ROYAL CANADIAN AIR CADETS

PROFICIENCY LEVEL FIVE

INSTRUCTIONAL GUIDE

EO C530.01 – FLY A CROSS-COUNTRY FLIGHT USING A FLIGHT SIMULATOR

Total Time: 90 min

PREPARATION

PRE-LESSON INSTRUCTIONS

Resources needed for the delivery of this lesson are listed in the lesson specification located in A-CR-CCP-805/PG-001, *Proficiency Level Five Qualification Standard and Plan*, Chapter 4. Specific uses for said resources are identified throughout the self-study package within the section for which they are required.

Self-study packages are intended to be completed by the cadet independently. More information about self-study packages can be found in the foreward and preface.

Review the lesson content and become familiar with the material prior to facilitating this lesson.

Photocopy the self-study package located at Attachment A for each cadet.

PRE-LESSON ASSIGNMENT

Nil.

APPROACH

A self study was chosen for this lesson as it allows the cadet to plan and fly a cross-country flight using a flight simulator at their own learning pace. This encourages the cadet to become more self-reliant and independent by focusing on their own learning instead of learning directed by the instructor.

INTRODUCTION

REVIEW

Nil.

OBJECTIVES

By the end of this lesson the cadet will have flown a cross-country flight using a flight simulator.

IMPORTANCE

It is important for cadets to practice the aviation theory they have learned throughout their cadet training by flying a cross-country flight using an aircraft flight simulator as it will reinforce learning and stimulate interest in future aviation training.

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SELF-STUDY PACKAGE INSTRUCTIONS

OBJECTIVE

The objective of this self-study package is to have the cadet fly a cross-country flight using a flight simulator.

RESOURCES

- Self-study package,
- Visual Flight Rules (VFR) Navigation Chart (VNC),
- ICAO chart ruler,
- Flight computer,
- Flight simulator (Microsoft flight simulator, computer, control yoke, and rudder pedals[joystick]; or Link),
- Pen / pencil.

ACTIVITY LAYOUT

Provide the cadet with a classroom or training area suitable to complete the self-study package.

ACTIVITY INSTRUCTIONS

1. Provide the cadet with a copy of the self-study package located at Attachment A and a pen / pencil.
2. Allow the cadet 90 minutes to complete the self-study package.
3. Provide assistance as required to the cadet.
4. Collect the self-study package once the cadet has finished.
5. Provide feedback to the cadet and indicate whether or not they have completed the Enabling Objective (EO).
6. Return the completed self-study package to the cadet for their future reference.
7. Record the result in the cadet's logbook and Cadet Training Record.

SAFETY

Nil.

END OF LESSON CONFIRMATION

The cadets' participation in flying a cross-county flight using a flight simulator will serve as the confirmation of this lesson.

CONCLUSION

HOMEWORK / READING / PRACTICE

Nil.

METHOD OF EVALUATION

Nil.

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CLOSING STATEMENT

It has been stated by many flight instructors that a significant difference can be seen in the quality of students have used a flight simulator compared to those who did not. Continued training on flight simulators will enhance preparation for future flight training.

INSTRUCTOR NOTES / REMARKS

Nil.

REFERENCES

A0-001 A-CR-CCP-263/PT-001. (2000). *From the ground up*. Ottawa, ON: Aviation Publishers Co. Ltd.

C3-345 Flight Simulator Navigation. (2009). *Air navigation*. Retrieved October 22, 2009, from http://www.navfltsm.addr.com.basic-nav-general.htm

