Study and Reference Guide

Private and Commercial Pilot Licence
including Aeroplane to Helicopter Pilot Licences

Helicopter

Fifth Edition
June 2004
GENERAL

KNOWLEDGE REQUIREMENTS

NOTE: The new Canadian Aviation Regulations (CARs) replace the Air Regulations, Air Navigation Orders, Air Regulation Series and the Personnel Licensing Handbook. While the implementation date for some of the CARs may be delayed, candidates are required to have a sound understanding of the appropriate CARs and will be examined on them from December 10, 1996 onward.

Applicants for Private and Commercial Pilot Licences in the Helicopter Category shall thoroughly understand the operational provisions of the CARs and Air Traffic Rules and Procedures that are appropriate to the licence, and in accordance with flight under the Visual Flight Rules (VFR).

Applicants for the Private Pilot Licence shall have a basic understanding of the remaining subjects in this guide. As well, they must have the ability to apply these subjects practically where required.

Applicants for the Commercial Pilot Licence shall have a good understanding of the remaining subjects in this guide with the ability to apply them practically where required. They shall also know those sections presented in this guide related to Part VII of the CARs – Commercial Air Services, applicable to the duties and responsibilities of a Commercial Pilot employed in a commercial air service operating VFR.

All applicants must also be able to read the examination questions in either English or French without assistance.

Subjects marked with a bullet (•) are considered essential knowledge for the Commercial Pilot Licence candidates.
EXAMINATIONS

Applicants for the Private and Commercial Pilot Licence in the Helicopter Category shall demonstrate their knowledge by writing a Transport Canada multiple choice examination on subjects contained in this guide.

<table>
<thead>
<tr>
<th>Examination</th>
<th>Questions</th>
<th>Time Limit</th>
<th>Pass Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Pilot – Helicopter (PPHEL)</td>
<td>100</td>
<td>3 hours</td>
<td>60%</td>
</tr>
<tr>
<td>Commercial Pilot – Helicopter (CPHEL)</td>
<td>100</td>
<td>3½ hours</td>
<td>60%</td>
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These examinations are sectionalized into four mandatory subject areas and require an overall pass mark of 60%. As well, the candidate must achieve 60% in each of the four subject areas. They are:

**Mandatory Subjects**  
**Study and Reference Guide Sections**

**AIR LAW**
- Air Law and Procedures – Section 1

**NAVIGATION**
- Navigation - General – Section 6
- Navigation and Radio Aids – Section 7

**METEOROLOGY**
- Meteorology – Section 4

**AERONAUTICS AND GENERAL KNOWLEDGE**
- Airframes, Engines and Systems – Section 2
- Theory of Flight – Section 3
- Instruments – Section 5
- Flight Operations – Section 8
- Human Factors – Section 9

Although the overall and supplementary examinations contain questions related mostly to the sections shown under the above four mandatory subject areas, there may be occasions where knowledge from an unrelated section is required to arrive at the correct response. For example, a practical question on fuel calculations under Navigation – Section 6 may require knowledge of VFR fuel requirements under Air Law – Section 1.

Applicants who obtain less than 60% on the overall examination will, for licensing purposes, be required to rewrite the complete paper. The rewrite provisions detailed in the CARs Part IV apply.
SUPPLEMENTARY EXAMINATIONS

Applicants who obtain 60% or more on the main examination (PPHEL or CPHEL), but who fail one or more mandatory subject areas will be assessed a partial pass. During one sitting they will be required to write supplementary examinations for each subject area failed.

