 1 flight, either a dual or pilot-in-command, of the 20-hour training syllabus is to meet the ICAO requirement of a route distance not less than 300 nautical miles and incorporating full-stop landings at 2 different aerodromes other than the aerodrome of departure.

- **Prior to flight**

  The pilot is to carry out, under the supervision of a Category B or A flight instructor, or of a Category C flight instructor who is no longer under direct supervision:

  - Map preparation, collection of and interpretation of relevant weather; and
  - Preparation of the flight log (to include track, heading, distance, ground speed, estimated time interval, and fuel calculations including reserves), consideration and application of NOTAM and PNGAIP supplements; and
  - Preparation of the flight plan; and
  - Calculation of the aircraft's centre of gravity, completion of a load sheet where applicable; and
  - Calculation of take-off and landing distances and whether planned aerodromes meet those requirements; and
  - Consideration (on which the supervising flight instructor may question orally) of use of airspace, use of entry, transit and exit lanes through controlled airspace, departure procedure, lost procedures, use of permits to land; and
  - Compliance with limitations of an operator's operating specifications and minimum equipment lists.

- **In Flight**

  - Departure procedures, position reporting, map reading, correction for track error, revision of ETA; and
  - Use of entry, transit, and exit lanes, and rejoining procedures at uncontrolled and controlled aerodromes (not necessarily on the same flight); and

- Diversions as dictated by weather or as required by the supervising flight instructor (dual exercises only); and Competent handling of en-route emergencies should they occur or as simulated by the supervising flight instructor (dual exercises only); and

- Flight in controlled and uncontrolled airspace, landings at controlled and uncontrolled aerodromes (not necessarily on the same flight); and

- Application of VFR to maintain VMC in all airspace, TAS checks, update weather reports and forecasts as required, use standard radiotelephone procedures and phraseology, transponder use; and

- Request of NOTAM and PNGAIP supplements for unplanned diversion aerodromes and confirmation that landing distance requirements are met; and

- Demonstration, as required by the supervising flight instructor, of flight at various percentage-power settings and fuel check calculations to maintain legal reserves.

➢ **Post Flight**

Termination of flight plan, aircraft inspection, the recording of flight time (including aircraft logbooks if appropriate), recording and notification to operator of defects, picketing, refuelling and hangarage; and

In addition, after pilot-in-command flights, the pilot is to submit map, flight plans, relevant weather, completed load sheets where applicable, and completed flight log (from which the flight can be reconstructed). The intention of these is to show corrections of track and ETA to the supervising flight instructor before the pilot's flying log book entry is certified, by the supervising flight instructor, as meeting the requirements of the CPL cross-country navigation training syllabus.

The syllabus of cross-country navigation training is to include procedures to be followed in the event of en-route emergencies resulting in operational, bad weather, or low-level diversions, becoming lost, partial or total engine failure. It is to include precautionary landing considerations as a result of bad weather, low fuel state, mechanical failures, or fading daylight, and transponder use in emergencies.

Each cross-country navigation training flight, undertaken in accordance with this syllabus, is to be certified in the pilot's logbook, by the supervising flight instructor, as meeting the requirements of the CPL syllabus of cross-country navigation training.

➢ **CPL (A) Cross-Country Flight Test**

On completion of the foregoing syllabus, and within 12 months of commencement, a cross- country flight test is to be conducted by the holder of a Category B or A flight instructor rating (A) who is employed by the organisation at which the student is undergoing his or her training.

The candidate may be given the route to fly in advance and will then be expected to complete all pre-flight navigation preparation within approximately 1 hour.

The flight test is to be approximately 2 hours and 30 minutes duration and may be counted as part of the 30-hour cross-country experience required for CPL issue, but not as part of the 20-hour training syllabus of this appendix.

The cross-country flight test is to include:

- Flight over varied terrain; and
- Flight in controlled airspace; and
- A standard overhead rejoin (preferably at an uncontrolled aerodrome); and

- A low-level diversion requiring flight at 500 feet above ground level and including a simulated precautionary landing from the bad weather configuration; and
- A simulated total or partial engine failure en-route; and
- A simulated engine failure after take-off, preferably not at the home base.

The candidate will be assessed on:

Pre-flight preparation: Choice of track and altitude, map preparation, use of relevant weather, preparation of the navigation log to include tracks, headings, distance, ground speed, ETA and fuel calculations, centre of gravity calculations, take-off and landing distance calculations, preparation of a loadsheet, application of NOTAM and PNGAIP supplements, completion and filing of the flight plan, aircraft pre-flight inspection and passenger brief.

General knowledge: (relating directly to the proposed flight test on which the flight examiner will question orally) Interpretation of weather reports and forecasts, aircraft performance and calculation of take-off and landing distances, load sheet requirements, aircraft loading, and lost procedures.

In flight: Departure and arrival procedures including a standard overhead rejoin, use of entry, transit and exit lanes, flight in controlled airspace (with unauthorised flight in controlled airspace to incur automatic failure), application of VFR to maintain VMC, holding heading and maintaining track, map reading, calculations to regain track and revise ETA, TAS checks, position reporting, awareness of fuel burnt and in reserve, use of transponders, standard radiotelephony phraseology, pilot-in-command decision-making and subsequent actions when given a scenario requiring a diversion, updating weather, choice of field and course of action for the engine failures and precautionary landing.

Post flight: Termination of flight plan, aircraft inspection, recording of flight time, recording and notification of defects, reconstruction of the flight from the flight navigation log.

Log book certification

When the cross-country navigation flight training, including the flight test, has been satisfactorily completed, the flight examiner is to endorse that fact in the applicant's log book. The following wording, which may be in the form of a stick-on label or a rubber stamp, would be acceptable:

I hereby certify that ..... has satisfactorily completed the cross-country navigation flight training for the CPL(A) and passed the flight test.

Signed .....Date .....

Instructor Category .....Licence number .....

2.2 Helicopter

An applicant for the issue of a CPL(H) is to have available, for inspection by the flight examiner, log book certification by the supervising flight instructor that the applicant has satisfactorily completed the cross-country navigation flight training.

A maximum of 4 hours of dual cross-country navigation flight instruction received towards the PPL experience requirements may be credited towards the 20 hours of cross-country flight time requirement but not towards the 15-hour training requirement. However, if a trainee has completed a full 125-hour course of integrated pilot training, all cross-country training may be counted towards the total requirement of 20 hours provided that such training was carried out in accordance with this syllabus from the outset.

