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Flight Test Guide

# **INSTRUMENT RATING GROUPS 1, 2 AND 3 AEROPLANE**

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**Canada**

**All significant amendments in this document are indicated by a bold vertical line along the right margin.**

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# FLIGHT TEST GUIDE - INSTRUMENT RATING

This flight test guide sets out the techniques, procedures and the marking criteria to be used by Transport Canada Inspectors and Pilot Examiners for the conduct of the flight test required for the issuance of the Instrument Rating – Groups 1, 2 and 3 - Aeroplane. It is also intended for the use of flight test candidates, flight training units, and flight instructors.

## Definitions

**'flight test item'** means a task or manoeuvre listed on the flight test report.

**'examiner'** means a Pilot Examiner, accredited under Part 1 Section 4.3(1) of the *Aeronautics Act*, or a Transport Canada Civil Aviation Inspector authorized to conduct this flight test.

**'non-precision approach'** an approach which is pilot-interpreted by making use of ground beacons and aircraft equipment such as VOR, NDB and LOC systems for lateral guidance, often with DME for range.

**'precision approach'** means an ILS approach that provides lateral and vertical guidance and has the approach criteria published on an officially recognized approach chart.

**'LPV'** means Localizer Performance with Vertical Guidance for RNP APCH approaches with LPV minima conducted with GNSS(WAAS) receivers.

**'undesired aircraft state'** means a flight-crew-induced aircraft state resulting from ineffective error management that clearly reduces safety margins. An undesired aircraft state is still recoverable.

## Acronyms

**AAE:** Above aerodrome elevation

**ABAS:** Aircraft-based Augmentation System (ICAO)

**APV:** Approach with Vertical Guidance

**ATC:** Air traffic control

**CAP:** Canada Air Pilot

**CDFA:** Constant Descent Final Approach

**CFIT:** Controlled flight into terrain

**DA:** Decision altitude

**DH:** Decision height

**DME:** Distance measuring equipment

**FAWP:** Final approach waypoint

**FD:** Upper level wind and temperature forecasts

**FFS:** Full-flight simulator

**FSTD:** Flight Simulation Training Device

**FTD:** Flight training device

**GFA:** Graphic area forecast

**GNSS:** Global Navigation Satellite System

**IFR:** Instrument Flight Rules

**ILS:** Instrument landing system

**IPC:** Instrument Proficiency Check

**IMC:** Instrument meteorological conditions

**LNAV:** Lateral Navigation by GNSS

**LOC:** localizer

**LPV:** Localizer Performance with Vertical Guidance

**LVOP:** Low Visibility Operations Plan

**MAP:** Missed approach point

**MAWP:** Missed approach waypoint

**MDA:** Minimum descent altitude

**NDB:** Non-directional beacon

**NPA:** Non-Precision Approach

**PIREPS:** Pilot reports

**RAIM:** Receiver autonomous integrity monitoring (FAA)

**RNP APCH: Approach meeting Required Navigation Performance standard**

**RVOP:** Reduced Visibility Operations Plan

**SBAS:** Space-based Augmentation System (ICAO)

**SID:** Standard Instrument Departure Procedure

**SIGMET:** Significant meteorological information

**SIGWX:** Significant weather prognostic charts

**SOP:** Standard Operating Procedures

**TAF:** Terminal aerodrome forecast

**TTL:** Technical team Lead

**VNAV:** Vertical Navigation by GNSS + barometric sensing

**VOR:** Very high frequency omnidirectional range

**WAAS:** Wide-Area Augmentation System

# GENERAL

## Admission to Flight Test - Initial

In order to be admitted to a flight test required for the initial issue of an Instrument Rating, and to meet the requirements of CAR Standards 421.46 and 428 – Schedule 8, the candidate will present:

- (a) a valid Pilot Licence booklet with a valid medical certification;
- (b) a letter of recommendation from a person qualified in accordance with CAR Standard 425.21(9) certifying that:
  - (i) the candidate meets the requirements of CAR Standard 421.14(4)(d);
  - (ii) the candidate is considered competent to complete the flight test for the Instrument Rating; and
  - (iii) the candidate is recommended for the flight test. (See example at the end of this document.)
- (d) proof of having successfully completed the written examination (INRAT) within the previous 24 months (CAR 400.03).

**Note:** The successful completion of a flight test is one of the prerequisites for the application for the issuance of an Instrument Rating. Once all of the prerequisites are met, the candidate may submit an application directly to a Transport Canada office or through the services of an Authorized Person.

## Admission to a Partial Flight Test or IPC Retest

A partial flight test must be conducted within 30 days following the original letter of recommendation.

Prior to admission to a partial flight test, the candidate will provide:

- (a) a valid Pilot Licence booklet with a valid medical certification;
- (b) a copy of the flight test report for the previously failed flight test; and
- (c) a letter, signed by a person qualified in accordance with CAR Standard 425.21(9) stating that the candidate:
  - (i) has received further training on the previously failed flight test item;
  - (ii) is considered to have reached a sufficient level of competency to successfully complete the flight test; and
  - (iii) is recommended by the instructor or qualified person for the partial flight test.

## Admission to a Complete Retest

For admission to a complete retest following the unsuccessful attempt of a flight test for the **initial** issue of an Instrument Rating, the candidate will conform to the requirements set out in "Admission to Flight Test-Initial".

For admission to a complete retest following the unsuccessful attempt of an Instrument Proficiency Check (IPC), where more than one sequence is unsuccessful, the candidate will present a letter of recommendation signed by a person qualified in accordance with CAR Standard 425.21(9) stating that the candidate is considered competent to complete the check.

## Admission to an Instrument Proficiency Check

- (a) An Instrument Proficiency Check replaces the flight test for the renewal of the qualification and currently is an amendment to subsection 401.05 (3) of the CARs. This change is supported by Global Exemption NCR-040-2015.
- (b) An Instrument Proficiency Check (IPC) is to be conducted in accordance with Advisory Circular (AC) 401-004 - Second Edition
- (c) **Instrument Proficiency Checks that involve first-time transitions from a Group 2, 3 or 4 rating to a Group 1 instrument rating will not be conducted in a flight-training device (FTD) and must be conducted in an aeroplane or a full-flight simulator. In these cases, the flight test report will be submitted to Transport Canada for amendment of the licence.**

## Aeroplane and Equipment Requirements

The initial flight test for the Instrument Rating may be conducted in an aeroplane or in a full-flight simulator (FFS) meeting the requirements stated in this section. The flight test for the renewal of the Instrument Rating may be conducted in an aeroplane, in a full-flight simulator or in a flight training device (FTD) meeting the requirements stated in this section, except that first-time transitions to Group 1 will not be conducted in a FTD.