Details on the mandatory subject area supplementary examinations are as follows:

### Private Pilot Licence

<table>
<thead>
<tr>
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<tr>
<td>AIR LAW (PHLAW)</td>
<td>20</td>
<td>1 hour</td>
<td>60%</td>
</tr>
<tr>
<td>NAVIGATION (PHNAV)</td>
<td>25</td>
<td>2 hours</td>
<td>60%</td>
</tr>
<tr>
<td>METEOROLOGY (PHMET)</td>
<td>25</td>
<td>1½ hours</td>
<td>60%</td>
</tr>
<tr>
<td>AERONAUTICS – GENERAL</td>
<td>35</td>
<td>1½ hours</td>
<td>60%</td>
</tr>
<tr>
<td>KNOWLEDGE (PHGEN)</td>
<td></td>
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### Commercial Pilot Licence

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<tr>
<td>AIR LAW (CHLAW)</td>
<td>20</td>
<td>1 hour</td>
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<tr>
<td>NAVIGATION (CHNAV)</td>
<td>25</td>
<td>2 hours</td>
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NOTE: When writing more than one supplementary examination, the maximum time allowed shall be the sum of the times indicated for each examination, not to exceed 3 hours for the Private Pilot supplementary examinations and 3½ hours for the Commercial Pilot supplementary examinations.
AEROPLANE TO HELICOPTER LICENCE EXAMINATIONS

Pilots who hold a valid Private, Commercial or Airline Transport Pilot Licence in the Aeroplane Category and who wish to apply for a Private Pilot Licence, Helicopter Category, shall demonstrate their knowledge by writing the following Transport Canada multiple choice examination.

<table>
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<tr>
<td>Private Pilot Helicopter</td>
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<td>1½ hours</td>
<td>60%</td>
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<tr>
<td>Rating – Alternate Category</td>
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<tr>
<td>(PHRAC)</td>
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</tr>
</tbody>
</table>

Pilots who hold a valid Commercial or Airline Transport Pilot Licence in the Aeroplane Category and who wish to apply for a Commercial Pilot Licence, Helicopter Category, shall demonstrate their knowledge by writing the following Transport Canada multiple choice examination.

<table>
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<tr>
<th>Examination</th>
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<tbody>
<tr>
<td>Commercial Pilot</td>
<td>35</td>
<td>1½ hours</td>
<td>60%</td>
</tr>
<tr>
<td>Helicopter Rating – Alternate Category (CHRAC)</td>
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<tr>
<td>(CHRAC)</td>
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The PHRAC and CHRAC examinations are based on subjects contained in Sections 1.0, 2.0, 3.0, 4.0, 7.0 and 8.0 of this study guide.
SECTION 1: AIR LAW AND PROCEDURES

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704.22 Simulation of Emergency Situations
704.23 VFR Flight Obstacle Clearance Requirements
704.24 VFR Flight Minimum Flight Visibility – Uncontrolled Airspace
704.25 VFR Flight Weather Conditions
704.28 VFR OTT Flight
704.29 Routes in Uncontrolled airspace
704.31 Minimum Altitudes and Distances
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2 Supplements
3 Aeronautical Information Circulars
4 Aviation Notices and AIRAC Canada

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1 Air Traffic and Advisory Services
2 Flight Service Stations
3 Communications Procedures
4 Radar Service
5 ATC Clearances and Instructions
6 Wake Turbulence Separation
7 Airport/Aerodrome Operations – Uncontrolled
8 Airport/Aerodrome Operations – Controlled
9 Mandatory and Aerodrome Traffic Frequencies
10 VFR En Route Procedures
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12 Simultaneous Intersecting Runway Operations (SIRO)

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2 Cruising Altitudes
3 Profile Descent
4 Leaving or Entering Uncontrolled Airspace
5 Uncontrolled Airspace Procedures
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- 1. Types
- 2. Four Stroke Cycle
- 3. Methods of Cooling
- 4. Principles of the Magneto
- 5. Dual Ignition
- 6. Exhaust System
- 7. Ancillary Controls
- 8. Turbo-charging
- 9. Effect of Density Altitude/Humidity
- 10. Limitations and Operation
- 11. Instruments

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- 2. Principles of Operation
- 3. Methods of Cooling
- 4. Particle Separators
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- 6. Bleed Air System
- 7. Accessory Drives
- 8. Turbine Temperature Measurement
- 9. Torque Sensing
- 10. Instruments
- 11. Ignition and Auto-relight System
- 12. Effects of Density Altitude/Humidity
- 13. Limitations