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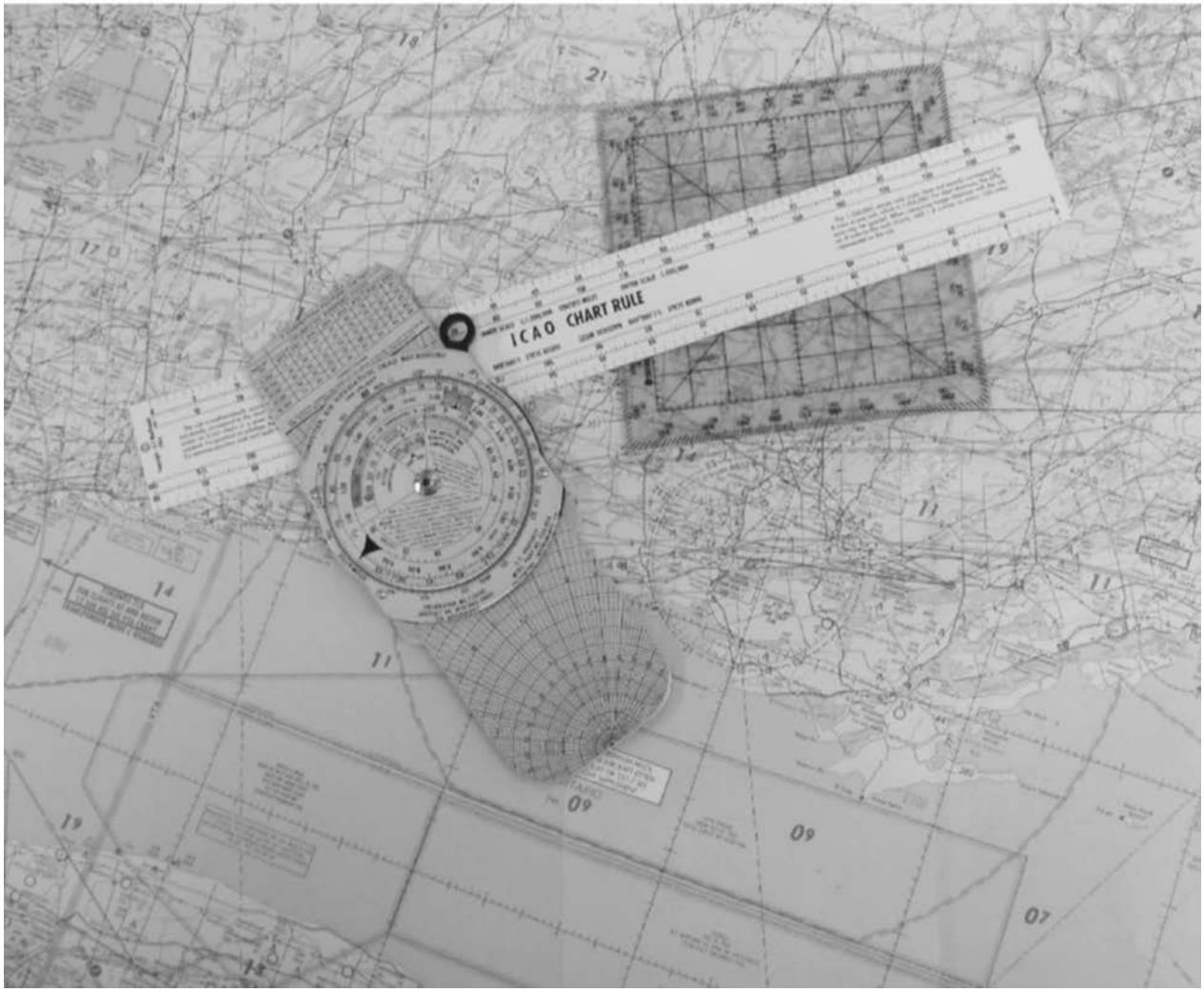
Fly a Cross-Country Flight Using a Flight Simulator



