



INSTRUMENT FLYING
GROUNDSCHOOL

Student Workbook

Chris Hobbs
Farmhall Aviation Training Limited
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SAMPLE PAGE ONLY

Chapter 1

Introduction

1.1 Use of this Workbook

This workbook is an integral part of the Farmhall Aviation Training Instrument Groundschool and provides the structure for each of the presentations. At the end of the course it serves as review material. Chapter 14 on page 107, while not part of the standard course, has been included to provide useful review questions for the IFR written examination and flight test.

This copy of the workbook is designed for students. A variant with answers to selected exercises is available for instructors. For more information please contact Chris Hobbs at Farmhall Aviation Training (<http://www.farmhall.ca>).

To use this workbook you will need the following, all of which should be available at your local pilot supply shop:¹

- a LO5/6 *En Route* Low Altitude chart
- the Canada Air Pilot Instrument Procedures for Ontario (CAP4)
- a copy of the Canada Flight Supplement (CFS)
- a copy of the General Pages of the Canada Air Pilot (CAP GEN)

This issue of the workbook is designed around a mid 2007 issue of the LO5/6 chart, CAP4 and CAP GEN. The questions, however, avoid items likely to change and are modified to bring them up-to-date before each groundschool course.

This workbook does not replace the many excellent examination preparation texts which are available for the Instrument Rating but, instead, complements them by providing challenging, non-multiple choice questions which can be discussed in class—I

¹e.g., <http://www.vippilot.com>

recommend that students ensure that they understand the principles of IFR flight by completing this workbook during the groundschool and then prepare for the written examination by using one of the examination-format workbooks.

1.2 Acknowledgments

I am grateful for the constructive criticism received from Jean René de Cotret, Don Buchan, students in the groundschools on whom earlier versions of the workbook were inflicted and other members of the Rockcliffe Flying Club.

It is inevitable that, as regulations change, some of the answers given in this workbook should become incorrect. To assist those who follow you in the course, please notify Chris Hobbs of any mistakes you find.

1.3 Course Format

The course consists of fifteen three-hour classes and may be combined with the Commercial Pilot groundschool. Farmhall Aviation Training's instructors are always available to answer questions arising from home study.

1.4 Reference Material

Several airports are used repeatedly in the questions in this workbook. Rather than repeat their locations, the information is gathered here.

Airport	Latitude	Longitude	Type
Arnprior	N45 24 49	W76 21 57	Uncontrolled
Ottawa Carp	N45 19 09	W76 01 20	Uncontrolled
Ottawa Gatineau	N45 31 17	W75 33 51	Mandatory Frequency
Kitchener/Waterloo	N43 27 32	W80 23 04	Controlled
Maniwaki	N46 16 28	W75 59 24	Uncontrolled
Marathon	N48 45 19	W86 20 40	Uncontrolled
North Bay	N46 21 49	W79 25 22	Mandatory Frequency
Ottawa	N45 19 21	W75 40 09	Controlled
Ottawa Rockcliffe	N45 27 37	W75 38 46	Uncontrolled
Pembroke	N45 51 52	W77 15 06	Uncontrolled

The locations of infrequently-used airports are given as required.