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- 1. Theory of Operation
- 2. Fuel-Air Mixture
- 3. Mixture Controls
- 4. Carburettor Icing
- 5. Use of Carburettor Heat and Its Effect on Mixture

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- 1. Battery/Starter- Generator/Alternator
- 2. Lighting
- 3. Ammeter, Load Meter and Warning/Caution Systems
- 4. Bus Bars
- 5. Circuit Breakers/Fuses
- 6. Grounding/Bonding

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- 1. Types/Viscosity/Grades and Seasonal Use
- 2. Purposes
- 3. Methods of Lubrication
- 4. Venting
- 5. Chip Detectors
- 6. Filters
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- 1. Types/Colour/Properties
- 2. Density/Weight
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- 5. Venting and Baffling
- 6. Fuel Pumps, Lines, Filters and Drains
- 7. Induction Manifold / Fuel Control Unit
- 8. Detonation/Pre-ignition Causes and Effects
- 9. Vapour Lock
- 10. Fuel Heater
- 11. Primers
- 12. Fuel Management - Ground and Air
- 13. Fuel Handling Fuelling Aircraft
- 14. Grounding/Bonding
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1 Types
2 Main Rotor
3 Tail Rotor
4 Intermediate
5 Drive Shafts
6 Mounting System
7 Clutches/Free-Wheeling Unit
8 Accessory Gearbox
9 Instruments

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1 Pump
2 Reservoir
3 Servo Actuators
4 Filters
5 Valves/Switches/Gauges

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2 Fire Detection and Protection
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5 Emergency Floatation
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1 Bernoulli’s Theorem
2 Newton’s Laws

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2 Relative Airflow and Angle of Attack
3 Chord Line
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5 Lift
6 Weight
7 Drag
8 Thrust
9 Pitch Angle/Angle of Incidence
10 Rotor Disc
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16 Phase Lag/Advance Angle
17 Coriolis Effect
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3 Pressure Distribution about an Aerofoil
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5 Velocities Affecting Rotor Systems
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7 Transitions
8 Tail Rotor Drift/Roll
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10 Reverse Flow
11 Blade Stall
12 Over Pitching
13 Settling with Power
14 Recirculation
15 Vortex Ring State
16 Ground Resonance

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1 Centrifugal Force/Weight
2 Linear/Turns
3 Structural Limitations
4 Gust Loads

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3 Control Orbits
4 Throttle/Governor
5 Tail Rotor Pedals
6 Aids to Stability

FORCES ACTING ON A HELICOPTER

1 Load Factor
2 Stability
3 Lift / Weight / Thrust / Drag

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1 Number / Speed of Blades
2 Rotor Blade Vortices
3 Limitations to Forward Speed and Vibrations
4 Autorotations
5 Tail Rotor
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2 Vertical Structure
3 ICAO Standard Atmosphere

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1 Pressure Measurements
2 Station Pressure
3 Mean Sea Level Pressure
4 Pressure Systems and their Variations
5 Effects of Temperature
6 Horizontal Pressure Differences

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1 Pressure Altitude
2 Density Altitude
3 True Altitude
4 Altimeter Settings
5 Effects of both Pressure and Temperature

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1 Heating and Cooling of the Atmosphere – Convection / Advection / Radiation
2 Horizontal Differences
3 Temperature Variations with Altitude
4 Inversions
5 Isothermal Layers

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1 Relative Humidity / Dewpoint
2 Sublimation and Condensation
3 Cloud Formation
4 Precipitation
5 Saturated and Dry Adiabatic Lapse Rates

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1 Lapse Rate and Stability
2 Modification of Stability
3 Characteristics of Stable and Unstable Air
4 Surface Heating and Cooling
5 Lifting Processes
6 Subsidence / Convergence

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1 Classification
2 Formation
3 Types and Recognition
4 Associated Precipitation and Turbulence

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1 Convection
2 Mechanical
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4 Clear Air Turbulence
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6 Reporting Criteria
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1 Pressure Gradient
2 Deflection caused by the Earth's Rotation
3 Low Level Winds – Variation in Surface Wind
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9 Land and Sea Breezes
10 Katabatic / Anabatic Effects
11 Topographical Effects
12 Wind Shear, Types and Causes
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1 Definition and Characteristics
2 Formation
3 Classification
4 Modification
5 Factors that Determine Weather
6 Seasonal and Geographic Effects
7 Air Masses affecting North America