### Aeroplane

An aeroplane to be used for an Instrument Rating flight test will have a valid and current Canadian or Foreign Flight Authority in accordance with the applicable sections of CAR 507 and meet the following requirements:

- (a) be type-approved for IFR flight operations in the AFM/POH or AFM/POH Supplement (CAR 602.07 – *Aircraft Operating Limitations*);
- (b) **be equipped with GNSS receiving equipment** that is a certified and approved installation for RNP APCH approaches to LNAV/VNAV, LNAV minima or any other function, such as use in lieu of a DME or an NDB. For the LPV approach, GNSS (WAAS) receivers must be certified and approved installations. Databases for GNSS or FMS units in aeroplanes must be current;
- (c) be equipped with sufficient radio navigational equipment to meet the requirements of CAR 605.18 – *Power-driven Aircraft – IFR*, permitting the pilot, in the event of the failure at any stage of the flight of any item of that equipment, including any associated flight instrument display, to:
  - (i) proceed to the destination aerodrome or proceed to another aerodrome that is suitable for landing; and
  - (ii) when the aircraft is operated in IMC, complete an instrument approach and, if necessary, conduct a missed approach procedure.
- (d) have the aircraft's transponder, including any associated altitude sensing reporting mechanisms, tested and recertified within the previous 24 months in accordance with CAR 625 Appendix C and CAR 571 Appendices B and F;
- (e) be equipped in accordance with CAR Standard 425.23 - *Training Aircraft Requirements*, subsections (1), (2) and (7) of the *Personnel Licensing Standards* with the exception that aeroplanes equipped with an electronic primary flight display are exempt from the requirements of paragraphs 425.23(1)(b) requiring a separate turn and slip or turn coordinator indicator; and
- (f) where an observer's seat is occupied by an examiner, it will:
  - (i) be equipped with a safety harness installed in accordance with the *Airworthiness Standards*;
  - (ii) be located to permit an unobstructed view of the aircraft instruments, radios and navigation equipment; and
  - (iii) be equipped to monitor intercom and air to ground and air to air radio communications.

### Flight Simulation Training Device (FSTD)

#### General

- (a) All FSTDs used for pilot testing, pursuant to Part IV of the *Canadian Aviation Regulations*, shall be approved and be certificated in accordance with CAR 606.03;
- (b) The examiner must either be trained in the use of the device or must monitor the candidate's performance while an individual, that has been trained, operates the device in accordance with an agreed-upon script.
- (c) A flight test in a FSTD will include all portions of a flight as conducted in an aeroplane, i.e. normal engine start, taxi, takeoff, landing, taxi to parking and shutdown.
- (d) The pilot seats will only be occupied by the required crewmembers. In the case of a single-pilot aircraft, that would be the candidate only.

#### Full Flight Simulator (FFS)

A full-flight simulator used for the Instrument Rating flight test shall be a Level A or higher FFS approved in accordance with the *Aeroplane and Rotorcraft Simulator Manual* (TP9685). The pilot seats will only be

occupied by the required crewmembers. In the case of a single-pilot aeroplane, that would be the candidate only.

### **Flight Training Device (FTD) (Instrument Proficiency Check only)**

An FTD used for Group 1, 2 or 3 Instrument Proficiency Checks shall be a minimum level 2 aeroplane FTD with the following enhancements:

- (a) An enclosed cockpit environment, which will have actuation of controls and switches that replicate those in the aeroplane or be representative of a single set of aeroplanes;
- (b) Crew seats shall have sufficient adjustments to allow the occupant to achieve the design eye reference position appropriate to the aircraft and for the visual system to be installed to align with that eye position;
- (c) A generic ground handling model that enables representative flare and touchdown effects to be produced by the sound and visual systems;
- (d) Installed systems must simulate the applicable aeroplane system operation. Systems shall be operative to the extent that it shall be possible to perform all normal, RNP APCH simulation, abnormal and emergency procedures as may be appropriate for the aeroplane during the flight test. Flight and navigation controls, displays and instrumentation, as well as backup navigational aids, must be sufficient to meet the requirements of CAR 605.18 for IFR operations;
- (e) The instructor's station must have the capability to introduce failures on all required systems. Once activated, proper system operation must result from system management by the crew member and not require any further input from the instructor's controls;
- (f) Control forces and control travels which respond in the same manner under the same flight conditions as in the aeroplane or set of aeroplanes being simulated with sufficient precision to manually fly an instrument approach;
- (g) Aerodynamic modeling shall reflect a rolling movement due to yawing;
- (h) Communication equipment (intercom and air/ground) corresponding to that installed in the replicated aeroplane or set of aeroplanes;
- (i) Significant cockpit sounds, responding to pilot actions, that correspond to the aeroplane or set of aeroplanes being simulated;
- (j) A visual system (night/dusk or day), that provides an out-of-the-cockpit view, providing cross-cockpit viewing for the pilot occupying the left seat of a minimum field of view of 150° horizontally and 30° vertically, unless restricted by the type of aeroplane, including adjustable cloud base and visibility; and
- (k) The visual system need not be collimated. The responses of the visual system and the flight deck instruments to control inputs shall be closely coupled to provide the necessary cues.

### **Other Equipment**

The candidate will supply the following publications and ancillary equipment:

- (a) Where the test is conducted in an aircraft, an effective means of excluding outside visual reference to simulate instrument flight conditions, while maintaining a safe level of visibility for the examiner or safety pilot.
- (b) Appropriate and current electronic data bases, and officially recognized enroute, terminal and approach charts for the area where the flight test is to occur and, if the test is conducted in Canada, a current *Canada Flight Supplement*.
- (c) Tablet computers / electronic flight bags (EFB) with aviation applications may be utilized in lieu of paper charts. EFBs provide additional situational awareness, but do not replace the primary navigational equipment installed in the aircraft or flight simulation training device. The EFB in the airplane must be an approved installation or be mounted and secured so as to avoid dislodging during the flight test and impacting flight controls;

**Note:** In a FSTD, when electronic databases have not yet been updated, the deficiency must be recorded and deferred. The matching charts must be retained until the deficiency has been rectified. Deficiencies must be rectified prior to the annual recertification of the device.

## Flight Test

Flight tests are conducted when weather conditions do not present a hazard to the operation of the aircraft, the aircraft is airworthy and the candidate's and the aircraft's documents are valid, as required by the *Canadian Aviation Regulations*. It is the sole responsibility of the examiner to make the final decision as to whether or not all or any portion of the flight test may be conducted.

Whenever practicable, flight tests for the Instrument Rating should be conducted in accordance with a filed IFR flight plan. The direct interaction between the candidate and ATS in an IFR-controlled environment makes the test more realistic. Suitable radio navigation facilities must be available to complete the flight test.

The candidate is encouraged to utilize an installed autopilot and/or flight management system (FMS) during the instrument flight test to assist in the management of the aircraft. The examiner is expected to test the candidate's knowledge of the systems that are installed and operative during the oral and flight portions of the test. The candidate will be required to demonstrate the use of the autopilot and/or FMS during one of the approaches. The candidate is expected to demonstrate satisfactory automation management skills. Although autopilots may be used during the flight test, at least one of the approaches will be hand-flown during the flight test for the initial qualification.

All of the required flight test items on the flight test report must be completed and the minimum pass mark for the Instrument Rating flight test of **39** (60%) must be achieved.

**Ground flight test items** are items **1A**, **1B** and **2**.

**Air flight test items** are those items, tasks or manoeuvres performed directly with the aircraft, including emergency procedures.

Ground flight test items will be assessed before the flight portion of the flight test.

Where the test is conducted in a FSTD, all segments will be conducted, as they would normally be performed in an aeroplane.

## Repeated Flight Test Item

A flight test item or manoeuvre will not be repeated unless one of the following conditions applies:

**Discontinuance:** Discontinuance of a manoeuvre for valid safety reasons; i.e., a go-around or other procedure necessary to modify the originally planned manoeuvre.