Cross-country flight time may not be accredited simultaneously with instrument or night flying, in any combination, for the purposes of meeting the 20-hour cross-country experience required for CPL issue.

The same route may not be used more than once for the purposes of meeting the 15-hour cross-country navigation training syllabus, however a route may be flown in the reverse direction.

The 15-hour cross-country navigation training syllabus and the cross-country flight test is to be completed within a maximum of 12 months from the first dual cross-country navigation exercise carried out in accordance with this syllabus as certified in the pilot's logbook by the supervising flight instructor.

- **Hours of training**

  At least 7 hours dual cross-country navigation flight instruction; and at least 8 hours pilot-in- command cross-country navigation flight time.

- **Dual and pilot-in-command navigation exercises**

  Preparation of flight plan, departure procedure, position reporting procedure, map reading, correction for track error, revision of ETA, use of entry, transit and exit lanes through controlled airspace, en-route emergencies, landing at a controlled aerodrome; and

  The pilot is to select, under supervision, a route for the flight to a point at least 100 nm from the point of departure; and

  A low-level navigation exercise to a remote location using a 1:63 360 or 1:50 000 chart and grid references. This requirement does not constitute authority to fly below the minimum safe heights.

- **CPL(H) cross-country flight test (day)**

  This test is to be carried out by a senior flight instructor. The candidate will be given the route to fly but will be expected to carry out all of the pre-flight preparation. The test flight is to be of approximately 2 hours duration and will be flown both at medium and low level. The candidate will be expected to use both 1:500 000 and larger scale (1:63 360 or 1:50 000) topographical maps.

- **CPL(H) cross-country navigation training (night)**

  Completion of the equivalent night cross-country syllabus and flight test at PPL(H) level meets the night cross-country requirement at CPL(H) level.

  Prior to undertaking night cross-country training the applicant is to have completed the day navigation training and flight test.

  The minimum night cross-country navigation flight time is to be at least–

  (a) 2 hours dual flight instruction; and

  (b) 1 hour solo flight time.

- **CPL(H) cross-country flight test (night)**

  This test is to be carried out by an appropriately night qualified senior flight instructor. The candidate will be given the route to fly but will be expected to carry out all of the pre-flight preparation. The flight test is to be of at least 1 hour duration and flown at medium level. The candidate will be expected to use 1:500 000 scale topographical maps.

- **Cross-country flight test syllabus**

  - **Pre-flight preparation:**
    - Map preparation: selection and marking of appropriate scale maps.
    - Flight log preparation: preparation of a suitable log for in-flight use.
    - Flight plan: preparation and filing of an ATC flight plan.

- ATC considerations: clearance requirements, use of entry, transit and exit lanes if applicable.
- NOTAM, PNGAIP supplements and airspace restrictions: checked and considered.
- Weather: appropriate information obtained and correctly interpreted.
- Fuel planning: accurately calculated and correctly interpreted.
- Aircraft loading and centre of gravity calculation: in accordance with flight manual.
- Performance considerations: requirements for takeoff, en route, and landing.

- **In-flight procedures:**
  - Pre-departure systems checks: aircraft systems required for flight checked.
  - Departure: set heading procedure, time noted.
  - Position reporting: standard, timely.
  - Map reading: regular fixing of position, competence in reading maps at medium and low- level (by day) and at medium level (by night).
  - Log keeping: regular recording of position and time.
  - Use of communications facilities: appropriate use of aircraft equipment to obtain relevant flight information, VOLMET, and ATIS.
  - Use of navaids: appropriate use without over-reliance, correctly identified.
  - Tracking techniques: use of 1-in-60 rule, drift lines, line features, heading and time as appropriate.
  - Flying accuracy: adherence to planned heading (± 10 degrees), IAS (± 5 knots), altitude (± 100 feet).
  - ETA revision: At least 1 per leg.
- **Turning point procedures:**
  - ETA achievement: Within ± 3 minutes.
  - Identification of turning points: related to topography, spot heights, rivers, streams, roads, and tracks.
  - Away landing: performance considerations, circuit, approach, landing, take-off.
- **Diversion:**
  - Decision: prompt and appropriate after being given a hypothetical weather or fuel situation by the flight examiner.
  - Track and distance estimation: correctly calculated from a positive fix of position.
  - ETA revision: calculated within 10 minutes of set headings on diversion.
  - Fuel considerations: landing fuel calculated.
- **Airmanship considerations**

- Pilot judgement: whole flight considered, confident, competent handling of the flight with appropriate decisions made based on sound information.
- Lookout: an effective look-out maintained for wires, other obstacles, and traffic.
- Radiotelephone and ATS procedures: standard.
- Lost procedures: oral discussion on ground.
- Emergencies: oral discussion on ground.

Logbook certification

When the cross-country navigation flight training, including the flight test, has been satisfactorily completed, the flight examiner is to endorse that fact in the applicants' logbook. The following wording, which may be in the form of a stick-on label or a rubber stamp, would be acceptable:

I hereby certify that .....

has satisfactorily completed the cross-country navigation flight training for the CPL(H) and passed the flight test.

Signed .....Date .....

Instructor Category .....Licence number .....

Appendix III Commercial Pilot Licence written examination syllabuses

3.1 AIR LAW

Candidates are required to have a broad knowledge of the purpose and content of the following documents or groups of documents:

- Civil Aviation Act 2000.
- Civil Aviation Rules (CARs).
- Civil Aviation Advisory Circulars (ACs).
- Papua New Guinea Aeronautical Information Publication (PNGAIP).
- Planning Manual.
- Visual Flight Guide (VFG).
- 1 : 500,000 Aeronautical Charts.
- Visual Terminal Charts.

3.1.1 Civil Aviation Act 2000

Candidates are required to have knowledge of the following section of the ACT:

- Sections 63 and 64 Duties of pilot in command.
- Sections 276 to 292 inclusive Safety and General Offences

3.1.2 Civil Aviation Rules (CARs)

Candidate must demonstrate knowledge of the following Rules parts. The level of knowledge for each section of the Rules is specified by the following grading.

Level	Standard
1	Candidates are to thoroughly understand the operational provisions of this essential knowledge.
2	Candidates are to have a working understanding of this knowledge.