SECTION 1: PLOT A VISUAL FLIGHT RULES (VFR) CROSS-COUNTRY FLIGHT ON A VNC

SECTION 2: DETERMINE AIRCRAFT SPEED

SECTION 3: FLY A CROSS-COUNTRY FLIGHT

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SECTION 1

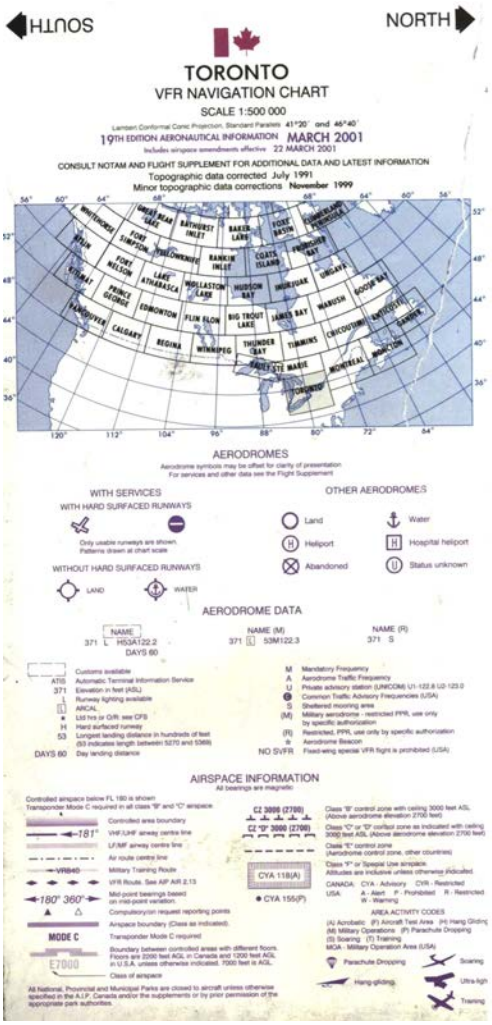
PLOT A VISUAL FLIGHR RULES (VFR) CROSS-COUNTRY FLIGHT ON A VNC

AIRPORT SELECTION

Pilotage

Did you know?

Pilotage is navigating from place to place by following visual landmarks on the ground.



Note. From Toronto VFR Navigation Chart, by, Department of Natural Resources, 2001, Ottawa, Ontario: Geomatics Canada. Copyright 2001 by Nav Canada.

Figure A-1 VNC Cover

Using a Visual Flight Rules (VFR) Navigation Chart (VNC), select two airports for the flight senario, including:

1. the departure airport, and
2. the arrival airport.

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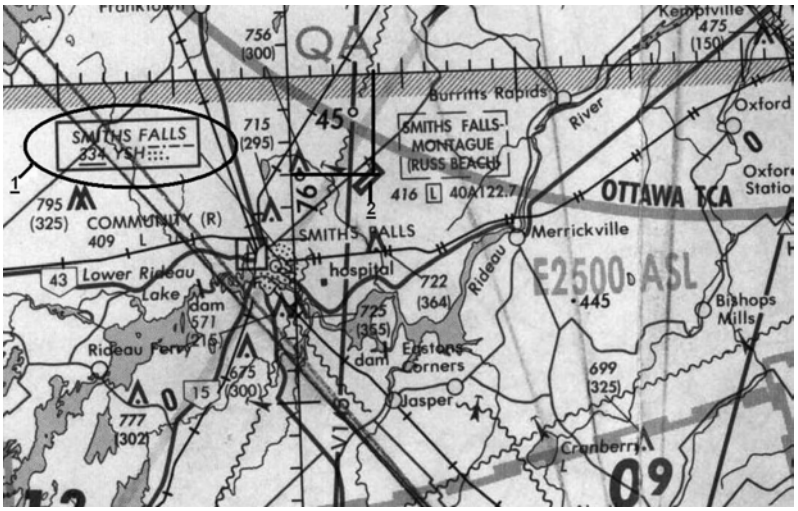
Coordinates



For each airport, identify the following:

- airport idenification letters (1), and
- airport VNC coordinates (2).

Note. Created by Director Cadets 3, 2009, Ottawa, ON: Department of Defence.

Figure A-2 VNC Map Coordinates

***Activate Your Brain #1*:**

What two airports will you be using?

Airports	Coordinates

Distance

Nautical Miles

Measure the distance to each turning point, totaling the distance between the two airports.