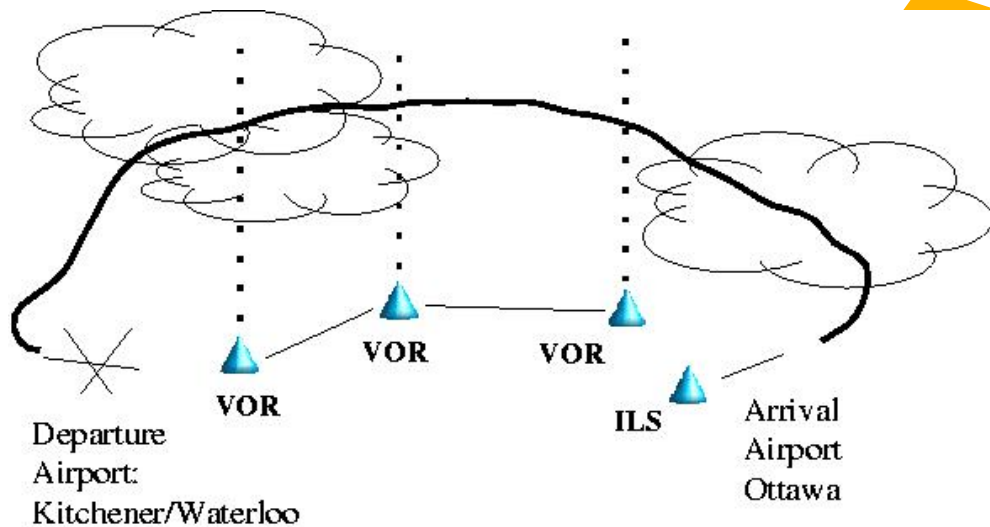


Figure 2.1: An IFR Flight

2.3.1 Flight Planning

The questions in this section relate to a day IFR flight you are planning from Kitchener/Waterloo, Ontario to Rockcliffe. You will be departing Kitchener at approximately 21:30Z in a C172 and the flight time will be about 2 hours 15 minutes.

Q 5 *Since Rockcliffe does not have a published instrument approach, can you file an IFR flight plan to it?*

Q 6 *What information would you consider for your flight planning, particularly information that you would generally not consider for a VFR flight?*

Q 7 *What items will you need to carry on-board the aircraft for this flight in addition to the normal VFR flight documents?*

Q 8 *What is an Alternate Airport?*

Q 9 *How does an IFR flight plan differ from a VFR one?*

Q 10 *Is it possible to file a flight plan:*

- *for a flight where part of the flight is IFR and part VFR?*
- *for an IFR flight which includes stops*

- for an IFR flight which is totally within uncontrolled airspace?
- for an IFR flight which is partially in uncontrolled and partially in controlled airspace?

Q 11 *How long before your flight do you need to file your flight plan for a domestic and for an international flight?*

Q 12 *Your aircraft has a mode C transponder, VHF radio, two VORs (one with localiser and glideslope), a hand-held GPS and an ADF. What equipment code would you write on your flight plan?*

Q 13 *How much fuel do you need for this flight?*

Q 14 *There are no NOTAMs for any of the navigation aids on your route and you have had a full weather briefing and, in summary, you can expect to be above a solid stratus undercast most of the way with winds from 320° Magnetic at 20 knots. Just before you leave, you get the latest METARs and TAFs from the route of flight as follows:*

METAR CYKF 142100Z AUTO 30004KT 9SM FEW008 SCT012 BRK022 22/16
A3005

TAF CYKF 141939Z 142004 32005KT P6SM SCT010 BKN025 TEMPO 2022
6SM -SHRA BR BKN020

RMK FCST BASED ON AUTO OBS. NXT FCST BY 02Z=

METAR CYHM 142100Z 22002KT 10SM FEW014 OVC025 21/18 A3006

TAF CYHM 142100Z 142222 VRB03KT P6SM BRK020 OVC050

RMK NXT FCST BY 06Z=

METAR CYYZ 142100Z 24003KT 15SM OVC025 22/17 A3004

TAF CYYZ 142110Z 142222 23005KT P6SM BRK020 OVC040

RMK NXT FCST BY 03Z=

METAR CYPQ 142100Z AUTO 26006KT 9SM OVC021 21/17 A3003

TAF CYPQ 142110Z 142200 27005KT P6SM OVC030

METAR CYOW 142100Z CCA 20005KT 20SM BRK010 OVC018 22/18 A2999

TAF CYOW 142115Z 142222 22005KT P6SM BRK008 OVC015

2.3. THE IFR FLIGHT

RMK NXT FCST BY 03Z=

METAR CYND 142100Z 0000KT 15SM OVC014 23/17 A2998
TAF CYND 142100Z 142222 23005KT P6SM BRK007 OVC010
RMK NXT FCST WILL BE ISSUED AT 151145Z=

Given these conditions, are you comfortable about launching?