**Collision Avoidance:** Examiner intervention on the flight controls to avoid another aircraft, which the candidate could not have seen due to position or other factors.

**Misunderstood Requests:** Legitimate instances when candidates did not understand an examiner's request to perform a specific manoeuvre. A candidate's failure to understand the nature of a specified manoeuvre being requested does not justify repeating an item or manoeuvre.

**Other Factors:** Any condition under which the examiner was distracted to the point that he or she could not adequately observe the candidate's performance of the manoeuvre (radio calls, traffic, etc.).

**Note:** These provisions have been made in the interest of fairness and do not mean that instruction, practice or the repeating of an item or manoeuvre already unacceptably demonstrated is permitted during the flight test evaluation process.

## Incomplete Flight Test

If the test is not completed due to valid circumstances beyond the candidate's control, (weather, mechanical, physiological reasons) the subsequent flight test will include the flight test items not completed on the original flight test. The test will be completed within the 30-day validity period of the original recommendation letter in an aeroplane of the same instrument-rating group.

The following process will apply:

- (a) a copy of the Flight Test Report must be presented to the candidate;
- (b) the flight test may be completed at a later date;
- (c) the test may be completed by the same or another examiner;
- (d) the original recommendation must still be valid;
- (e) flight test items already assessed will not be re-tested, but items already demonstrated during the initial flight and repeated for the purpose of the second flight, may be re-assessed as "1", if the aim of the exercise is not achieved or safety is compromised;
- (f) the original flight test report may be used to complete the test, or two separate reports may be submitted;
- (g) the candidate is permitted to complete additional training while awaiting completion of the test.

If the incomplete flight test included one failed air item, the partial flight test for that item may be conducted during the subsequent flight, after the candidate has completed all of the required items, provided:

- (a) the minimum pass mark has been achieved;
- (b) no additional item was failed during the subsequent flight; and
- (c) a letter of recommendation for the partial flight test was received prior to the flight.

## Unsuccessful attempt of a Flight Test

Not attaining the minimum pass mark (39) or the unsuccessful attempt of any flight test item on the flight test report constitutes an unsuccessful attempt of the flight test.

The unsuccessful attempt of any ground item will require a complete re-test and precludes the air portion of the flight test. Ground items are not eligible for a partial flight test.

If one air item is unsuccessful, the candidate will be eligible for a partial flight test on that item and the unsuccessful attempt of a second air item will require a complete re-test.

If not satisfied with the outcome of the flight test, a candidate may wish to file a written complaint regarding the conduct of a flight test or the performance of an examiner with the Transport Canada Regional Office responsible for that examiner. In order to succeed with a complaint, the applicant will have to satisfy Transport Canada that the test was not properly conducted. Mere dissatisfaction with the flight test result is not enough. After due consideration of the individual case, the TTL responsible for Part IV flight testing and licensing, may authorize a re-test to be conducted, without prejudice (with a clean record in regard to the disputed flight test), by a Civil Aviation Inspector or an alternate pilot examiner.

### **NOTE: DO NOT STRIKETHROUGH ANY PRIVILEGE ON A CANADIAN AVIATION DOCUMENT.**

A pilot licence, including any ratings or endorsements attached to that licence, is a *Canadian Aviation Document* (CAD). The powers to suspend, cancel or refuse to renew a CAD or any of its additional privileges, are set out in the *Aeronautics Act*. The only avenue for appeal of an unsuccessful attempt for which a candidate has not reached a resolution with Transport Canada is an appeal before the Federal Court of Canada.

The Federal Court may be contacted at: Federal Court, Ottawa, Ontario, Canada K1A 0H9.

## Partial Flight Test

Provided the applicable pass mark has been achieved and there is no more than one unsuccessful attempt at an air item, the skill requirement for the issuance of the instrument rating may be met by completing a partial flight test of that item assessed "1".

The candidate will be required to successfully perform the air item assessed as "1" on the previously unsuccessful complete flight test. Flight test items not associated with the item to be retested, but repeated for the purpose of the second flight, may be re-assessed as "1" if their aim is not achieved or safety is compromised.

The partial flight test will be completed within 30 days of the date of the original letter of recommendation in an aircraft of the same instrument-rating group. No more than one partial flight test will be allowed for each complete flight test.

## Complete Retest

A complete retest will be required in the following situations:

- (a) the required pass mark is not obtained during a complete flight test;
- (b) the unsuccessful attempt of any ground item;
- (c) the unsuccessful attempt of more than one air item during a complete flight test;
- (d) the unsuccessful attempt of any flight test item during a partial flight test;
- (e) a display of unsafe manoeuvring or dangerous behaviour;
- (f) a demonstrated pattern of failing to use proper visual scanning techniques is displayed during the visual flight portions of the flight test; or
- (g) a partial flight test is not completed within 30 days of the original complete flight test.

**Note:** In the case of a complete re-test, the candidate should not show or submit a copy of the previously failed flight test report to the examiner to avoid a prejudgement of the test.

## Instrument Rating Groups

The group of instrument rating issued must correspond to the class and category of aircraft or representative FSTD used for the instrument rating flight test.

Subject to the privileges of the candidate's licence, an instrument rating may be issued valid for:

- Group 1** (all aeroplanes) when the flight test was conducted in a multi-engine aeroplane other than a center-thrust multi-engine aeroplane;
- Group 2** (all center-thrust multi-engine and single engine aeroplanes) when the flight test was conducted in a center-line thrust multi-engine aeroplane;
- Group 3** (all single engine aeroplanes) when the flight test was conducted in a single engine aeroplane.

**Note: Flight tests or Instrument Proficiency Checks that involve transitioning from a Group 2, 3 or 4 rating to a Group 1 instrument rating will not be conducted in a flight-training device (FTD). Those transitions must be conducted in an aeroplane or a full-flight simulator and the Flight Test Reports must be submitted for updating of the licences.**

## Validity Periods

Instrument ratings no longer expire since the issuance of Global Exemption NCR-040-2015, but are subject to the recency requirements of CAR Section 401.05(3) and the conditions of the exemption.

Examiners are authorized to endorse pilot licences with instrument rating privileges. These endorsements are valid for 90 days from the date of the endorsement or upon receipt of a new licence label by the candidate.

## Pre-Test Briefing

Flight test examiners are required to brief test candidates on the following details:

- (a) **The sequence of test items to be covered.** There is no need for the candidate to memorize the sequence, as the examiner will give instructions for each item.
- (b) **If in doubt -- ask!** Candidates who do not clearly understand what they are being asked to do should feel free to ask. It may be that the examiner wasn't clear in giving instructions.
- (c) **Who is pilot-in-command?** The candidate may be pilot-in-command if he or she is the holder of a valid instrument rating. If the candidate does not hold a valid instrument rating (initial or expired), the examiner will be the pilot-in-command, pursuant to CAR 401.03. In either case, the examiner reserves the right to exercise all reasonable duty and care to ensure safe flight by intervening or taking control of an aircraft when any action or lack of action by the candidate seriously jeopardizes flight safety or if a breach of regulation is imminent.
- (d) **Who will do what in the event of an actual emergency?** Discuss
- (e) **How to transfer control.** There should never be any doubt as to who is flying the aircraft so proper transfer of control through the words "You have control" and "I have control" is expected during a flight test. A visual check is recommended to verify that the exchange has occurred.
- (f) **Method of simulating emergencies (aircraft only)** What method will be used? Verbal? Simulated zero thrust setting?