CAR PART 1 – Definitions and Abbreviations

Candidates must understand the meaning of the following terms:

Accident	Act
Aerobatic flight	Aerodrome
Aerodrome control service	Aerodrome Control Tower
Aerodrome Flight Information service	Aerodrome operational area
Aerodrome traffic	Aerodrome traffic circuit
Aerodrome traffic zone	Aeronautical Information Circular

Aeronautical Information Publication	Aeronautical information service
Aeroplane	AIP service
AIP Supplement	Aircraft
Aircraft category	Aircraft Flight Manual
*Aircraft Operation	Aircraft radio station
Air Traffic	Air Traffic advisory service Air
Traffic Control (ATC) service	Air Traffic Control unit
Air Traffic service	Air Transport operation
Airworthiness certificate	Airworthiness directive
Airworthy condition	Alerting service
Altitude	Apron
Area control centre	Area Control service
ATC clearance	ATC instruction
ATS unit	Aviation Medical Assessor
Cargo	Ceiling
Certificated organisation	*Class 3(a) fuel
*Class 3(b) fuel	Clearance limit
Clearway	*Commercial Transport Operation
Configuration	Control area
Controlled airspace	Controlled flight
Control zone	Conversion instruction
Cost sharing flight	Co-pilot
*Crew member	Cross-country flight
Cruising level	Dangerous goods
Day	Designated Medical Examiner
*Director	Disabled passenger
Document	Dual flight time
Final reserve fuel	Fit and proper person
Flight Examiner	Flight following flight plan
*Flight following service	Flight Information region
Flight instruction	*Flight level
*Flight manual	Flight plan
Flight time	*Fully functioning flight controls
General Aviation Area	*Height
*Helicopter	*Heliport
*Hover	Incident
Instrument meteorological conditions	Instrument time
Lifed	*Maintenance
Manoeuvring area	Manufacturer's maintenance programme
Movement area	Night
NOTAM	*Operable
Operate	Operational flight plan
Owner	Passenger
Pilot-in-command	Rating

Regular air transport passenger service	*Remote aerodrome
SARTIME	*SEIFR Passenger Operation
SIGMET information	Synthetic flight trainer
Take-off distance available	Take-off run available
Take-off weight	Taxi
Traffic load	Type
Unlawful interference	Valid
Visibility	Visual meteorological conditions
VFR flight	

Candidates must have an awareness of the abbreviations listed in CAR Part 1.

CAR PART 12 – Accidents Incidents and Statistics

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12.53	Details of an accident	1
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12.57	Details of an incident	1
12.59	Investigation and reporting	2
12.101	Access to aircraft involved in an accident	2
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CAR PART 20 Transition Rules

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19.7	Intoxicating liquor and drugs	1
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*19.351	Carriage of firearms by Police	2
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CAR PART 43 – General Maintenance Rules

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CAR PART 61 – Licences and Ratings
Pilot

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61.17	Written examinations - prerequisites and grades	2
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CAR PART 61 - Pilot Licences and Ratings

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71.51	Control areas	1
71.53	Control zones	1
71.55	VFR transit lanes	1
71.57	General aviation areas	1
71.61	Temporary airspace	1
71.105	Class C airspace	1
71.107	Class D airspace	1
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CAR PART 71 - Designation and Classification Of Airspace

Section		Level
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CAR PART 91 - General Operating and Flight Rules

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CAR PART 91 - General Operating and Flight Rules

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91.247 (a) (c) (d)	Use of SSR transponder and altitude reporting equipment	1
91.249 (a) (b)	Aircraft callsigns	1
91.301	VFR meteorological minima	1
91.303	Special VFR weather minima	1
91.305	Fuel requirements for flight under VFR	1

91.307	VFR flight plan	1
91.309	Position reports	1
91.311	Minimum heights for VFR	1
91.313 (a 1) (b)	VFR cruising altitude and flight level	1
91.315	Operating in snow and ice conditions	1
91.501	General requirements - instruments and equipment	1
91.505	Seating and restraints	1
91.509	Minimum instruments and equipment	1
91.511	Night VFR instruments and equipment	1
91.513	VFR communication equipment	1
91.515	Communication and navigation equipment -VFR over water	1
91.525	Flights over water	1
91.529	Emergency locator transmitter (ELT)	1
91.533	Oxygen for non-pressurised aircraft	1
91.537 (b)	Inoperative instruments and equipment	1

CAR PART 91 - General Operating and Flight Rules

Section		**Level**
91.541 (a)	Transponder and altitude reporting equipment	1
91.607	Annual and 100-hour inspections	1
91.609	Radio station tests and inspections	1
91.611	Altimeter system and altitude reporting equipment tests and inspections	
91.613	SSR Transponder tests and inspections	1
91.615	ELT tests and inspections	1
91.617	Operation after maintenance	1
91.619	Annual review of airworthiness	1
91.629	Technical log	1
91.701	Aerobatic flight	2
91.703	Aviation events	2
91.705	Parachute drop operations	2
91.709	Towing gliders	2
91.711	Towing objects other than gliders	2

CAR PART 92 - Carriage of Dangerous Goods

Section		**Level**
92.3	Definitions	2
92.5	Classification	1
92.7	General carriage requirements	1

92.9	Forbidden dangerous goods	1
*92.11(d)	Exceptions	
92.51	Packaging requirements	2
92.53	Packaging approval	2
92.55	Packing requirements	2
92.57	Marking requirements	2
92.59	Labelling requirements	2
92.103	Offer of dangerous goods	2
92.105	Dangerous goods transport document	1
92.157	Aircraft loading restrictions	1
*92.159	Incompatible dangerous goods	
92.161	Separation, segregation, and security	1
*92.163(l)	Loading inspection	
92.173	Information to Pilot-in-Command	2
92.179	Information to passengers	2

PART 133 – Helicopter External Load Operations For helicopter candidates only

Rule		Level
*133.3	Definitions	
*133.5	Pilot licence requirements	
*133.51	Minimum safe heights	
*133.53	Carriage of persons	
*133.55	Third party risk	
*133.57	Weight limitations	
*133.59	VFR	
*133.61	Night operations	
*133.63	Carriage of loads	
*133.65	Dangerous goods	
*133.67	Flight characteristics	
*133.69	Operations over congested areas	
*133.71(a)	Suspension of person beneath helicopters	
*133.255	External load equipment	
*133.257	Quick release devices	