2.3.2 Departure

Q 15 *When departing on an IFR flight, what walk-around and taxi checks would you carry out that might not be part of a VFR flight?*

Q 16 *What would be the constituent parts of the clearance that you could expect to receive at Waterloo?*

Q 17 *Had you been taking off from Bar River, Ontario, runway 18, what special consideration would you need to take regarding your climb rate?*

2.3.3 En Route

Q 18 *When you are flying IFR in VMC, who has responsibility for avoiding collisions with VFR aircraft?*

Q 19 *When you are flying IFR in VMC, who has responsibility for collision avoidance with other IFR aircraft? Hint: does the answer to this question depend on the class of airspace in which you're flying?*

Q 20 *What are the appropriate IFR cruising altitudes?*

Q 21 *What is a low-level airway and how does it differ from an air-route?*

Q 22 *What is a hold?*

Q 23 *Due to unexpected headwinds and extensive vectoring, you calculate that your fuel will not allow you any delay at your destination. How will you make this known to ATC?*

Using the LO5 and LO6 charts, answer the following questions:

Q 105 *What is the MOCA on V145 between the Ottawa VOR (YOW) and the Watertown VOR (ART)?*

Q 106 *What is the MRA over the same airway?*

Q 107 *Why is no MOCA shown on V316-360 between PESAC (N46 33 W72 11) and SOKYE (N46 22 W72 51)?*

Q 108 *How would you identify the THURO reporting point on V316, East of Ottawa?*

Q 109 *How far is it from the AGLIN to THURO along V316?*

Q 110 *How far is it from YOW to YUL along V316?*

Q 111 *On V282 from YUL, what is the MOCA and MRA between FAWNS and BUGSY?*

Q 112 *REEDO (N44 42.2 W75 58.9) is identified by a black triangle, ASHTN (just north of REEDO on V145) is identified by an open triangle. What do these triangles indicate and what is the difference between ASHTN and REEDO?*

Q 113 *What class of airspace is directly above Port Elgin airport (on the Eastern shore of Lake Huron, South of Wiarton) at the following altitudes:*

- 1000 feet ASL?
- 15000 feet ASL?
- 19000 feet ASL?

Q 114 *The frequency of the Ottawa VOR is given on LO6 as 114.6 (underlined) whereas the frequency of the Plattsburgh VOR (N44 41 W73 31) is given as 116.9 (without an underline). What does the underline on the Ottawa frequency mean?*

Q 115 *At the Ottawa Airport there is a small square box. What does this signify and how would you use it?*

Q 116 *What is the height above sea level of Arnprior (N45 25 W76 22) airport?*

Q 117 *What is the difference between CYOW, YOW and OW (all in the neighbourhood of Ottawa airport)?*

4.3. PREFERRED ROUTES

- Q 118** *What frequencies can be used to reach the FSS at Gatineau (North-East of Ottawa)?*
- Q 119** *What is the “integral sign” on V487 between Maniwaki and FIRON?*
- Q 120** *What would be suitable IFR altitudes to fly from the Plattsburgh VOR (N44 44.1 W73 31.4) to the NAPEE intersection?*
- Q 121** *The Tulita NDB (N64 54.4 W125 33.9) just south east of Norman Wells is inside an area marked with squares with white borders. What does this mean?*
- Q 122** *What does “(Days 35)” under the label for Port Elgin (N44 24 51, W81 24 59) mean?*
- Q 123** *T101 is drawn between FIRON, just to the west of the Mirabel VOR to ATUKO on V487. What is T101?*
- Q 124** *Just to the east of T101 close to Mont Laurier, there is a small circle enclosing a dot. What is this?*
- Q 125** *Just south of the St Lawrence river there is an irregularly-shaped area labelled FALCON 1 MOA. What is this?*

4.3 Preferred Routes

What are the preferred low-level routes for the following flights:

- Q 126** *Ottawa to Hamilton? What is the MOCA on the last segment of that flight?*
- Q 127** *Ottawa to Pierre Elliott Trudeau International at 7000 feet?*
- Q 128** *Pierre Elliott Trudeau International to Ottawa?*

4.4 Alternate Airports

You are flying a Cessna 172 and the surface winds in the area in which you intend to land are anticipated to be 120° Magnetic at 25 knots at the time of your arrival. Surface temperature is likely to be about 20°C. Your aircraft is equipped with VOR, ILS, DME, ADF and approach-approved GPS.

For each of the following possible alternate airports (for each of which a TAF is published), state the minimum weather conditions which would have to be forecast to allow you to select that airport as an alternate.