**Note 1:** For Groups 1 and 2 (multi) ratings, simulated engine failures in aeroplanes will only be carried out in accordance with the manufacturer's recommendations or in their absence by reducing power to flight idle. Once the candidate has simulated feathering the propeller of the simulated failed engine, the examiner will establish "zero thrust" in accordance with the manufacturer's recommendations. Simulated engine failures will NOT be initiated below 1000 feet AGL.

Special care must be exercised to respect engine and airframe limitations when simulating an engine failure. The practice of closing fuel valves, shutting off magneto switches or pulling circuit breakers will not be used during a flight test.

**Note 2:** Failures of electronic flight or map displays may be simulated in accordance with the training and testing recommendations/handbooks supplied by the equipment manufacturer. The examiner must apply discretion and good judgement, as to the wisdom of creating a simulated failure, based on the existing flight conditions and his/her familiarity with the specific equipment, in order to ensure safety of flight.

## Flight Management

Flight management refers to the effective use of all available resources, including working with such groups as dispatchers, other crewmembers, maintenance personnel, and air traffic controllers. Poor performance of a manoeuvre or task can often be explained by weaknesses in flight management competencies.

### Problem Solving and Decision Making

- (a) anticipates problems far enough in advance to avoid crisis reaction
- (b) uses effective decision-making process
- (c) makes appropriate inquiries
- (d) prioritizes tasks to gain maximum information input for decisions
- (e) makes effective use of all available resources to make decisions
- (f) considers "downstream" consequences of the decision being considered

### Situational Awareness

- (a) actively monitors weather, aircraft systems, instruments, ATC communications
- (b) avoids "tunnel vision" - awareness that factors such as stress can reduce vigilance
- (c) stays "ahead of the aircraft" in preparing for expected or contingency situations
- (d) remains alert to detect subtle changes in the environment

## Communication

- (a) provides thorough briefings
- (b) asks for information and advice
- (c) communicates decisions clearly
- (d) asserts one's position appropriately (Multi-crew)

## Workload Management

- (a) organizes cockpit resources well
- (b) recognizes overload in self
- (c) eliminates distractions during high workload situations
- (d) maintains ability to adapt during high workload situations

## Flight Test Results

The *Privacy Act* protects the privacy of individuals with respect to personal information about themselves held by a government institution. A flight test measures the performance of the candidate for the flight test, the examiner conducting the flight test, the instructor who recommended candidate and, through identification of the Flight Training Unit, the performance of the Chief Flight Instructor who is responsible for the training at that unit. All of these are identified on the flight test report.

Personal information may be disclosed in accordance with Section 8(2)(a) of the *Privacy Act*, which allows disclosure... "for the purpose for which the information was obtained or compiled by the institution or for a use consistent with that purpose". The purpose for which flight test information is obtained is to ensure the safety of aviation in Canada. The specific purposes are to measure whether the candidate meets the minimum skill standard for the licence or rating, whether the recommending instructor is performing competently as an instructor, whether the examiner is conducting the test in accordance with the standards and whether the Flight Training Unit is performing in accordance with the general conditions of the operator certificate.

In accordance with 8(2)(a) of the *Privacy Act*, a copy of the flight test report may be given to the candidate for a flight test and a copy will be retained by the examiner who conducted the flight test. A copy may also be given to the instructor who recommended the candidate for the flight test and to the chief flight instructor responsible for the quality of flight training at the Flight Training Unit where the training was conducted. Specific information about the results of a flight test will not be given by Transport Canada to anyone but the individuals named on the flight test report, except in accordance with the *Privacy Act*.

## Assessment of Flight Test Performance

The "*Performance Criteria*" section of each flight test item prescribes the marking criteria. These criteria assume no unusual circumstances as well as operation of the aircraft in accordance with the operating limitations as required by CAR 602.07, published SOPs, owner/operator checklists, the manufacturer's recommended speeds and configurations in the POH/AFM or other approved data based on the certification standard of the aircraft used for the test.

Throughout the flight test, the candidate is evaluated on the use of an appropriate checklist. Proper use is dependent on the specific task being evaluated. The situation may be such that the use of the written checklist, while accomplishing the elements of an "*Aim*", would be either unsafe or impractical. In this case, a review of the checklist after the elements have been accomplished would be appropriate. Division of attention and proper visual scanning should be considered when using a checklist.

Consideration will be given to unavoidable deviations from the published criteria due to weather, traffic or other situations beyond the reasonable control of the candidate. To avoid the need to compensate for such situations, tests should be conducted under normal conditions whenever possible.

Whenever practicable, instrument rating flight-test flights should be filed on an IFR flight plan. In this way, the candidate can effectively demonstrate that he or she can interact realistically with the ATC system. If circumstances do not permit a filed IFR flight, the examiner will role-play as ATC, act as a safety pilot, coordinate with the ATC system and issue simulated clearances to the candidate. In either case, the candidate is expected to comply with the clearances whether issued by ATC or the examiner.

## Errors

**Error:** means an action or inaction by the flight crew that leads to a variance from operational or flight crew intentions or expectations.

### Minor Error

A minor error is an action or inaction that is inconsequential to the completion of a task, procedure or manoeuvre, even if certain elements of the performance vary from the recommended best practices.

### Major Error

A major error is an action or inaction that can lead to an undesired aircraft state or a reduced safety margin, if improperly managed; or an error that does not lead to a safety risk, but detracts measurably from the successful achievement of the defined aim of a sequence/item.

### Critical Error

A critical error is an action or inaction that is mismanaged and consequently leads to an undesired aircraft state or compromises safety such as:

- Non-compliance with CARS or non-adherence to mandated standard operating procedures; or
- Repeated improper error management or uncorrected and unrecognized threats, which risk putting the aircraft in an undesired state; or
- Repeated major errors or the non-performance of certain criteria prescribed in the *Performance Criteria*\* that are essential to achieving the *Aim*\* of a test sequence/item.

\* defined in the applicable Flight Test Guide.

## Deviations

**Deviation:** means a variance in precision with respect to a specified tolerance published for a manoeuvre within a test item or sequence, which is a result of pilot error or faulty handling of the aircraft.

### Minor Deviation

A minor deviation is one that does not exceed a specified tolerance.

### Major Deviation

A major deviation is one that exceeds a specified tolerance or repeated minor deviations without achieving stability.

### Critical Deviation

A critical deviation is a major deviation that is repeated, excessive or not corrected, such as:

- Repeated non-adherence to specified tolerance limits; or
- Not identifying and correcting major deviations. or
- More than doubling the specified value of a tolerance limit.