CAR PART 135 - Air Transport Operations - Small Aeroplanes and Helicopters

Section		**Level**
135.3	Definitions	
135.7	Procedure compliance	1

135.53	Aircraft airworthiness	1
135.57	Flight preparation	1
135.61	Fuel	1
135.63	Cockpit checklists	1
135.65	Passenger safety	1
135.69	Manipulation of controls	1
135.73	Refuelling and fuelling operations	1
135.75	Fuel spillage	1
135.77	Use of aerodromes	1
135.81	Operations of single-engine aircraft - IFR	1
*135.83	Restrictions or suspension of operations	
135.85	Minimum height for VFR flights	1
135.87	Flights over water	1
*135.93	Operations over congested areas (helicopters only)	
*135.95	Helicopter sling loads (helicopters only)	
135.153		1
135.155	Meteorological conditions - VFR flight	1
135.207	General aeroplane performance	2
135.305	Aircraft load limitations	1
135.355	Seating and restraints	1
135.359	Night flight	1
135.363	Emergency equipment	1
135.409	Persons certifying maintenance	2
135.415	Maintenance review	2
135.503	Assignment of flight crew duties	1

CAR PART 135 - Air Transport Operations - Small Aeroplanes and Helicopters

Section		**Level**
135.505	Pilot-in-command type experience requirements	1
135.607 (except (3))	Flight crew competency checks	1
135.803	Fatigue of flight crew – Operator responsibilities	1
135.805	Flight crew responsibilities	1
135.855	Documents to be carried	1
*135.857	Daily flight record	
135 App C	Runways (candidates to be aware of this section)	2

3.1.3 Advisory Circulars

Candidates must have a working knowledge of the following Subparts of the current Advisory Circular:

- AC 12-1 Mandatory Occurrence Notification and Information
- AC 61-1 Pilot Licences and Ratings - General
- AC61-1.2Student Pilot.
- AC61-1.3Private Pilot licence.
- AC61-1.5Commercial Pilot licence.
- AC 67-1 Medical Standards and Certification
- AC 119-2Air Operations – Fatigue of flight crew

3.1.4 PNGAIP Planning Manual

Candidates for the Commercial Pilot licence must have a satisfactory working knowledge of the information contained in the PNGAIP Planning Manual.

- **GEN Section** -. GEN9 (Miscellaneous Information) and GEN10 (Abbreviations).
- **AGA Section** - all sections.
- **COM Section** - all sections except COM2 (Radio Nav Service).
- **RAC Section** - all sections excepting items dealing with IFR operations, and except RAC10 (Oceanic Procedures).
- **OPS Section** - all sections excepting items dealing with IFR operations, and except App 1 (New ICAO PANS OPS Procedures).
- **SAR Section** - all information in this section. **MAP Section** - all information in this section. **FAL Section** - sections FAL 1 - FAL 5.

3.1.5 Visual Flight Guide (VFG)

➢ **Communications**

Candidates must be able to:

- find required information in the telephone/fax directory;
- interpret information contained in FISCOM charts; and
- find required information in the radio communication and navigation tables.

➢ **Operations**

Candidates must be able to:

- find required information contained in the Operations section with special emphasis on general VFR Operations and Special Procedures;

- determine the beginning and end of daylight by interpretation of the Daylight Zones;
- identify QNH zones;
- find required information associated with Search and Rescue;
- find required information associated with Accident Notification.

➢ **Chart Section**

Candidates must be able to:

- correctly interpret, and find information in Aerodrome Legends and General Legends;
- correctly interpret Aerodrome Charts and associated Operational Data; and
- interpret Arrival/Departure procedures at applicable aerodromes.

➢ **Emergency**

Candidates must be able to find required information on:

- distress;
- communication and navaid failure;
- speechless technique using unmodulated transmissions; and RTF distress and urgency communications.

3.2 Flight navigation

General: This syllabus includes all the items in the PPL air navigation and flight planning syllabus and may examine those items to a greater depth. However, no questions will be asked of glider and balloon pilots which are inapplicable to those categories of aircraft.

Time: The relation between time and longitude, Local Mean Time (LMT), Co-ordinated Universal Time (UTC), Papua New Guinea Standard Time (PNGST), and the conversion of times.

Twilight: The effects of seasonal changes, height, and of latitude and longitude on the times of sunrise, sunset and the duration of twilight.

Aeronautical charts: Practical use of the Mercator and Lambert Conformal Conic projections and of visual aerodrome charts including the interpretation of chart symbols and topographical features.

Flight plans: Preparation of operational plans including the determination of fuel requirements, payload, take-off weight and landing weight.

Flight planning: An appreciation of the problems involved in choice of route and flight altitude, the selection of alternate aerodromes and the provision of adequate fuel reserves.

Point of no return and equitime point: Calculation and use.

Future air navigation system (FANS): General principles.

3.3 Meteorology

General: This syllabus includes all the items in the PPL meteorology syllabus and may examine those items to a

greater depth.

The atmosphere: Variation of air density with height, temperature and humidity, variation of pressure with density.

Wind: Buys Ballot's Law, the relationship of wind speed to pressure gradient, the measurement of wind velocity, diurnal variations of wind, local winds.

Humidity: Evaporation and condensation, relative humidity, absolute humidity and dew point.

Turbulence: Mechanical and thermal turbulence.

Clouds: Formation and dissipation, contrails and other artificial clouds.

Fog: Main types, conditions favourable for formation and dissipation, diurnal and seasonal effects.

Visibility: Factors affecting visibility.

Precipitation: Types, related clouds, and conditions favourable for formation, associated flying conditions.

Thunderstorms: Formation, diurnal and seasonal effects.

Airframe icing: Types and methods of formation, conditions favourable for icing, avoiding action.

Air masses: Types and source regions, characteristics, associated weather and flying conditions.

Weather maps: Interpretation of plotted information, associated weather and flying conditions.

Local effects: Orographic effect of topography on wind velocity, development of weather and flying conditions with particular reference to Papua New Guinea topography.

Global climate: The general distribution and seasonal variation of pressure, temperature, winds, cloud and precipitation.

Pacific climate: The general and seasonal weather patterns of Australia, New Zealand and the South-west Pacific including trade winds, convergence zones, tropical cyclones, dust storms and the normal progression of weather in mid-latitudes, Southern Oscillation, El Nino and La Nina.

Meteorological information: Sources of meteorological data, the different types of meteorological forecasts provided for international and domestic aviation, in-flight meteorological service, interpretation of meteorological forecasts and reports provided for flight crew use.

3.4 Principles of flight and aeroplane performance – aeroplane

Mechanics: Mass, inertia, momentum, force, work, power, speed, velocity, acceleration, gravity and weight, Newton's laws of motion, forces in equilibrium, forces not in equilibrium, motion in a curved path, centrifugal and centripetal forces, composition and resolution of forces, moments, couples and principles of moments.