4. Rockcliffe (CYRO) runway 27

Q 153 *Who is responsible for obstacle and terrain clearance during an instrument departure?*

Q 154 *The term SPEC VIS appears on the plate Runway 08 at Red Lake, Ontario. What does this term mean?*

6.2 Departure from Uncontrolled Airport

Assume that you have filed an IFR flight-plan from Ottawa Rockcliffe (CYRO) to Toronto City Centre Airport. Rockcliffe is an uncontrolled airport lying about 7 nm from Ottawa International. Answer the following questions:

Q 155 *How is visibility determined so that you can decide whether a takeoff can legally be made?*

Q 156 *By what means could you obtain your departure clearance?*

Q 157 *If you receive your departure clearance on the ground, what information is it likely to contain which would not be in a departure clearance at a controlled airport?*

6.3 Climb Gradients

Q 158 *Unless otherwise stated in the CAP, what climb gradient has the approach planner assumed when creating the departure procedure?*

Q 159 *You are considering an IFR takeoff from Bar River, Ontario, runway 18. What climb gradient (feet per nautical mile) must you achieve after takeoff to avoid SPEC VIS? If you are flying a Cessna 172 climbing at 80 knots into a headwind of 10 knots, to what does this equate in feet per minute?*

Q 160 *You are considering an IFR departure from Midland/Huron, Ontario, runway 34. What climb gradient (feet per nautical mile) must you achieve after takeoff to ensure obstacle clearance?*

Using the table in CAP GEN (page 11), or otherwise, answer the following questions:

Q 161 *You are departing Toronto City Centre airport, using runway 08 under conditions of SPEC VIS. Your aircraft is expected to have a climb groundspeed of 140 knots. In order to ensure obstacle clearance, what climb rate in feet/minute will you have to achieve?*

Q 162 *You are departing Ottawa airport, runway 32, and anticipate a climb groundspeed of 150 knots. What climb rate in feet/minute will you have to achieve to ensure terrain clearance?*

6.4 Standard Instrument Departures

Answer the following questions regarding the Ottawa Departure (SID) from Ottawa airport. Assume that you are flying a non-jet aircraft and have been cleared to fly this SID.

Q 163 *The RVR for runway 32 is reported to be 3000 feet. Is a takeoff from this runway allowed?*

Q 164 *You are departing runway 32 and your clearance is to Mirabel airport via V360 to maintain 7000 feet. You receive your takeoff clearance and report to departure at 1000 feet ASL. Departure frequency then gets very busy and you do not get any further transmission from them. There is a strong cross-wind blowing from 020M at 25 knots. What heading do you fly? What do you do when you reach 3000 feet ASL? What do you do when you reach YOW?*

Q 165 *You are departing runway 32 and your clearance is to Mirabel airport via V360 to maintain 7000 feet. At 300 feet AGL you enter cloud and find that your radio has failed. What do you do?*

Q 166 *You are departing runway 32 and, at 1000 feet, you are given the instruction to "turn right to 040, intercept V360 en route." Considering the Ottawa noise abatement procedures, what action do you take?*

7.2. POSITION REPORTING

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Q 181 *Following the cruise clearance in question 179 you descend to five thousand feet and report your new altitude to ATC. May you now climb back to six thousand feet without further contact with ATC?*

Q 182 *You are cruising at 8000 feet ASL when ATC tells you:
Papa Tango November, contact Toronto Centre on 132.75
What exactly do you say when checking in with the next controller?*

7.2 Position Reporting

You are flying Foxtrot Papa Tango November IFR along V348 at 7000 feet inbound to Montreal Mirabel from North Bay. Since ATC's secondary radar has failed, you have been instructed to give position reports and, in particular, to *REPORT BOBRA*. You pass over BOBRA at 22:10Z flying with a groundspeed of 105 knots.