## Airmanship

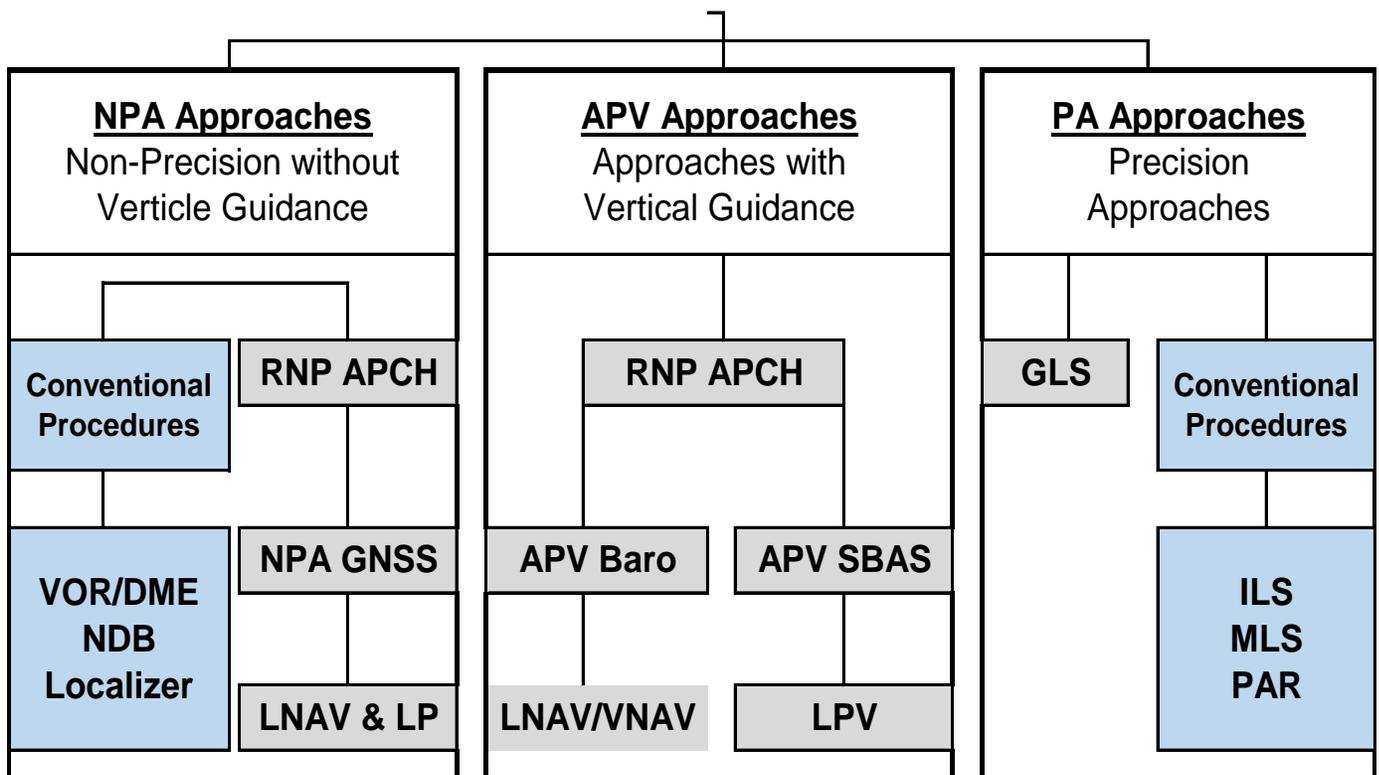
The candidate's airmanship will be assessed along with other factors in determining the mark awarded for each item. Airmanship elements such as lookout for other aircraft during visual flight, use of checklists, consideration for other aircraft on the ground and in the air, choice of run-up areas and choice of runways as well as departure and approach profiles will be important parts of each item assessed. The candidate will be expected to demonstrate good airmanship and complete accurate checks on a continuing basis.

## 4-POINT MARKING SCALE

When applying the 4-point scale, award the mark that best describes the weakest element(s) applicable to the candidate's performance of the particular test sequence/item demonstrated.

<b>4</b>	<p>Performance is well executed considering existing conditions:</p> <ul style="list-style-type: none"> <li>• Aircraft handling is smooth and positive with a high level of precision.</li> <li>• Technical skills indicate a thorough knowledge of procedures, aircraft systems, limitations and performance characteristics.</li> <li>• Situational awareness is indicated by continuous anticipation and vigilance.</li> <li>• Flight management skills are exemplary and threats are consistently anticipated, recognized and well managed.</li> <li>• Safety margins are maintained through consistent and effective management of aircraft systems and mandated operational protocols.</li> </ul>
<b>3</b>	<p>Performance is observed to include minor errors:</p> <ul style="list-style-type: none"> <li>• Aircraft handling with appropriate control input includes minor deviations.</li> <li>• Technical skills indicate an adequate knowledge of procedures, aircraft systems, limitations and performance characteristics to successfully complete the task.</li> <li>• Situational awareness is adequately maintained as candidate responds in a timely manner to cues and changes in the flight environment to maintain safety while achieving the aim of the sequence/item.</li> <li>• Flight management skills are effective. Threats are anticipated and errors are recognized and recovered.</li> <li>• Safety margins are maintained through effective use of aircraft systems and mandated operational protocols.</li> </ul>
<b>2</b>	<p>Performance is observed to include major errors:</p> <ul style="list-style-type: none"> <li>• Aircraft handling is performed with major deviations and/or an occasional lack of stability, over/under control or abrupt control input.</li> <li>• Technical skills reveal deficiencies either in depth of knowledge or comprehension of procedures, aircraft systems, limitations and performance characteristics that do not prevent the successful completion of the task.</li> <li>• Situational awareness appears compromised as cues are missed or attended too late or the candidate takes more time than ideal to incorporate cues or changes into the operational plan.</li> <li>• Flight management skills are not consistent. Instrument displays, aircraft warnings or automation serve to avert an undesired aircraft state by prompting or remedying threats and errors that are noticed late.</li> <li>• Safety margins are not compromised, but poorly managed.</li> </ul>
<b>1</b>	<p>Performance is observed to include critical errors or the <i>Aim</i> of the test sequence/item is not achieved:</p> <ul style="list-style-type: none"> <li>• Aircraft handling is performed with critical deviations and/or a lack of stability, rough use of controls or control of the aircraft is lost or in doubt.</li> <li>• Technical skills reveal unacceptable levels of depth of knowledge or comprehension of procedures, aircraft systems, limitations and performance characteristics that prevent a successful completion of the task.</li> <li>• Lapses in situational awareness occur due to a lack of appropriate scanning to maintain an accurate mental model of the situation or there is an inability to integrate the information available to develop and maintain an accurate mental model.</li> <li>• Flight management skills are ineffective, indecisive or noncompliant with mandated published procedures and/or corrective countermeasures are not effective or applied.</li> <li>• Safety margins are compromised or clearly reduced.</li> </ul>

## Approach Types



### Constant Descent Final Approach (CDFA)

CDFA is a technique, consistent with stabilized approach procedures, for flying the final approach segment of a non-precision approach (NPA) procedure as a constant descent, without level-off, from an altitude at or above the final approach fix altitude to a point approximately 15 m (50 ft.) height above the landing runway threshold or the point where the flare manoeuvre should begin for the type of aircraft flown. [International Civil Aviation Organization (ICAO) Doc 8168, Vol. I, Part I, Amdt. 3,]

The constant descent angle technique has been identified by the ICAO CFIT Task Force as an aid in preventing controlled flight into terrain (CFIT) accidents, which continue to be a major threat to civil aviation safety in Canada. Studies and accident investigations have shown that the risk of CFIT is high on NPAs. While the procedures themselves are not intrinsically unsafe, the use of the traditional step-down descent technique for flying non-precision approaches is prone to error and is therefore discouraged. Many ICAO Contracting States require the use of the CDFA technique and apply increased visibility or RVR requirements when the technique is not used.

