Transport Canada Transports Canada

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Instructor Guide
VFR Over -The -Top - Rating

First Edition

Canada

This publication outlines the completion standard for a VFR Over-the-Top (VFR OTT) rating. It provides direction to flight instructors who are training licensed pilots for the issue of this rating and can be used as a reference by the pilots taking the training.

The Instructor Guide, VFR Over-the-Top Rating, may be obtained from:

Transport Canada
AARA
Ottawa, Ontario
K1A 0N8
Telephone: 1-800-305-2059
Facsimile: 613 998-7416

Organizing the Training

Flying VFR Over-the-Top means flying with visual reference to a layer of cloud instead of the earth's surface. This type of VFR flying offers challenges that require advanced training in instrument flying and radio navigation skills. It also requires advanced training and skill in interpretation and application of weather reports and forecasts.

The flight training for the VFR OTT rating must include the instrument flying elements of the Commercial Pilot Licence - Aeroplane or Helicopter. These are full panel and partial panel instrument flying, recovery from unusual attitudes and radio aids to navigation.

Before starting the training the instructor shall provide the student with a training program outline that meets the requirements of Canadian Aviation Regulations section 405.13. Giving an outline of both the ground and flight training program for the VFR OTT rating will let the student know what to expect and what you expect of the student.

The Rating

A VFR OTT rating will be required by some pilots to fly VFR OTT. This rating can be applied to a Private Pilot Licence - Aeroplane and to a Private, Commercial or Airline Transport Pilot Licence - Helicopter. The privilege to fly VFR OTT will be given automatically to anyone who holds a Commercial Pilot Licence - Aeroplane or an Instrument Rating.

Fifteen hours of dual instrument training is required to obtain a VFR OTT rating. Five of the fifteen hours may be done on a certified flight training device. Instrument flight training already accomplished in obtaining a Private Pilot Licence - Aeroplane, a Private, Commercial or Airline Transport Pilot Licence - Helicopter and a night rating may be credited. A person who conducts training towards the issue of a VFR Over-the Top rating shall have a flight instructor rating for the category of aircraft used for the training.

Recommending for the Rating

The process of the training is modeled on the training for the night rating. In addition to certifying that the training requirements have been met, the flight instructor must ensure that the completion standards set out in this guide have also been met. The ground and flight training as outlined in this guide must have been covered and the required performance demonstrated. The instructor then recommends the candidate for the VFR OTT rating using the form "Flight Crew Licence - Application for Endorsement of a Rating". No written examination or flight test is required.

Some Definitions

Essential Background Knowledge

This is the minimum knowledge required for a student to benefit fully from the air instruction. One of your obligations as an instructor is to make sure students have been given all the pertinent ground instruction before beginning air instruction.

Preparatory Ground Instruction

Classroom-type instruction, generally on a one-to-one basis but not excluding group instruction, that is based on lesson plans contained in or

given by the instructor when introducing a new exercise. Ideally it should be given within 24 hours prior to the related training flight.

There is no flight test or written examination for the VFR OTT rating. Instead, the instructor is expected to certify that the student is competent to

standards are given for each air exercise. The student must be able to perform all the required exercises to the given performance standard before

Ground Training

Ground training related to the topics listed in this guide may be presented in

Preparatory Ground Instruction. Whichever approach you take, make sure that the student understands the Essential Background Knowledge that is

before going flying. The following are items that must be included in the ground training for this rating:

Explain the meaning and application of the contents of the following Canadian Aviation Regulations and Standards:

- VFR OTT Rating

  Section 421.44
- Section 425.23 Training aircraft requirements
- Section 602.116 Visual Flight Rules
- Section 605.15 Aircraft equipment requirements

2. Review airspace classification and operating procedures within Canadian Domestic Airspace.

3. Explain the correct interpretation of aviation weather reports, forecasts, pireps sigmets and notams and how they apply to VFR OTT flight situations, including determining
    - the stability of the air mass(es) affecting the flight.
    - weather trends and the suitability of departure, enroute and destination weather for the time of the flight.
    - the bases and tops of cloud layers using the area forecast and understanding their significance to VFR OTT flight.

4. Review the following elements of instrument flying as outlined in the Flight Instructor Guide (TP 975), Exercise 24 -- Instrument Flying.
    - The Control and Performance Instruments
    - Scanning Techniques
    - Applying the scanning pattern
    - Terminology
    - Human Factors - Explain how human factors topics such as hypoxia, judgment, decision making, disorientation and cockpit resource management apply to VFR OTT flying. Explain that illusory sensations may occur when flying above or between layers of cloud and how to cope with these sensations .

5. Explain the basic principles of operation, limitations and errors of ADF, VOR or GPS equipment as applicable.
    - Demonstrate how to determine that this equipment is functioning accurately.
    - Show how to obtain ADF, VOR or GPS information from aeronautical charts

6. Explain the use of ADF, VOR or GPS to:
    - locate the aircraft's position
    - home to the station or waypoint
    - track to eliminate drift
    - intercept a pre-determined track or radial and fly to the station or waypoint
    - intercept a pre-determined track or radial and fly outbound from the station or waypoint
    - identify station passage.