Q 183 *What position report will you give Montréal Centre at BOBRA?*

Q 184 *As you pass BOBRA the wind shifts significantly and your groundspeed (as recorded by the GPS) increases to 144 knots. What action do you need to take?*

Q 185 *Shortly after passing BOBRA, you hear that ATC has your aircraft Radar Identified. What effect does this have on your need to make position reports?*

Q 186 *ATC asks you to report your distance to a particular fix. How would your answer differ depending on whether you were using DME or GPS?*

7.3 PIREPs

Q 187 *Under what conditions are you encouraged to make a PIREP?*

Q 188 *You find yourself flying a Cessna 172 on V370 west of the Ottawa VOR (YOW) heading towards Killaloe (YXI) at 8000 feet. At 1230Z, when you are 30nm from Killaloe, you are asked by ATC to make a PIREP of existing conditions. You are on top of a cloud-layer which appears to be about 1000 feet below you, the outside air temperature is +5°C, you are encountering a smooth flight and have met no icing in the climb. What would be the format of your report?*

Q 189 *How might the PIREP which you gave in the previous question subsequently appear in reports?*

Consider the following PIREP:

Chapter 8

The Arrival

8.1 General

Q 219 *Identify IAFs, IFs, FAFs and MAPs (where they exist) for the following approaches:*

1. *ILS RWY 07, Ottawa International*
2. *LOC (BC) RWY 25, Ottawa International*
3. *NDB/VOR RWY 28, Pelee Island (CYPT)*

8.2 Arrival at an Uncontrolled Airport

You are flying on an IFR flight plan from Ottawa to Kincardine (N44 12 W81 36), an uncontrolled airport in uncontrolled airspace. As you cross the Warton NDB you hear the following clearance from ATC:

PAPA TANGO NOVEMBER is cleared out of controlled airspace to the Kincardine airport for an approach.

Answer the following questions:

Q 220 *You decide to fly directly to the Kincardine NDB and then fly the NDB RWY 31 approach. What call do you make to ATC?*

Q 221 *At what height may you fly the transition to Kincardine airport?*

Q 222 *Who is responsible for terrain clearance during the approach into Kincardine?*

Q 223 *Once you have entered uncontrolled airspace, who is responsible for maintaining separation between you and other IFR aircraft?*

Q 224 *In trying to contact the UNICOM at Kincardine, you find that it is unmanned. How will you determine wind speed and direction? May you make a straight-in approach without a procedure turn?*

Q 225 *What radio calls would you make when approaching Kincardine?*

Q 226 *You fly the approach at Kincardine but do not break out of cloud. What action do you take?*

You are flying IFR to Tomvale, Ontario (N44 55, W76 56), an airport which lies beneath controlled airspace (a few miles south-east of the MAZNA intersection on V300-V308) and which has no published instrument approach. Answer the following questions about this arrival.

Q 227 *When ATC clears you out of controlled airspace, you descend to the MEA and find that you are still in cloud. May you descend lower and, if so, to what height?*

Q 228 *While you are making this approach, what service will ATC offer you?*

8.3 Standard Terminal Arrival Routes

Q 229 *What is the difference between an open and a closed RNAV arrival?*

Consider the *THURO ONE ARR STAR* for Ottawa airport and answer the following questions. Assume that you are arriving from the Montreal direction along the 279 radial from YUL at 6000 feet and are initially just East of THURO. You have no GPS on board. The latest weather report for Ottawa is of 500 foot ceilings in light rain.

Q 230 *On what frequency would you listen to the ATIS? What information would you need to obtain from it?*

Q 231 *What is the scale on this chart?*

Q 232 *How will you identify THURO?*

Q 233 *As you reach THURO you are told that you are number 2 for runway 32 and that you should fly the THURO ONE arrival, maintaining 4000 feet. How will you identify AGLIN?*

Chapter 9

The Approach

9.1 Approach Charts

Consider the approach chart for the LOC(BC) RWY 25 approach at Ottawa airport and answer the following questions:

Q 243 *What is the 25 nm Minimum Safe Altitude (MSA) indicated on the plate? On what is the circle centred?*

Q 244 *On what point is the SAFE ALT 100NM 7000 centred?*

Q 245 *On what point is the 10 nm inner ring centred?*

Q 246 *What does the acronym “NAD83” in the very bottom right-hand corner of the plate mean?*

Q 247 *What type of lighting is available for runway 25? Using the same plate (LOC(BC) RWY 25), determine the of type of lighting available for runway 07.*

Q 248 *What is the meaning of the encircled P3 associated with runway 25?*

Q 249 *By what means can the final approach fix be identified?*

Q 250 *What information can be obtained from the aircraft’s glideslope indicator during this approach?*