The CDFA technique requires no specific aircraft equipment other than that specified by the title of the NPA procedure. Pilots can safely fly suitable NPAs with CDFA using basic piloting techniques, aircraft flight management systems (FMS) or RNP APCH systems. Where you can fly a CDFA profile, you should, as it makes sense to use a CDFA profile on most non-precision approaches (NPA). Unless a CDFA profile is not practical to expedite descent out of icing conditions or for an approach that requires circling to land, pilots should use the CDFA technique whenever possible as it adds to the safety of the approach by reducing pilot workload and reducing the possibility of error in flying the approach.

**Descent to MDA/DA:** The CDFA technique requires a constant descent without level-offs, flown either with VNAV guidance calculated by on-board equipment or based on manual calculation of the required rate of descent as a function of groundspeed. The rate of descent is selected and adjusted to achieve a constant descent angle to a point approximately 15m (50 ft) above the landing runway threshold or the point where the flare manoeuvre should begin for the type aircraft flown. The descent shall be calculated and flown to pass at or above the minimum altitude at any approach fix.

**Pilots typically employ one of three techniques for vertical path control on NPAs. Of these, the CDFAs technique is preferred.**

**When to go Missed Approach:** When the aircraft approaches the minimum descent altitude (MDA), the only options for the pilot/crew are:

- (a) continue the descent below the minimum altitude for the approach to land with the required visual references in sight without any intermediate level-off;
- (b) execute a missed approach upon reaching MDA , if visual conditions are not imminent; or
- (c) level off at or above MDA and continue inbound until able to land or reaching the missed-approach point (MAP) and commencing the missed approach procedure. It is good technique to begin the level off above MDA, such as MDA + 50 feet.

If the visual references required to land have not been acquired or are not imminent when the aircraft approaches the MDA, the pilot should consider it as a decision altitude (DA) and initiate the vertical (climbing) portion of the missed approach at an altitude above the MDA sufficient to prevent the aircraft from descending through the MDA. Likewise, if the aircraft reaches the MAP before descending to or near the MDA, the missed approach must be initiated at the MAP. Pilots must not descend below the MDA when executing a missed approach from a CDFAs. Any turns on the missed approach shall not begin until the aircraft reaches the MAP.

Flight Training Units should emphasize the training and standardization of vertical path control for NPA procedures. Pilots should be instructed to initiate the level-off or go-around at an altitude above the MDA that would ensure the aircraft does not descend below the published MDA.

Reference: Transport Canada Advisory Circular AC 700-028– Vertical Path Control on Non-Precision Approaches 2013-04-22

## **Stable approach (Generic Description)**

On the correct final approach flight path:

- Aircraft must be in the proper landing configuration appropriate for wind and runway conditions;
- Only small heading and pitch changes required;
- Speed within +20/-0 knots. of the reference speed;
- Maximum sink rate of 1,000 feet per minute;
- Appropriate power settings applied;
- Briefings and checklists complete;
- ILS or LPV Approach – within ½ scale laterally and within ½ scale of the glideslope or glide path angle;
- LNAV/VNAV Approach - within ½ scale laterally and within ½ scale of the glide path angle;
- During IMC – Stable by 1,000 feet AGL;
- During VMC – Stable by 500 feet AGL.
- Visual Approach – Wings level at 500 feet AGL;
- Circling Approach – Wings level at 300 feet AGL;

An aircraft may be stable at 1000 feet but may subsequently become unstable due to handling or flight conditions and will be considered during the evaluation.

# FLIGHT TEST ITEMS

## 1. Pre-flight

### 1. A. Obtaining Weather Information (Ground item)

#### *Aim*

To determine the candidate's competency to retrieve and interpret the aviation weather information necessary for the safe conduct of a flight in accordance with the Instrument Flight Rules.

#### *Description*

The candidate will obtain and interpret aviation weather information for the route of flight assigned for the flight test.

#### *Performance Criteria*

Assessment will be based on the candidate's competency to retrieve and interpret items such as:

- (a) weather reports and forecasts;
- (b) graphic area forecasts ;
- (c) surface analysis chart;
- (d) radar and satellite imagery;
- (e) WXCam;
- (f) significant weather prognostic charts;
- (g) winds and temperatures aloft ;
- (h) SIGMETs;
- (i) PIREPS; and
- (j) NOTAMs, including WAAS NOTAMS and RAIM Predictions.

### 1. B. Flight Planning (Ground Item)

#### *Aim*

To determine the candidate's competency to plan a flight utilizing performance charts, weight and balance calculations and other information, including appropriate or preferred routing, altitude and alternate destinations, necessary for the safe conduct of a flight in accordance with Instrument Flight Rules (IFR).

#### *Description*

The candidate will plan a flight to an assigned destination. The candidate will prepare a flight log, weight and balance calculations and an IFR flight plan.

#### *Performance Criteria*

Assessment will be based on the candidate's competency to:

- (a) describe the effects of meteorological conditions upon performance characteristics and correctly apply these factors to a specific chart, table, graph or other performance data;
- (b) demonstrate acceptable knowledge of procedures and planning while applying operational factors affecting aircraft performance;
- (c) select an appropriate route, altitude and alternate;
- (d) locate and apply information essential to the flight;
- (e) integrate information such as weather reports and forecasts; surface analysis charts; significant weather prognostic charts; winds and temperatures aloft; icing, turbulence and freezing level charts, PIREPS, NOTAMs, WAAS NOTAMS and SIGMETs into the planning of the flight.

- (f) calculate the estimated time enroute and total fuel requirement based on factors such as power settings, operating altitude or flight level, wind and fuel reserve requirements;
- (g) determine that the required performance for the planned flight is within the aircraft's capability and operating limitations;
- (h) make a competent "GO/NO-GO" decision based on available information for the planned flight; and
- (i) complete a flight plan in a manner that reflects the conditions of the proposed flight;

## 1. C. Cockpit Checks

### *Aim*

To determine the candidate's competency to complete the cockpit checks necessary for a safe flight under Instrument Flight Rules (IFR), including checks of aircraft systems related to IFR operations.

### *Description*

The candidate will complete all checks necessary for an IFR flight in accordance with published SOPs, owner's checklists and the POH/AFM.

### *Performance Criteria*

Assessment will be based upon the candidate's competency to:

- (a) perform the pre-flight instrument, avionics and navigation equipment cockpit checks;
- (b) determine that the aircraft is properly equipped and serviceable for safe instrument flight;
- (c) verify that publications and databases to be used are current;
- (d) take appropriate action with respect to unsatisfactory conditions identified; and
- (e) complete checks applicable to anti-icing, de-icing, or ice warning systems.

## 2. IFR Operational Knowledge (Ground and Air Item)

**Note:** For this item, acceptable knowledge is considered mandatory during the ground portion of the flight test, but the practical application of that knowledge will also be evaluated during the air portion. The mark will be awarded at the end of the test.

### *Aim*

To determine that the candidate has sufficient knowledge of IFR procedures and the competence to safely conduct the assigned flight under Instrument Flight Rules.

### *Description*

The candidate will demonstrate a practical knowledge of IFR procedures by responding to a brief series of oral questions posed by the examiner that pertain to the planned flight and other questions pertinent to IFR flight in other areas and by demonstrating a competence to apply that knowledge during the flight.