FRONTS

1 Structure
2 Types
3 Formation
4 Cross-sections
5 Discontinuities Across Fronts
6 Frontal Waves and Occlusions
7 Frontogenesis and Frontolysis

FRONTAL WEATHER

1 Warm Front
2 Cold Front
3 Stationary Front
4 TROWAL and Upper Fronts

AIRCRAFT ICING

1 Formation
2 Types of Ice
3 Reporting Criteria
4 Cloud Types and Icing
5 Freezing Rain and Drizzle
6 Icing in Clear Air (Hoar Frost)
7 Collection Efficiency
8 Aerodynamic Heating

THUNDERSTORMS

1 Requirements for Development
2 Life Cycle
3 Classification – Air mass, Frontal, Squall Line, Convective, Orographic and Nocturnal
4 Tornadoes and Hurricanes
5 Hazards – Turbulence, Hail, Rain, Icing, Altimetry, Lightning, Gust Fronts, Downbursts and Micro-bursts

SURFACE BASED LAYERS

1 Fog Formation
2 Fog Types (including mist)
3 Haze and Smoke
4 Blowing Obstructions to Vision

METEOROLOGICAL SERVICES AVAILABLE TO PILOTS

1 Aviation Weather Briefing Service (AWBS)
2 Aviation Weather Information Service (AWIS)
3 Flight Service Stations (FSS)
4 Weather Broadcasts by FSS
5 Atmospheric Environment Service Weather Briefing
6 Transcribed Weather Broadcasts (TWB)
7 DUATS – Commercial Weather Service
8 Automatic Terminal Information Service (ATIS)
9 VOLMET (HF) Broadcast
10 Pilots Automatic Telephone Weather Answering Service (PATWAS)
AVIATION WEATHER REPORTS

₁  Aviation Routine Weather Report (METAR)
₂  SPECI
₃  Decoding
₄  AWOS
₅  Pilot Reports (PIREP/AIREP)

AVIATION FORECASTS

₁  Times Issued and Validity Periods
₂  Decoding
₃  Graphical Area Forecasts (GFA) and AIRMET
₄  Aerodrome Forecasts (TAF)
₅  Upper Level Winds and Temperature Forecasts (FD)
₆  Significant In-flight Weather Warning Messages (SIGMET)

WEATHER MAPS AND PROGNOSTIC CHARTS

₁  Times Issued and Validity Periods
₂  Symbols and Decoding
₃  Surface Weather Map
₄  Prognostic Surface Chart
₅  Upper Level Chart – ANAL (850 – 700 mb)
₆  Significant Weather Prognostic Chart FL100 – 250 (700 – 400 mb)
SECTION 5: INSTRUMENTS

FLIGHT INSTRUMENTS – PRINCIPLES AND OPERATIONAL USE

1. Pitot Static System
2. Airspeed Indicator
3. Altimeter and Encoding Altimeter
4. Radio / Radar Altimeter
5. Outside Air Temperature
6. Turn-and-bank Indicator / Turn Coordinator
7. Vertical Speed Indicator (VSI)
8. Heading Indicator
9. Attitude Indicator (AI)
10. Radio Magnetic Indicator (RMI)
11. Horizontal Situation Indicator (HSI)
12. Flight Director

FLIGHT MANAGEMENT INSTRUMENTS

1. Flight Management System (FMS)
2. Electronic Flight Instrument System (EFIS)

ENGINE AND TRANSMISSION INSTRUMENTS – PRINCIPLES AND USE

1. N1 / N2 / Rotor Tachometer
2. Torquemeter or Degrees of Pitch
3. Transmission
4. Oil Temperatures and Pressures
5. Turbine Temperature
6. Fuel Pressure
7. Fuel Flow