You will be flying a Visual Flight Rules (VFR) flight. The route between airports should have highways, rivers, towns / cities, and other landmarks visible from the air.

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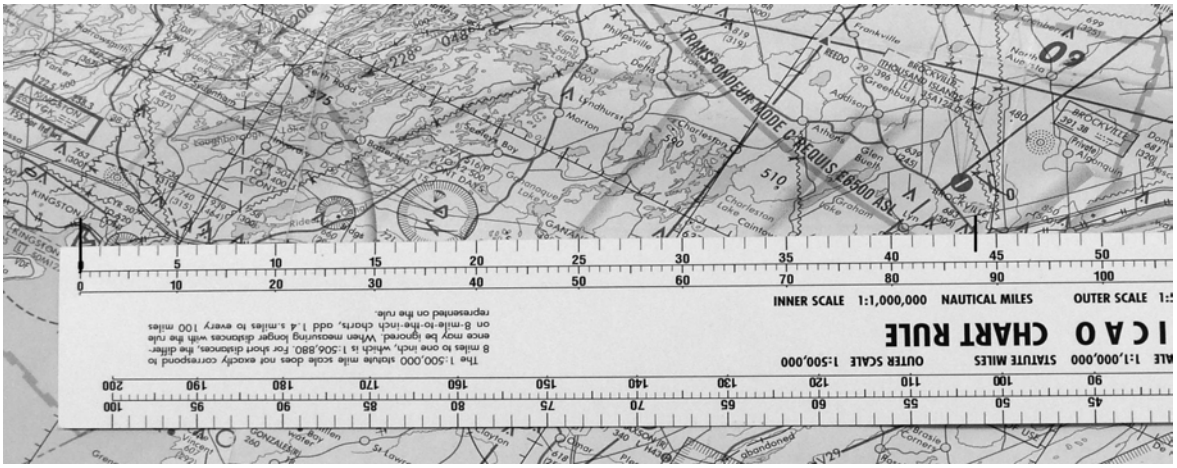

Note. Created by Director Cadets 3, 2009, Ottawa, ON: Department of Defence.

Figure A-3 ICAO Chart Ruler

***Activate Your Brain #2*:**

What is the distance between the two airports? Each turning point will have a distance in nautical miles (record as many turning points as required to arrive at the second airport).

First measurement: _____
Second measurement: _____
Third measurement: _____
Fourth measurement: _____
Fifth measurement: _____
Total distance: _____

Convert the distance from nautical miles to statute miles using a flight comuputer. Using the inside ring, set the nautical miles on the nautical mile mark on the outside ring. Read the number on the second ring corresponding to the statute mile mark on the outside ring.

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Note. Created by Director Cadets 3, 2009, Ottawa, ON: Department of Defence.

Figure A-4 Flight Computer

***Activate Your Brain #3*:**

What is the distance between the two airports in statue miles?

Nautical Miles	Statute Miles

Landmarks

Using the VNC, identify landmarks along the flight route that will be visible from the aircraft.