### *Performance Criteria*

Assessment will be based on the candidate's competency to demonstrate, prior to departure, sufficient practical knowledge of IFR procedures to ensure a safe flight, such as:

- (a) take-off weather limits;
- (b) departure procedures;
- (c) alternate weather minima;
- (d) take-off minima – weather below landing minima;
- (e) icing encounters;
- (f) landing minima;
- (g) reduced/low visibility operations (RVOP/LVOP)
- (h) approach ban (as applicable to the type of operation involved);
- (i) approach charts.

### 3. Air Traffic Control Clearances

#### *Aim*

To determine the candidate's competency to obtain, read back and comply with clearances.

#### *Description*

Based on actual or simulated clearances, the candidate will obtain, read back and comply with clearances throughout the flight.

#### *Performance Criteria*

Assessment will be based upon the candidate's competency to:

- (a) establish two-way communications with the appropriate controlling agency/ radio station, using proper phraseology;
- (b) obtain and read back clearances received; and
- (c) when necessary, request clarification, verification, or change if unable to comply.

### 4. Departure

#### *Aim*

To determine the candidate's competency to safely depart while complying with departure procedures, clearances and instructions.

#### *Description*

The candidate will complete the departure procedures, including an instrument function check, and establish the aeroplane on the enroute course, as cleared in accordance with the Instrument Flight Rules. The candidate will control the aeroplane solely with reference to flight instruments once in flight and above 400 feet AAE, unless otherwise specified in a departure procedure.

#### *Performance Criteria*

Assessment will be based on the candidate's competency to:

- (a) select and use the appropriate communications frequencies;
- (b) select and identify the navigation aids associated with the proposed departure phase;
- (c) verify that course indications correspond to the intended navigational equipment;
- (d) perform an instrument check;
- (e) safely taxi while respecting runway signs and avoiding a runway incursion;
- (f) accomplish the applicable checklist items and perform recommended procedures;
- (g) maintain acceptable aeroplane control while respecting mandatory operating limitations and the recommended configurations;
- (h) intercept, in a timely manner, all tracks, radials, and bearings appropriate to the procedure, route, or ATC clearances and instructions;
- (i) adhere to departure, noise abatement and transition procedures or ATC instructions;
- (j) maintain assigned headings ( $\pm 10$  degrees);
- (k) maintain assigned tracks and bearings ( $\pm 10$  degrees); and
- (l) climb to and maintain assigned altitudes ( $\pm 100$  feet).

## 5. Enroute

### *Aim*

To determine the candidate's competency to intercept routes and comply with enroute procedures, as cleared while maintaining proper aircraft control and flight within operating configurations and limitations.

### *Description*

The candidate will maintain the aeroplane on the enroute course and comply with enroute procedures, as cleared, in accordance with Instrument Flight Rules. The candidate will control the aeroplane solely with reference to flight instruments.

### *Performance Criteria*

Assessment will be based on the candidate's competency to:

- (a) select and use the appropriate communications frequencies;
- (b) select and identify the navigation aids associated with the proposed enroute phase;
- (c) verify that course indications correspond to the intended navigational equipment;
- (d) perform the aircraft checklist items relative to the phase of flight;
- (e) intercept, in a timely manner, all tracks, radials, and bearings appropriate to the route or clearance;
- (f) adhere to enroute procedures;
- (g) maintain proper aircraft control and flight within operating configurations and limitations;
- (h) maintain assigned headings ( $\pm 10$  degrees);
- (i) maintain assigned tracks ( $\pm 10$  degrees); and
- (j) maintain assigned altitudes ( $\pm 100$  feet).

## 6. Arrival

### *Aim*

To determine the candidate's competency to comply with arrival procedures, as cleared.

### *Description*

The candidate will complete the arrival procedures, as cleared, in accordance with the Instrument Flight Rules. The candidate will control the aeroplane solely with reference to flight instruments.

### *Performance Criteria*

Assessment will be based on the candidate's competency to:

- (a) select and use the appropriate communications frequencies;
- (b) select and identify the navigation aids associated with the proposed arrival phase;
- (c) perform the aircraft checklist items relative to the phase of flight;
- (d) intercept, in an efficient manner, all headings, tracks, radials, and bearings appropriate to the procedure, route or clearance;
- (e) adhere to the arrival procedures;
- (f) maintain proper aircraft control and flight within recommended configurations and operational limitations;
- (g) maintain assigned headings ( $\pm 10$  degrees);
- (h) maintain assigned tracks and bearings ( $\pm 10$  degrees); and
- (i) descend to and maintain assigned altitudes ( $\pm 100$  feet).

## 7. Holding

### *Aim*

To determine the candidate's competency to establish the aeroplane in a holding pattern in accordance with an actual or simulated ATC clearance.

### *Description*

Based on an actual or simulated clearance, the candidate will select a suitable entry procedure, enter and establish the aeroplane in the holding pattern. The candidate will demonstrate adequate knowledge of holding endurance including, but not limited to, fuel on board, fuel available for holding and fuel required to the alternate destination.

### *Performance Criteria*

Assessment will be based on the candidate's competency to:

- (a) recognize arrival at the holding fix and to initiate entry into the holding pattern;
- (b) use a suitable entry procedure that assures manoeuvring within the protected airspace;
- (c) report crossing the fix entering the hold and, if required by ATC, report established in the hold;
- (d) use the proper timing criteria, where applicable; or
- (e) comply with leg lengths when a DME distance is specified;
- (f) anticipate and further assess the effect of wind and apply effective drift and timing correction techniques;
- (g) maintain the designated track or course ( $\pm 10$  degrees) or within  $\frac{1}{2}$  scale deflection of the course deviation indicator, as applicable (Terminal Mode sensitivity if with GNSS);
- (h) maintain the declared airspeed ( $\pm 10$  knots);
- (i) maintain assigned altitudes ( $\pm 100$  feet); and
- (j) maintain proper aeroplane control and flight within operating configurations and limitations.
- (k) provide the examiner with a reasonably accurate estimate of the maximum holding time available based on the IFR flight plan and the fuel on board.

## 8. Approaches

**The candidate will perform two (2) different types of instrument approaches. The candidate will demonstrate one RNP APCH approach. On an initial Instrument Rating flight test, a precision approach with vertical guidance is also mandatory. If an LPV approach is used to demonstrate ILS approach proficiency, the other approach must be a non-precision approach without vertical guidance.**

**For Instrument Proficiency Checks (IPC), one RNP APCH approach will be conducted with or without vertical guidance and the other approach must be a non-precision approach without vertical guidance.**

One of the approaches will be demonstrated with a simulated failed engine for Groups 1 and 2 instrument rating qualifications.

**All intermediate and final segments of non-precision approaches with approach slopes of 3.5 degrees or less will be flown using a Constant Descent Final Approach (CDFA) profile from the highest intermediate segment altitude to the minimum descent altitude (MDA). The use of step-down approach techniques where CDFA profiles are possible and practical will be considered a major error.**

Approaches may be flown with vectors from ATC, where available, or by flying a full-procedure approach.

**When aerodrome temperatures are 0°C or colder, candidates are expected to apply the altitude corrections published in the CAP - General to all minimum altitudes depicted on the approach chart used.**

Where a major deviation has occurred during the approach, **but safety has not been compromised**, the candidate may initiate a missed approach for one additional attempt at the approach and the evaluation will

be marked as a 2, if the subsequent approach is acceptable. The candidate is allowed only one (1) second attempt for an approach. Where safety has been compromised or unacceptable performance has been demonstrated, including but not limited to, descent below a published minimum descent altitude due to pilot error or poor technique, the approach will be evaluated as a “1” despite the initiation of a missed approach by the candidate.