The atmosphere: Air density and pressure, relationship between density, pressure and temperature, air pressure and temperature changes with height, international standard atmosphere, density altitude, pressure altitude.

Aerodynamics: Airflow, aerofoils, form drag, induced drag, pressure distribution about an aerofoil, lift, Bernoulli's theorem, boundary layer, angle of attack, angle of incidence, lift/drag ratio, stalling, tail stalls, spinning, centre of pressure and its relation to angle of attack, span, chord, aspect ratio, wash-in and wash-out, forces acting on an aircraft while in straight and level flight, climbing and descending, turning and during dive recovery, loading and acceleration in flight manoeuvres, stability and control about the 3 axes, control surfaces and their effects, trimming devices and their effects, mass and aerodynamic balance, centre of gravity and its relation to stability and control, autorotation, effect of flaps and slots, effect of variation of air density on airframe and propeller performance, aerodynamic factors affecting range and endurance for piston-engined aircraft, effect of wind when turning at low level, effect of wind gradient on take-off and approach, effect of frost and airframe icing on the aerodynamic performance of an aircraft.

Propellers: Torque, thrust, pitch, propeller efficiency, forces acting on a propeller, fixed-pitch and constant-speed propellers.

Asymmetric flight: Forces involved including the factors affecting the severity of yaw and the effectiveness of rudder, use of bank, identification of failed engine, engine failure on take-off and in flight.

Ground stability and control characteristics: Tailwheel and nosewheel aircraft, effect of propeller, engine torque, slipstream, and crosswind, aquaplaning.

Wind shear: The initial and further effects of wind shear on the airspeed and flight path of the aeroplane.

Aircraft performance: V_1, V_{MCA}, V_{LOF}, V_2, V_S, ISA, MCTOW, accelerate-stop distance, clearway, altitude of an aerodrome, gradient of climb, gross flight path, net flight path, landing distance available, take-off distance available.

Surface correction factors: An understanding of, and the ability to apply, tabulated surface correction factors.

Take-off speeds: The relationship between the stalling speed, the minimum control speed and the take-off safety speed, the ability to interpret take-off data for a typical light twin- engined aircraft and to compute the take-off safety speed in compliance with the regulatory requirements in Papua New Guinea.

Take-off and landing distances: The effect of wind, aircraft all-up weight, temperature, aerodrome pressure altitude and runway slope on the takeoff, accelerate-stop and landing distances, the ability to use graphs and tabulations for the purpose of calculating these distances and the all-up weight limitation for an aircraft landing on a surface of fixed length, the application of surface correction factors.

En route one-engine inoperative limitations: An ability to assess from one-engine inoperative cruise data whether an aircraft can comply with en route one-engine inoperative limitations at a specific MSA for a route area.

V-g diagram: Interpretation, load factor, V_{no}, V_{NE}, V_A, V_{SO}, V_{SL}, effect of aeroplane manoeuvre, turbulence, airspeed and wing loading on load factor.

3.5 Principles of flight and aircraft performance – helicopters

Mechanics: Mass, inertia, momentum, force, speed, velocity, acceleration, gravity and weight, Newton's laws of motion, forces in equilibrium, forces not in equilibrium, motion in a curved path, centripetal and centrifugal forces, composition and resolution of forces, moments, couples and principles of moments.

Aerodynamics: Airflow, aerofoils, chord line, pitch angle, angle of attack, lift, form and induced drag, stalling, relative airflow, lift and angle of attack, lift and velocity of air flow, lift and air density, lift and weight, thrust and drag, lift components of a turn, loads, load factors, solidity and disc loading.

Flight: Hovering, vertical, forward, sideward and rearward flight, torque, anti-torque rotor, gyroscopic precession, dissymmetry of lift, blade flapping, coning, axis of rotation, Coriolis effect, translating tendency or drift, ground effect, translational lift, transverse flow effect, pendular action.

Flight problems: Retreating blade stall, power settling, ground resonance, low, medium, and high frequency vibrations, transition from powered flight to autorotation, rotor RPM and flares during autorotation, anti-torque system failure while cruising or hovering.

Precautionary rules: Height and velocity operating limits, rotor and engine RPM operating limits, extreme attitudes and over-controlling, flight technique in hot weather, effect of altitude on instrument readings, high altitude technique, altitude versus airspeed charts, tall grass operation and water operation, turbulence, ridge line and pinnacle operations, operation over barriers, slope operations, high speed operations, operations with

reduced visibility and low ceiling conditions, operations in precipitation, effect of solid deposits on rotor blade performance.

Atmosphere: Air density, relationship between density, pressure and temperature, air pressure and temperature changes with height, international standard atmosphere, density altitude, pressure altitude, QNH altitude, effect of moisture on density altitude, relative humidity, determination of density altitude, effect of pressure and temperatures on density altitude, effect on helicopter performance of variations of density altitude, all-up weight and wind.

3.6 General aircraft technical knowledge

Engines: Principles of internal combustion engines, the four-stroke cycle, valve timing, fuels and octane ratings, detonation and pre-ignition, carburation and fuel injection, the significance of fuel-air ratio, effects of lean and rich mixtures, supercharging, manual control of manifold pressure, lubrication, ignition, engine cooling systems, fuel systems, engine handling, engine performance, effect of altitude, temperature and density on engine performance, carburettor icing, pilot checks and inspections, fault finding and analysis.

Electricity and magnetism: Properties of a magnet, terrestrial magnetism, magnetic variation and dip, isogonals, direct and alternating current, charging, capacity and functioning of accumulators, fuses and circuit breakers, solenoids, voltage regulators, inverters, ammeters.

The direct reading compass: Tests for serviceability, deviation, effects of the presence of magnetic material and electromagnetic fields near the compass, turning and acceleration errors, when an aircraft compass must be swung.

Instruments: Principles, method of operation and operating limitations, errors, corrections, sources of power supply where applicable, and the purpose of the following instruments: tachometer, manifold pressure gauge, temperature gauge, fuel contents gauge, vacuum gauge, sensitive altimeter, turn and slip indicator, gyro direction indicator, artificial horizon, airspeed indicator, vertical speed indicator.

Weight and balance: Conversion between US gallons, imperial gallons & litres, specific gravity of fuel and oil and the calculation of the weight of a volume of fuel or oil, empty weight, all-up weight, useful load, and maximum all-up weight, balance, centre of gravity, centre of gravity limits and the calculation of the position of the centre of gravity, movement of the centre of gravity due to change of load and fuel burnoff, use of index units.