AIRCRAFT COMPASS SYSTEMS

1. Construction
2. Use
3. Limitations and Faults
4. Gyromagnetic Remote Indicating Compass
### SECTION 6: NAVIGATION – GENERAL

#### NAVIGATION TERMS

**1. Air Position**
**2. Great Circle**
**3. Rhumb Line**
**4. Greenwich Hour Angle**

#### MAPS AND CHARTS

**1. Lambert Conformal**
**2. Transverse Mercator**
**3. Enroute Low Altitude Charts**

#### TIME AND LONGITUDE

**1. Time Zones and Relation to Longitude**

#### FLIGHT PLANNING CALCULATIONS

- **1. Heading and True Airspeed**
- **2. Wind and Wind Speed**
- **3. IAS – CAS – EAS – TAS**
- **4. Track and Groundspeed**
- **5. Time**
- **6. Weight and Balance**
- **7. Fuel Load / Zero Fuel Weight**
- **8. Pay Load / Weight Shift**
- **9. Critical Point (CP)**
- **10. Point of No Return (PNR) / Radius of Action**

#### FLIGHT PLAN FORMS

**1. Flight Plan**
**2. Flight Itinerary**

#### EN ROUTE NAVIGATION

- **1. Use of Aeronautical Charts**
- **2. Calculation of Heading and Groundspeed**
- **3. Use of Radio Aids to Determine Position and Transferring Position Lines**
- **4. Gyro Steering Techniques in Areas of Compass Unreliability**
- **5. Maintaining a Flight Log (Air Position)**
- **6. Determination of Wind Velocity**
- **7. Use of Canada Flight Supplement (CFS)**
SECTION 7: NAVIGATION AND RADIO AIDS

DEFINITIONS

1. Meridian
2. Prime Meridian
3. Longitude
4. Equator
5. Latitude
6. Great Circle
7. Rhumb Line
8. Variation
9. Isogon
10. Agonic Line
11. Deviation
12. Track
13. Heading
14. Airspeed
15. Ground Speed
16. Air Position
17. Ground Position
18. Bearing
19. Wind Velocity
20. Drift

MAPS AND CHARTS

1. Characteristics of Projections
2. VTA – Transverse Mercator Projection
3. VNC – Lambert Conformal Conic Projection
4. WAC – Lambert Conformal Conic Projection
5. Topographical Symbols
6. Elevation and Contours (Relief)
7. Aeronautical Information
8. Scale and Units of Measurement
9. Locating Position by Latitude and Longitude
10. Navigational Aids
11. Enroute Low Altitude Charts

TIME AND LONGITUDE

1. 24 Hour System
2. Time Zones and Relation to Longitude
3. Conversion of UTC to Local and Vice Versa

PILOT NAVIGATION

1. Use of Aeronautical Charts
2. Measurement of Track & Distance
3. Map Reading
4. Setting Heading – Visual Angle of Departure
5. Check Points and Pin-Points
6. Plotting Bearings
7. Use of Position Lines to Obtain a Fix
8. Ground Speed Checks and E.T.A. Revisions
9. Track Made Good
10. Determining Drift by 10° Lines
11. Double Track Error Method to Regain Track
12. Sum of Opening and Closing Angles to Destination
13. Visual Alteration Method of Correcting to Track
14. Diversion to Alternate
15. Return to Departure Point (Reciprocal Track)
16. Low Level Navigation
17. Deduced (Dead) Reckoning (DR Navigation)
18. In-flight Log and Mental Calculations
19. Procedures When Lost
20. Air and Ground Position
21. Variation and Deviation
22. True Track, Magnetic Track
23. True, Magnetic and Compass Headings
24. Indicated and Calibrated Airspeed (IAS, CAS)
25. True Airspeed, Ground Speed (TAS, G/S)
26. Compass Errors
27. Radio Communications (as per Section 1)
TRIANGLE OF VELOCITIES