Flight Training

Each pilot to be trained will have a different level of knowledge and skill. It will be helpful to identify their strengths and weaknesses early in training through oral questioning and flight evaluation. This will help you to shape the training to fill in any weak areas identified and will ensure that the required standard of knowledge and skill is achieved.

INSTRUMENT FLYING

The following are the flight training exercises that you must include when designing a course for the VFR OTT rating. The instrument flying for this rating is to be completed in accordance with the exercise outlines in the Flight Instructor Guide(TP 975), Exercise 24 - Instrument Flying.

Full Panel (Aeroplanes and Helicopters)

- Straight and level flight
- Climbing
- Descending
- Gentle turns
- Medium turns
- Steep turns
- Rate one turns
- Turns to selected headings
- Climbing turns
- Descending turns

Completion Standards

Flying by sole reference to instruments and using full panel, the student shall at various specified airspeeds be able to:

- maintain co-ordinated straight and level flight
- carry out climbs and descents at various rates
- conduct climbing descending and level turns at various specified angles of bank to specific headings
- control and manoeuvre the aeroplane or helicopter within:
  - +/- 10° of the assigned heading
  - +/- 100 feet of the assigned altitude
  - +/- 10 knots of the assigned airspeed
  - +/- 10° of the specified angle of bank.

Partial Panel (Aeroplanes Only)

- Straight and level flight
- Climbing
- Descending
- Rate one turns
- Climbing turns
- Descending turns
- Timed turns

Completion Standards

Using partial panel the student shall, at various specified airspeeds:

- maintain straight and level flight
- conduct rate one timed turns to specific compass headings
- control and manoeuvre the aeroplane within:
  - +/- 15° of assigned heading
  - +/- 200 feet of assigned altitude
  - +/- 15 knots of assigned airspeed.

Unusual Attitudes (Aeroplanes and Helicopters)

- Nose-high
- Nose-high while banked
- Nose-low
- Nose-low while banked

Completion Standards

Using partial panel the student shall be able to recover from various unusual attitudes:

- promptly, taking immediate and correct action
- with minimum loss of altitude
- smoothly
- using co-ordinated control inputs.

Radio Navigation

The following list of topics outlines the radio aids to navigation exercises that you must include when designing a course for the VFR OTT rating. This training is to be completed in accordance with the exercise outlines in the Flight Instructor Guide (TP 975), Exercise 24 -- Instrument Flying.

VOR

- Tune and identify the station and test the VOR receiver
- Determine line of position
- Plot a position fix
- Home to the station
- Tracking to eliminate drift
- Intercept a predetermined radial and fly to the station
- Intercept a predetermined radial and fly from the station
- Identify station passage

ADF

- Tune and identify the station and test the ADF receiver
- Determine line of position
- Plot a position fix
- Home to the station
- Tracking to eliminate drift
- Intercept a predetermined track and fly to the station
- Intercept a predetermined track and fly from the station
- Identify station passage

GPS

- monitor and verify self test and initialization
- verify the equipment is serviceable and functioning
- Input, or retrieve and verify the waypoint
- Home to the waypoint
- Tracking to eliminate drift
- Intercept a predetermined track and fly to the waypoint
- Intercept a predetermined track and fly from the waypoint
- Identify waypoint passage

Completion Standards

The student shall be able to:

- tune and identify the radio facility and test the receiver or, for GPS, input or retrieve and verify the required waypoint
- determine the position of the aircraft relative to a radio navigation aid or waypoint
- expeditiously apply an orientation procedure that will establish the aircraft on the required track or radial
- maintain the required track or radial within +/- 10° or, for GPS, within +/- one nautical mile
- identify or describe station or waypoint passage.

Advice to Instructors

Planning an Over-the-Top flight brings with it some additional areas of consideration. Point out that in many cases it will be necessary to fly at higher altitudes and the operational limits of the aircraft may become a critical factor. Also, if the flight will be above 10,000 feet, oxygen may become a requirement.

Consider the benefits of adding realism to the training. If possible, arrange the training schedule such that a portion of the training is carried out in various actual over-the-top conditions. Have the student practice making go-no-go decisions based on an analysis of weather data for a pre-selected trip.

Training Resources

Flight Training Manual-Fourth Edition. Provides detailed information on instrument flying techniques and radio navigation procedures.

Air Command Weather Manual (TP9352) and Air Command Weather Manual Supplement (TP9353). The Air Command Weather Manual provides detailed text explaining the interpretation of weather reports, forecasts, weather maps and prognostic charts. The Air Command Weather Manual Supplement is the companion workbook to this manual.

AWARE (Environment Canada). This is a manual of meteorology for flight crews.

Flight Instructor Guide (TP 975), Exercise 24 -- Instrument Flying. Exercise 24 provides guidance for teaching basic instrument flying skills and radio navigation.

Human Factors for Aviation -- Basic Handbook. An introduction to the study of how pilot performance is influenced by their relationship with their equipment, procedures, the environment, and other people.