Pilot maintenance: Abilities and restrictions in accordance with Part 43.

Plus for aeroplanes only:

Airframes: Types of wing and fuselage construction, angle of incidence, basic layout of aircraft flying controls and trimming devices, types of brake systems, hydraulic systems, pneumatic systems, landing gear shock absorbing systems, fire warning and protection systems, de-icing and anti-icing systems, pilot checks and inspections, faultfinding and analysis.

Handling of piston-engined aircraft: Starting and ground running, hand-swinging and mechanical starting, picketing, refuelling, effect of fixed-pitch and constant-speed propellers on engine performance.

Plus for helicopters only:

Airframes: Functions of controls, stabilisers and trimming devices, landing gear shock absorbing systems, pilot checks and inspections, fault finding and analysis.

Transmission systems: Clutch, free-wheeling unit, swash-plate assembly, main rotor systems, tail rotor systems.

3.7 Human factors

Basic physiology and the effects of flight

- Anatomy and physiology of the eye, ear, vestibular, circulatory, and respiratory systems.
- Composition of the atmosphere and gas laws as applicable to pilots, and the nature of the human requirement for oxygen.
- Effects of reduced ambient pressure and of sudden decompression, times of useful consciousness.
- Recognizing and coping with hypoxia and hyperventilation.
- Entrapped gases and barotrauma.
- Decompression sickness and the hazard of flying after diving.
- Effects of acceleration (positive and negative g) on circulatory system, vision, and consciousness.
- Mechanism, effects, and management of motion sickness.

Flying and health

- Noise-induced and age-induced hearing loss.
- Visual defects and their correction.
- Arterial disease and coronary risk factors, electrocardiogram, blood pressure, stroke.
- Diet, exercise, obesity.
- Neurological factors, fits, faints, and the electroencephalogram.
- Psychiatric diseases, drug dependence, and alcoholism.
- Tropical diseases (including malaria) and their prevention, hepatitis, and sexually transmitted diseases.
- Common ailments and fitness to fly, gastroenteritis, colds, use of common drugs and their side effects, hypoglycaemia and dehydration.
- Prescription and non-prescription medication.
- Toxic hazards.
- Causes and management of in-flight incapacitation.
- Age-related physiological and behavioural changes.

Basic aviation psychology

- Basic plan of human information processing, including the concepts of sensation, attention, memory, central decision-making and the creation of mental models.
- Limitations of decision making, single channel capacity, and mental workload.
- Function of attention in selecting information sources, attention-getting stimuli.
- Types of memory; peripheral or sensory memory, short term or working memory, long term memory, motor or skills memory, semantic and episodic memory.
- Memory limitations and failures.

- Perception, the integration of sensory information to form a mental model.
- Effects of experience and expectation on perception.
- Erroneous mental models, visual, vestibular, and other illusions.
- Recognizing and managing spatial disorientation.
- Use of visual cues in landing.
- Eye movements, visual search techniques, mid-air collisions.
- Comparison of skill, rule, and knowledge-based behaviours.
- The nature of skill acquisition, the exercise of skill, conscious and automatic behaviour, errors of skill.
- Rule-based behaviour, procedures, simulator training, failures of rule-based behaviour.
- Knowledge-based behaviour, problem solving and decision-making, inference formation, failures in knowledge-based behaviour.
- Mental imagery, maintaining accurate mental models, situational awareness, conformation bias.
- Awareness that special perception problems exist in helicopter operations, water flying, and agricultural operations.

Stress management

- Definitions, concepts, and models of stress.
- Arousal, concepts of over- and under-arousal.
- Environmental stresses and their effects, heat, noise, vibration, low humidity.
- Domestic stress, home relationships, bereavement, financial and time commitments.
- Work stress, relationships with colleagues and management.
- Effects of stress on attention, motivation and performance.
- Life stress and health, other clinical effects of stress.
- Defence mechanisms or coping strategies, identifying stress, and stress management.

Sleep and fatigue

- Biological clocks and circadian rhythms, sleep and wakefulness, temperature rhythms, zeitgebers.
- Sleep stages, sleep at abnormal times of day, required quantity of sleep.
- Work-induced fatigue.
- Shift work.
- Time zone crossing, circadian disrhythmia, re-synchronization.
- Rostering problems sleep management, and naps.
- Sleep disorders and sleep hygiene.

- Management of sleep with drugs.
- Control of workload, fatigue, rest and biological rhythms.

Judgement

- Hazards and risks in aviation, risk assessment.
- Errors, incidents and accidents, the role of human error in aviation accidents.
- Causes of human error, slips and mistakes, violations and errors, cognitive and attitudinal factors.
- Making decisions, developing judgement and decision-making skills, theory and practice for countering hazardous pilot attitudes.
- In-flight decision-making, decision making under uncertainty, influence biases, heuristics, and errors as elements of judgement in decision making under conditions of uncertainty.
- Expert decision-making, declarative and procedural knowledge. Judgement training, applying a decision making model such as DECIDE.

Social psychology and flight deck management

- Personal abilities, skills and behavioural styles.
- Main dimensions of personality, extroversion, anxiety, other important traits, warmth and sociability, impulsivity, tough-mindedness, dominance, stability, and boldness.
- Goal-directed, person-directed types of behaviour. Autocratic and democratic leadership styles.
- Individual personality related problems of flying, especially risk-taking.
- Personality interaction on the flight deck and the interaction of personality with status or seniority, handling versus non-handling and other roles and perceived ability of crew members.
- Concepts of conformity, compliance, and group decision-making, implications of these concepts for the flight deck with regard to effects of crew size, especially 2 versus 3 crew.
- Communication, verbal and non-verbal communication one-way and two-way communication, different communication styles, theory and process of communication, developing effective communication styles, listening skills, conflict management, feedback.
- Methods of maximising crew effectiveness and improving flight deck, or cockpit resource, management, developing a team concept, group decision making.
- Interacting with cabin crew, air traffic services, maintenance personal and passengers.

Design of flight decks, documentation and procedures

- Basic principles of control, display, and workspace design.
- Eye datum, anthropometry, and workspace constraints, external vision requirements, reach, comfort and posture.
- Display size, legibility, scale design, colour, and illumination, common errors in display interpretation.
- Control size, loading, location and compatibility of controls with displays.
- The presentation of warning information and misinterpretation of warnings.