Q 251 *What is the precise meaning of the term No PT 1500?*

- Q 252** *What is the meaning of the Maltese cross at NAKRO?*
- Q 253** *What is the ICAO identifier for Ottawa airport?*
- Q 254** *What is the magnetic variation at Ottawa airport?*
- Q 255** *If you are using DME to recognise fixes, from what navigation aid is the distance being measured?*
- Q 256** *What is TEFLY?*
- Q 257** *What is the missed approach point for this approach? By what means may it be identified?*
- Q 258** *What is the missed approach procedure?*
- Q 259** *What is the Touch-Down Zone Elevation of runway 25?*
- Q 260** *The identifier of the localiser is IOW. What is the significance of the letter I at the beginning of this identifier?*
- Q 261** *What is the highest obstacle within 10 nm of NAKRO?*
- Q 262** *To what frequency will tower probably switch you to contact ground control after your landing?*

9.2 Approach Bans

- Q 263** *Generally, under what conditions is an aircraft banned from making an approach?*
- Q 264** *Under what conditions may you continue an approach if the conditions are worse than those described in question 263?*

9.3 Descent Rates

- Q 265** *When you are 42nm DME from your destination airport, ATC clears you*

Papa Tango November descend and maintain 4000 feet at pilot's discretion. Maintain 180 knots.

You are flying at 9000 feet and there is no appreciable wind. At what rate (in feet per minute) would you need to descend to arrive overhead the airport at 4000 feet? What is this descent rate in feet per nautical mile?

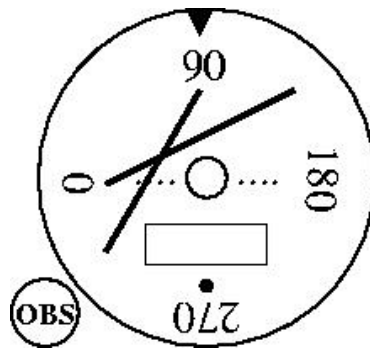


Figure 9.2: Localiser for Question 295

9.5.3 LOC (BC) Approach

Consider the *LOC(BC) RWY 25* for Ottawa International. You approach Ottawa from the west and fly to directly OW having been cleared for the full procedure. Answer the following questions about the approach:

Q 295 *As you fly from OW towards TEFLY, your localiser and glideslope appear as shown in figure 9.2. Does this mean that you are North or South of the runway centreline? In which direction do you need to turn to reintercept the centreline?*

Q 296 *With the indicators as shown in figure 9.2 between the airport and TEFLY, what does this indicate about your altitude?*

Q 297 *At NAKRO, your glideslope receiver is indicating full deflection upwards (as in figure 9.2). What does this indicate about your height above ground?*

Q 298 *Your groundspeed on the approach is 100 knots. How will you identify the missed approach point?*

9.5.4 RNAV Approaches

Consider the ILS/DME or LOC/DME RWY 15R approach at Toronto Lester B Pearson airport.

Q 299 *What does the phrase RADAR OR RNAV REQUIRED mean?*

1. *this approach can only be flown by an aircraft which has weather radar on board*

after passing Killaloe (YXI) on V316 you have a total electrical failure. Unfortunately you find that the batteries are dead in your portable radio and you do not have your cell phone with you. What action do you take?

10.4 Radio Failure

You are flying IFR from Ottawa to North Bay, Ontario at 6000 feet above an undercast of cloud which is forecast to reach to within 800 feet of the ground. Just before reaching Killaloe (YXI) on V316 you have a total radio failure. Unfortunately you find that the batteries are dead in your portable radio and you do not have your cell phone with you. The last clearance that you received was,

Papa Tango November is cleared to the North Bay Airport via Victor 316, maintain 6000 feet. Expect 8000 feet at Killaloe.

Your flight plan estimated a flight time of 2 hours 15 minutes and you took off from Ottawa at 1500Z. The time now is 1600Z.

Q 356 *What action do you take?*

Q 357 *Where and when will you start your descent for North Bay?*

Q 358 *For how long will ATC protect the airspace around North Bay for you? Starting at what time?*

Q 359 *On arrival at North Bay, you make an approach but do not break out of cloud. Your alternate airport filed on your flight plan is Midland/Huronia. Must you fly to Midland? By what route?*

You are approaching Ottawa International Airport and have been told

Papa Tango November fly direct to the Ottawa VOR and hold South West on the 200 radial. Maintain 6000 feet. Expect further clearance at 1440Z.