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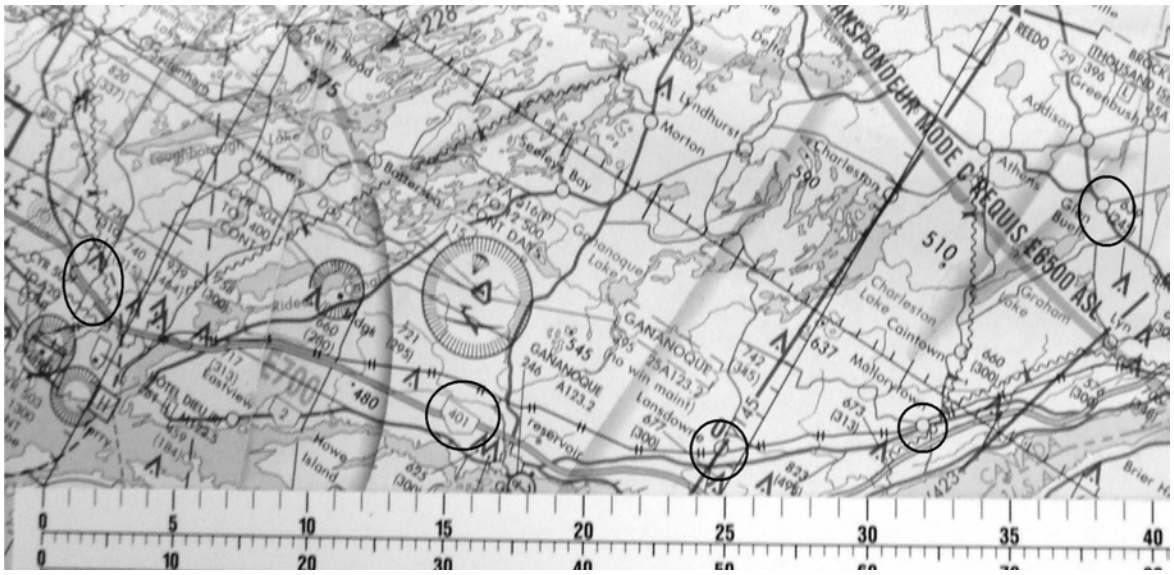

Note. Created by Director Cadets 3, 2009, Ottawa, ON: Department of Defence.

Figure A-5 Landmarks

***Activate Your Brain #4*:**

What are the landmarks you will be following between the two airports? List as many as required.

First landmark: _____
Second landmark: _____
Third landmark: _____
Fourth landmark: _____
Fifth landmark: _____

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SECTION 2

DETERMINE AIRCRAFT SPEED

AIRCRAFT SPEED

Calculate the airspeed you will need to fly to arrive at your arrival airport. The formula to calulate is:

Speed (unknown ground speed) X **T**ime (known [.5 hour]) = **D**istance (known)

As the speed is unknown, you will use the formula:

Distance / Time = Speed (D / .5 = S)



***Activate Your Brain #5*:**

What is the aircraft speed required to fly between the two airports?

Distance	Divided by	Time	Equals	Speed
_____	/	.5	=	_____

To finalize your scenario, the following knowns will be set in the simulation program, including:

- clear daylight,
- no wind,
- altitude is 1 200 feet, and
- aircraft to fly, to include:
  - Piper J-3C Cub, or
  - Cessna C172.



Did you know?

The Piper J-3C's maximum speed is 74 kts (85 mph / 137 km/h).

The Cessna C172's maximum speed is 126 kts (203 km/h).



Variations from this criteria can be made to adjust for the area in which you are flying.

Complete the flight plan sheet using the data from the Activate Your Brain boxes.

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FLIGHT PLANNING WORKSHEET

Date: _____ **Depart:** _____ **Destination:** _____

Airport, ID and coordinates

Airport, ID and coordinates

Distance to travel: _____
one-way

Altitude: _____

Airspeed: _____

Landmarks	Description of landmark	Time arrived at landmark
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Airports	Timings
Depart 1	
Arrive 2	
Depart 2	
Arrive 1	

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SECTION 3

FLY A VFR CROSS-COUNTRY FLIGHT USING A FLIGHT SIMULATOR

Start the flight simulator with the scenario you created.

Using the flight simulator, fly the VFR cross-country flight at 1 200 feet AGL. Once you arrive at the first airport, land and then take off for a return flight to the original airport where you will land and taxi to the gas pumps.

Fill in the times as required during the flight on the Flight Planning Worksheet.

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CONCLUSION

The knowledge to fly a cross-country flight has been developed over your four years of cadet training. Users of computer-based flight simulators have enhance their knowledge for future flight training.



Congratulations, you have completed your self-study package on EO C530.01 (Fly a Cross-Country Flight Using a Flight Simulator). Hand your completed package to the Training Officer / Proficiency Level Officer who will record your completion in your Proficiency Level Five logbook.

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