- The design and appropriate use of checklists and manuals.
- Effects of automation and the glass cockpit, integration of information from many data sources on one display, and automatic selection of displayed information, mode and status representation.
- Machine-intelligence and relationship between aircraft decisions and pilot decisions.
- The avoidance of complacency and boredom, and maintaining situational awareness, maintaining basic flying skills.

Human Factors Courses

In accordance with the concepts of the Rule/AC system, successful completion of an approved course in Human Factors would be accepted as equivalent to a written examination pass in the subject for CPL. This requirement would be met by completion of a course of Human Factors training at an organisation certificated under Civil Aviation Rule Part 141, with certification that a satisfactory standard had been achieved.

Guidelines for such a course are that it should be to the CPL human factors syllabus, be of at least 100 hours duration (which may include preparatory reading and projects), and include internal assessment.

Appendix IV Commercial Pilot Licence Flight Test syllabuses

4.1 Flight test syllabus — aeroplanes

➢ **General knowledge test**

The test is to include an oral general knowledge test followed immediately by a pilot competency test. The candidate is to provide a copy of the current meteorological forecast for the period of the flight. Failure to pass in any item of the test may result in the applicant and the instructor being advised of the failure aspects and the further training believed necessary before a further flight test may be undertaken.

Aircraft documents: Certificate of airworthiness, flight manual, release to service, and radio licence.

Aircraft performance: Calculation of take-off and landing distance requirements.

Fuel: Requirements and management.

Aircraft loading: Including fuel, oil and baggage and completion of a load sheet, calculation of centre of gravity position.

Aircraft inspection: Pre-flight check.

Emergency equipment: Location, use, and operation.

Weather, NOTAM and PNGAIP supplements: Information applicable on the day of the test, obtained and correctly interpreted.

➢ **Piloting technique test**

Pre-flight inspection: As in flight manual.

Engine start up and warm up: As in flight manual.

Engine checks and run-up: As in flight manual.

Air traffic services procedures: Standard.

Taxiing and brake check: Safe, instrument checks, speed control.

Pre-take-off checks: Flight manual or mnemonic. The use of check lists is encouraged.

➢ **Visual flight test**

Normal take-off: Correct power, straight take-off path, correct elevator use for tailwheel or nosewheel type, unstick, nose attitude, speed control, flap raising, accurately trimmed, nominated climb speed ± 5 knots.

Crosswind take-off: Determine crosswind component, apply to aircraft, use of differential braking for tailwheel type, straight take-off path, windward aileron raised, reducing with effective speed increase, positive, clean lift-off, track out, accurately trimmed, nominated climb speed ± 5 knots.

Maximum performance take-off: Brakes, maximum power, pressures and temperatures checked, straight run, nominated unstick speed, initial best angle of climb speed, accurately trimmed, then best rate-of-climb speed, retrim.

Abandoned take-off: Close throttle fully, directional control, brakes, subsequent actions.

Engine failure after take-off: Lower nose, correct gliding speed, trim if possible, selection of area, warn passengers, Mayday if time, flap as required, checks if time, mixture ICO, fuel and ignition off, door unlocked, master off last if electric flap involved, correct overshoot procedure applying power first.

Climbing: Nominated speed ± 5 knots, accurately trimmed, temperatures and pressures checked, look-out, heading changes during long climbs to see over nose blindspot, ball central.

Level flight: Accurately trimmed, ± 50 feet of nominated altitude, ball central.

Descent: Nominated speed ± 5 knots, accurately trimmed, ball central.

- **Instrument flight test**

Full panel:

No visual horizon.

Straight and level: ± 5 degrees, ± 100 feet.

Medium turns: 180 degree left and right, ± 10 degrees of heading, ± 100 feet.

Straight ascent and descent: ± 100 feet to pre-selected altitude.

Stall onset power-on level flight: Unstall, correct use of power and controls.

Stall onset power-on climbing turn: Unstall, correct use of power and controls.

Start of power-on spiral dive: Correct identification and recovery.

Limited panel:

Using only ASI, VSI, altimeter, turn and slip indicator and magnetic compass. No visual horizon, DI, or HSI.

Climbing turns: On to compass headings, nominated speed ± 10 knots, ± 10 degrees.

Straight climb: Compass headings, nominated speed ± 10 knots, ± 10 degrees.

Straight and level: Compass headings, ± 10 degrees, ± 200 feet.

Medium turns: Left and right, ± 200 feet, only tested on aircraft fitted with a bat-and-ball or other basic instrument capable of providing accurate angle of bank indication beyond Rate 1.

Unusual attitude recovery:

Including start of power-on spiral dive.

- **Visual flight test continued**

All to be done to a maximum of one-quarter ball deflection.

Medium turns: Minimum 180 degrees left and right, look-out, ± 50 feet.

Climbing turns: Minimum 180 degrees left and right, look-out, nominated power and speed.

Descending turns: Minimum 180 degrees left and right, look-out, nominated power and speed.

Steep turns: Through 360 degrees left and right, look-out, bank angle minimum of 45 degrees, correct power use during entry and rollout, correct co-ordination and balance, ± 50 feet.

Maximum rate turns: Through 360 degrees left and right, look-out, correct power use during entry and roll-out, correct co-ordination and balance, ±50 feet.

Steep gliding turns: Minimum 180 degrees left and right, look-out, entry at best gliding speed, power idle, speed increased during turn, roll-out back to glide, correct co-ordination and balance.

Stalling: Safety checks and clearing turns essential.

Stall in basic configuration: Recovery either at incipient or fully developed stage (flight examiner will nominate which), with minimum height loss, no yaw, standard recovery.

Power-on stall: With or without flap, as for basic stall.

Wing-drop stall: Correct use of rudder to prevent further yaw, no aileron use during initial recovery, correct use of power.

Stall in a steep turn: Reduced power entry optional, recovery either at incipient or fully developed stage (flight examiner will nominate which), balanced entry, recognition, correct recovery to straight and level and to continued turn left and right, maximum height loss 100 feet.

Forced landings with power: From 500 feet approximately, in LFA or on aerodrome, cloud base and visibility nominated by flight examiner, circuit planning, engine handling, configuration, nominated speed, execution.

Forced landings without power: Commencement height at flight examiner discretion, field selection by candidate, initial actions, descent plan and execution, speed as nominated, carburettor heat, trouble checks, simulated Mayday, power checks, warn passengers, shutdown checks, gross undershoot or overshoot is a failure, correct overshoot procedure with only 1 attempt allowed.