You have listened to the ATIS and are aware that runway 25 LOC(BC) is in use.

Q 360 *At 1430Z you have a complete radio failure. What actions do you take?*

Q 361 *You are approaching Ottawa International Airport and have been vectored to downwind for runway 32. You have been told to expect the ILS approach for runway 32. You have a total communications failure. What action do you take?*

11.2.4 Upper Air (Constant Pressure) Charts

Q 378 *Approximately what altitudes correspond to each of the upper air analysis charts?*

Q 379 *A line on an upper air analysis chart joins points expected to have the same...*

1. ... temperature
2. ... pressure
3. ... altitude
4. ... speed

Q 380 *What is the main difference in the way pressure is depicted on an upper air analysis chart and a surface analysis chart?*

11.2.5 Graphical Area Forecasts

Q 381 *Following those charts included in section 11.10 of this document, for what periods will the next Surface Analysis, Upper Air Analyses and GFAs be valid?*

Q 382 *Considering the GFA in figure 11.3, what synoptic weather feature dominates the weather in the Toronto area and what effect might this have on your flight?*

11.2.6 Surface Analysis Chart

Q 383 *Consider the following METARs for Ottawa. By considering the portion of the 12:00Z surface analysis chart shown in figure 11.1 explain the variation in sea-level pressure over the last three hours.*

METAR CYOW 301600Z 08009KT 6SM HZ OVC012 07/04 A2965 RMK SC8
SLP046=

METAR CYOW 301700Z 09009KT 6SM -RA BR OVC009 07/05 A2961 RMK
SC8 SLP031=

METAR CYOW 301800Z 09007KT 5SM -RA BR FEW012 OVC017 07/06
A2956 RERA RMK SC2SC6 SLP013=

Q 384 *By considering the surface analysis chart in figure 11.1, would you expect stronger winds in Winnipeg or Ottawa? What difference would you anticipate in wind direction at these two locations? Confirm your answers by comparing the METARs for Ottawa in question 383 with the following METARs for Winnipeg:*

11.3. BASIC ALTIMETRY

METAR CYWG 301600Z 01014G19KT 15SM OVC010 02/00 A2968
 RMK ST8 SLP062=
 METAR CYWG 301700Z 02016KT 15SM OVC010 02/00 A2970
 RMK SC8 SLP067=
 METAR CYWG 301800Z 01013G18KT 15SM OVC010 02/01 A2969
 RMK SC8 SLP065=

11.3 Basic Altimetry

Q 385 *Given the above METARs from Ottawa and the following METARs from Toronto, consider the following question. You flew from Ottawa to Toronto, City Centre Airport, leaving at 1600Z and arriving at 1800Z. You did not change your altimeter setting en route. What was the error in your altimeter reading when you were on the ramp in Toronto? How important could this error be on an IFR flight?*

METAR CYTZ 301600Z AUTO 19004KT 2 1/2SM BKN020 16/15 A2952
 RMK PCPN 0.5MM PAST HR SLP997=
 METAR CYTZ 301700Z AUTO 20006KT 3SM OVC022 15/15 A2948
 RMK SLP986=
 METAR CYTZ 301800Z AUTO 19009KT 4SM BKN022 BKN044 15/14 A2943
 RMK SLP969=

11.4 Visibility

Q 386 *You are considering an IFR flight to Québec City's Jean Lesage International Airport, flying at 7000' ASL. The briefer tells you that the latest temperature is 12° and the dew-point is 3°. Even though skies are currently reported clear, if convection were to occur, could you expect to be in cloud as you approach Québec City?*

Q 387 *Consider the 1500Z METAR for Kapuskasing (CYYU) below. Given that the temperature and dew-point are equal, why is the first layer of cloud base as high as 3200 feet AGL?*

METAR CYYU 111300Z 11008KT 10SM -SN OVC080 M02/M04 A3037
 RMK AC8 SLP297=
 SPECI CYYU 111321Z 11007KT 8SM -SN FZRA OVC090 RMK AC8=

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