1 True Airspeed and Heading
2 Wind Velocity
3 Ground Speed and Track

NAVIGATION COMPUTERS

1 True Heading and True Airspeed
2 Applying the Wind
3 True Track and Ground Speed
4 Magnetic Heading and Magnetic Track
5 Density Altitude and True Altitude
6 Indicated, Calibrated and True Airspeed
7 Time, Ground Speed and Distance
8 Fuel Consumption and Conversions
9 Climbs and Descents

PRE-FLIGHT PREPARATION

1 Factors Affecting Choice of Route
2 Map Preparation
3 Meteorological Information
4 NOTAM
5 Selection of Check Points
6 Fuel Requirements
7 Weight and Balance
8 Use of the Canada Flight Supplement
9 Documents to be Carried in Aircraft
10 Flight Plans and Itineraries
11 Flight Log Forms
12 Aircraft Serviceability

RADIO THEORY

1 Wave Length and Frequency
2 Frequency Bands
3 Characteristics of Low, High and Very High Frequency Radio Waves
4 Frequency Bands Used in Navigation and Communication

VHF OMNIDIRECTION RANGE (VOR)

1 Principles of Operation
2 Aircraft Equipment
3 Tuning and Identifying
4 Serviceability Checks
5 Interpretation/Orientation/Homing
6 Intercepting Predetermined Radials and Tracking
7 Position Lines and Fixes
8 Time and Distance Formula
9 Checking Ground Speed
10 Voice Feature
11 VHF (VOR) Airways and Air Routes
12 Reception Limitations

AUTOMATIC DIRECTION FINDER (ADF)

1 Principles of Operation
2 Aircraft Equipment
3 Tuning and Identifying
4 Serviceability Checks
5 Interpretation/Orientation/Homing
6 Intercepting Predetermined Tracks and Tracking
7 Position Lines and Fixes
8 Relative Bearings, Conversion to Magnetic and True Bearings
9 Time and Distance Formula
10 Checking Ground Speed
11 Voice Feature
12 Inaccuracies and Limitations
13 LF/MF (NDB) Airways and Air Routes

RADIO MAGNETIC INDICATOR (RMI)

1 Basic Principals, Use and Limitations

LONG RANGE AREA NAVIGATION (LORAN C)

1 Principals of Operation
2 Inaccuracies and Reception Limitations
GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS-GPS)

1 Basic Principals, Use and Limitations

OTHER RADIO AND RADAR AIDS BASIC PRINCIPALS AND USE

1 Distance Measuring Equipment (DME)
2 Transponder
3 Emergency Locator Transmitter (ELT)
4 VHF Direction Finding (DF) Assistance
5 Airport Surveillance Radar (ASR) Primary and Secondary
6 Precision Approach Radar (PAR)
7 Very Low Frequency (VLF) Navigation Systems – Basic Principle only
SECTION 8: FLIGHT OPERATIONS

GENERAL

➔ 1 Pilot-In-Command Responsibilities
➔ 2 Winter Operations
➔ 3 Float Operations
➔ 4 Thunderstorm Avoidance
➔ 5 Mountain Flying Operations
➔ 6 Collision Avoidance – Use of Landing Lights
➔ 7 Marshalling Signals
➔ 8 Aerodrome/Heliport Marking and Lighting
➔ 9 Hover Taxi/Air Taxi
➔ 10 Obstruction Markings/Lighting
➔ 11 Units of Measurement and Conversion
➔ 12 Use of Aircraft Flight Manual Including Approved and Unapproved Operational Information

USE OF PERFORMANCE CHARTS

➔ 1 Hover Ceiling, In Ground Effect (IGE) and Out of Ground Effect (OGE)
➔ 2 Rate of Climb
➔ 3 Height Velocity Curve (HVC)
➔ 4 Critical Wind Azimuth
➔ 5 Performance (V) Speed – Vy, Vne

WEIGHT AND BALANCE

➔ 1 Terms (e.g. datum, arm, moment)
➔ 2 Locating Centre of Gravity (C of G)
➔ 3 C of G Limits – Longitudinal
➔ 4 C of G Limits – Lateral
➔ 5 Weight (e.g. empty, gross)
➔ 6 Load adjustment
➔ 7 Cargo Tie Down/ Passenger Loading/ External Loading