Flap usage or sideslipping: Flap usage within speed range, safe operation. Side-slipping, only tested when applicable to aircraft type, straight and in turns, speed control, safe execution.

Low flying in simulated bad visibility: Preliminary checks, not more than 45 degree banked turns, nominated height ± 50 feet, speed ± 5 knots, good look-out essential, constant radius turns accurate, obstacle avoidance turns accurate, correct power usage. Reversal- turns — coastal or restricted terrain (or both), correct direction of turn. Not above 500 foot or below 200 foot height.

Rejoining and circuiting: As nominated by flight examiner, checks before rejoining and circuit checks completed, acceptable level of safety awareness.

Approach and landing: As nominated by flight examiner, approach in accordance with performance chart to minimum length fields, wheel landing, flapless landing, glide approach and landing, crosswind landing. Nominated speeds, correct execution, descent path, drift allowance, and touchdown.

Missed approach from below 50 feet: Correct power usage, gear, flap sequence, safe execution, heading ± 5 degrees, nominated climbing speed, accurately trimmed.

Radiotelephony tuning and procedures: Standard phraseology required.

Look-out and general airmanship: Good look-out and airmanship.

Air traffic control: Comply with air traffic services practices and procedures and carry out the required communications with a degree of competency appropriate to the privileges of a CPL(A).

Intercommunication: Equipment of an approved type is to be provided for use during the flight test.

An approved airline flight simulator may be used for those exercises that are not normally demonstrated in flight in the particular aeroplane concerned.

4.2 Flight test syllabus — helicopter

The test is to include an oral general knowledge test followed immediately by a pilot competency test. The candidate is to provide a copy of the current meteorological forecast for the period of the flight. Failure to pass in any item of the test may result in the applicant and the instructor being advised of the failure aspects and of the further training believed necessary before a further flight test may be undertaken.

- **General knowledge test**

Aircraft documents: Certificate of airworthiness, helicopter flight manual, release to service and radio licence.

Helicopter performance and operating requirements: As in current legislation.

Fuel: Requirements and management.

Loading: Including fuel, oil and baggage.

Emergency equipment: Location and use.

Weather, NOTAM and PNGAIP supplements: Obtained and correctly interpreted.

- **Piloting technique test**

Pre-flight inspection: As in check list.

Start-up, warm-up, clutch engagement: As in flight manual.

Run-up, functional checks: As in flight manual.

Lift-off to hover: Maintain correct attitude and heading, constant height, good RPM control and co-ordination, hover check - power, centre of gravity position indicated by cyclic, control response.

Hover taxiing: Steady walking pace, good height and RPM control, skids aligned with direction of movement.

Hover patterns and turns: Smooth control of the helicopter in spot turns and sideways and backwards flight.

Normal circuit: Good lift-off, hover, correct attitude during transition to normal climb ± 10 knots, turn at nominated height, downwind at nominated height ± 100 feet, downwind checks, judgement of base turn, safe approach speed, reasonable approach angle to nominated touchdown spot, good RPM and directional control throughout, terminate at a hover then land vertically.

Limited-power operations: Demonstrate running take-off, run-on landing, cushion creep take-off, zero speed landing, towering take-off.

Quick stops: At nominated height, perform quick stops terminating into wind, safe position of tail rotor and avoid dangerous sink.

Straight-in autorotation: From approximately 800 foot height perform a straight-in autorotation with power recovery to a 3 foot hover, initial collective fully down, positive needle split at approximately 300 RPM, good speed and RPM control in descent, safe cyclic action, co-ordination of throttle, collective and anti-torque pedal.

180 degree autorotation: From approximately 800 foot height perform a 180 degree autorotation with power recovery to the hover, control as for straight-in case.

Autorotation: IAS and RPM variation, from approximately 800 foot height perform an approach with varying IAS and RPM to hover over a nominated spot.

Low flying: At a nominated height and not below a nominated speed, maintain good RPM control whilst turning and following basic contours with use of the collective.

Mountainous-terrain flying: On a knoll (or spot on a ridge) perform a reconnaissance, determine the wind direction and report it, then carry out a circuit with power check and safe approach to a hover or landing as applicable. In no-natural-horizon conditions, demonstrate flying in a valley terminating in an approach to a hover, or landing as applicable, at a position nominated by the examiner. This item may be omitted from the test if a

Category B or A flight instructor has certified the candidate's competence in the candidate's log book.

Slope landings and take-offs: Demonstrate slope landings across and up slope, maximum operating engine RPM, gentle ground contact, correct handling of collective and cyclic throughout.

Confined areas: As appropriate perform a high reconnaissance of selected confined areas, consider size, shape, wind, best approaches, obstructions, termination hover height or landing spot (or both), surface, slope and overshoots, plan circuit, make power assessment, circuit and approach to hover or landing, and departure. Test to include advanced confined area operations involving maximum power or steep towering take-off techniques and hover manoeuvres to position where appropriate, which might include turns about the mast or cargo hook, nose and tail rotor.

Carriage of external rack loads: To be covered by an oral discussion and briefing.

Carriage of sling loads: With the helicopter at or near its MCTOW, and using a sling at least four metres long, position the helicopter on the ground, attach the sling to the hook and demonstrate a lift-off with maximum operating engine RPM, circuit and approach to the hover over a nominated spot with manual release, maximum operating engine RPM on finals to the hover.

Instrument flight manoeuvres: Straight and level flight, ± 5 degrees heading, ± 100 foot altitude, in-balance, climbing and descending to pre-selected altitudes, level flight to be re- established at the pre-selected altitude ± 100 feet, 180 degrees medium level turns left and right, Rate 1, ± 100 foot altitude, ± 10 degrees of roll-out heading, in-balance, autorotations, safe and correct, recovery from unusual attitudes, prompt and correct.

Run-down procedures: As in flight manual.

Emergencies: Hydraulic controls failure if applicable, tail rotor emergencies, discussions on forced landings, fire in the air, ditching, and any other emergency relevant to the helicopter being used for the test.

Airmanship: The whole flight will be considered and an assessment made of pilot judgement, decision making, and adequacy of lookout.

Air traffic control: Comply with air traffic services practices and procedures and carry out the required communications with a degree of competency appropriate to the privileges of a CPL(H). Provided that, where the applicant is the holder of at least a CPL(A), the flight examiner may substitute an oral examination on air traffic services practices and procedures when the helicopter is not equipped with two-way radio or air traffic services are not available.

Intercommunication equipment of an approved type is to be provided for use during the flight test.