EXTERNAL LOADS

➔ 1 Equipment
➔ 2 Ground/Air Signals
➔ 3 Safety/Precautions
➔ 4 Emergencies

WAKE TURBULENCE

➔ 1 Causes
➔ 2 Effects
➔ 3 Avoidance

SEARCH AND RESCUE (SAR) (A.I.P. CANADA – SAR Information)

➔ 1 Types of Service Available
➔ 2 Emergency Locator Transmitter (ELT) Exclude Categories
➔ 3 Aircraft Emergencies
➔ 4 Survival – Basic Techniques
CRITICAL SURFACE CONTAMINATION

1 Clean Aircraft Concept
2 Frozen Contaminants
3 Cold Soaking Phenomenon
4 Practices for Pilots to Ensure a Clean Aircraft
5 Pre-Take-Off Inspection
SECTION 9: HUMAN FACTORS

AVIATION PHYSIOLOGY

1. Hypoxia / Hyperventilation
2. Gas Expansion Effects
3. Decompression (including SCUBA diving)
4. Vision / Visual Scanning Techniques
5. Hearing
6. Orientation / Disorientation (including visual and vestibular illusions)
7. Positive and Negative "G"
8. Circadian Rhythms / Jet Lag
9. Sleep / Fatigue
10. Toxic Hazards (CO₂)

THE PILOT AND THE OPERATING ENVIRONMENT

1. Personal Health / Exercise / Fitness
2. Obesity / Diet / Nutrition
3. Medications (prescribed and over-the-counter)
4. Substance Abuse (alcohol and drugs)
5. Pregnancy
6. Heat / Cold
7. Noise / Vibrations
8. Effects of Smoking
9. Toxic Hazards (including carbon monoxide)

AVIATION PSYCHOLOGY

1. The Decision-Making Process
2. Factors that Influence Decision-Making
3. Situation Awareness
4. Stress
5. Managing Risk
6. Attitudes
7. Workload (attention and information processing)

PILOT – EQUIPMENT / MATERIALS RELATIONSHIP

1. Controls and Displays
   - Errors in Interpretation and Control
   - Information Selection – eg. "glass" cockpits
2. Alerting and Warning Systems
   - Appropriate Selection and Set up
   - False Indications
   - Distractions and Responses
3. Standard Operating Procedures (SOPs)
   - Correct Use of Charts, Checklists and Manuals

INTERPERSONAL RELATIONS

1. Communication with
   - Flight Crew and Cabin Crew
   - Passengers
   - Company Management
   - Flight Operations
   - Maintenance Personnel
   - Air Traffic Services
2. Crew Problem Solving and Decision-Making
3. Crew Management / Small Group Dynamics
4. Operating Pressures
   - Family
   - Peer Group
   - Employer
RECOMMENDED STUDY MATERIAL

- List of Civil Aviation Publications (TP 3680E) - Contains titles, reference numbers, source and cost.
- Student Pilot Permit or Private Pilot Licence for Foreign and Military Applicants, Air Regulations (PSTAR) (TP 11919E)
- When in Doubt... Small and Large Aircraft - Aircraft Critical Surface Training (TP 10643E)
- Aircraft Critical Surface Contamination Examination Questions (TP 10615E)
- Helicopter Flight Training Manual (TP 9982E)
- Air Command Weather Manual (TP 9352E)
- Air Command Weather Manual Supplement (TP 9353E)
- Human Factors for Aviation - Basic Handbook (TP 12863E)
- AWARE (Aviation Weather... Playing by the Rules) Aeronautical Information Publication (A.I.P. Canada) (TP 2300E)
- Canadian Aviation Regulations (CARs)
- Flying the Weather VFR (TP 3115E)


Information on textbooks and other publications produced by commercial publishers can be obtained through local flying training organizations, bookstores and similar sources.


ENQUIRIES

Information concerning the location of pilot training organizations and matters pertaining to flight crew licensing may be obtained by contacting the appropriate Regional Offices. A complete listing may be found at: http://www.tc.gc.ca/CivilAviation/General/Exams/Centres.htm