## **8. A. Non-precision Instrument Approach**

### *Aim*

To determine the candidate’s competency to safely fly a successful non-precision approach.

### *Description*

After transitioning to the approach facility or after receiving vectors from ATC, the candidate will fly the approach depicted on the approach chart to the missed approach point or to a landing. The candidate will control the aeroplane solely with reference to flight instruments. The candidate will make clear to the examiner whether the intent is to fly a straight-in or a circling approach to landing.

### *Performance Criteria*

Assessment will be based on the candidate’s competency to:

- (a) establish two-way communications with ATC using the proper communications phraseology and techniques, as required for the phase of flight or approach segment;
- (b) comply, in a timely manner, with all clearances, instructions and procedures issued by ATC and advise accordingly if unable to comply;
- (c) select and comply with the instrument approach procedure to be performed;
- (d) select, tune, identify, confirm and monitor the operational status of ground and aeroplane navigation equipment to be used for the approach procedure;
- (e) establish the appropriate aeroplane configuration and airspeed considering turbulence, wind shear or other meteorological and operating conditions, including runway length available and CRFI;
- (f) complete the aircraft checklist items appropriate to the phase of flight or approach segment, including engine-out approach and landing checklist, as appropriate;
- (g) apply necessary adjustment to the published Minimum Descent Altitude (MDA) and visibility criteria for the aircraft approach category when required, because of temperature, NOTAMS, inoperative aeroplane and/or ground navigation equipment or inoperative visual aids associated with the landing environment;
- (h) prior to final approach course, maintain altitudes, as cleared or as declared, ( $\pm 100$  feet) and maintain headings ( $\pm 10$  degrees);
- (i) maintain declared approach airspeeds (+10/-5 knots);
- (j) on the intermediate and final segments of the final approach course:
  - (i) maintain VOR, LOC tracking within  $\frac{1}{2}$ -scale deflection of the course deviation indicator or within 5 degrees of the specified track in the case of an NDB approach;
  - (ii) fly the approach in a relatively stable manner, using a CDFA final approach profile where possible, without descending below the applicable minimum altitudes depicted on the approach chart (+as required/ -0 feet);
  - (iii) descend to and accurately maintain the Minimum Descent Altitude (MDA) and track to the Missed Approach Point (MAP) or to the recommended minimum visibility distance that would permit safe completion of the visual portion of the approach with a normal rate of descent and minimal manoeuvring.
- (k) initiate the missed approach procedure at the MAP, if the required visual references for the intended runway are not obtained prior to the MAP; or
- (l) execute a normal landing from a straight-in or circling approach as required.

## 8. B. ILS or LPV Instrument Approach

### *Aim*

To determine the candidate's competency to safely fly a successful ILS or LPV approach.

### *Description*

After transitioning to the approach facility or after receiving vectors from ATC, the candidate will, in the case of an ILS approach, intercept the localizer and glideslope and descend to the decision height (DH) or, in the case of a LPV approach, intercept the final approach and glidepath and descend to the decision altitude (DA), as specified on the approach chart. The candidate will control the aeroplane solely with reference to flight instruments. The candidate will make clear to the examiner whether the intent is to fly a straight-in or a circling approach to landing. LPV approaches will be indicated on the flight test report by filling the ILS circle and inserting a note in the Remarks section.

### *Performance Criteria*

Assessment will be based on the candidate's competency to:

- (a) establish two-way communications with ATC using the proper communications phraseology and techniques, as required for the phase of flight or approach segment;
- (b) comply in a timely manner, with all clearances, instructions, and procedures issued by ATC and advise accordingly if unable to comply;
- (c) select and comply with the ILS or LPV instrument approach procedure to be performed;
- (d) select, tune, identify and confirm the operational status of ground and aeroplane navigation equipment to be used for the approach procedure;
- (e) establish the appropriate aeroplane configuration and airspeed considering turbulence, wind shear or other meteorological and operating conditions, including runway length available and CRFI;
- (f) complete the checklist items appropriate to the phase of flight or approach segment, including engine out approach and landing checklist, as appropriate;
- (g) apply necessary adjustment to the published DH or DA and visibility criteria for the aeroplane approach category when required, because of temperature, NOTAMS, WAAS NOTAMS, inoperative aeroplane and/or ground navigation equipment or inoperative visual aids associated with the landing environment;
- (h) prior to final approach course, maintain altitudes, as cleared or as declared, ( $\pm 100$  feet) and maintain headings ( $\pm 10$  degrees);
- (i) on final approach course, allow no more than  $\frac{1}{2}$ -scale deflection of the localizer/lateral guidance or glideslope/glidepath indications;
- (j) during an LPV approach, confirm approach-active mode within 2 nm prior to reaching the Final Approach Waypoint (FAWP) inbound on the final approach course;
- (k) during an LPV approach, take appropriate action in the event that a RAIM alert is displayed when the aircraft is established on the final approach course;
- (l) maintain declared approach airspeeds within  $+10/-5$  knots;
- (m) maintain a stabilized descent to the DH/DA; and
- (n) initiate the missed approach procedure, upon reaching the DH/DA, when the required visual references for the intended runway are not obtained; or
- (o) execute a transition to a landing with minimal manoeuvring.

## 8. C. RNP APCH Instrument Approach

### *Aim*

To determine the candidate's competency to safely fly a successful RNP APCH approach.

### *Description*

The candidate will fly an RNP APCH approach, other than an overlay approach. The candidate will fly the approach tracks depicted on the approach chart and fly the approach to the MAWP or to a landing. The candidate will control the aeroplane solely with reference to flight instruments. The candidate will make clear to the examiner whether the intent is to fly a straight-in or a circling approach to landing.

### *Performance Criteria*

Assessment will be based on the candidate's competency to:

- (a) establish two-way communications with ATC using the proper communications phraseology and techniques, as required for the phase of flight or approach segment;
- (b) comply in a timely manner, with all clearances, instructions, and procedures issued by ATC and advise accordingly if unable to comply;
- (c) conduct a RAIM check prior to the approach when conducting Required Navigation Performance (RNP) approaches, except if the GNSS receiver is WAAS enabled;
- (d) select and comply with the RNP APCH instrument approach procedure to be performed;
- (e) retrieve the RNP APCH approach from the database and the approach waypoints used for the approach procedure;
- (f) establish the appropriate aeroplane configuration and airspeed considering turbulence, wind shear or other meteorological and operating conditions, including runway length available and CRFI;
- (g) complete the checklist items appropriate to the phase of flight or approach segment, including engine-out approach and landing checklist, when applicable;
- (h) apply necessary adjustment to the published Minimum Descent Altitude (MDA) and visibility criteria for the aeroplane approach category when required, because of temperature, NOTAMS, inoperative aircraft equipment and/or inoperative visual aids associated with the landing environment.
- (i) prior to final approach course, maintain altitudes, as cleared or as declared, ( $\pm 100$  feet) and maintain headings ( $\pm 10$  degrees);
- (j) take appropriate action in the event that a RAIM alert is displayed when the aircraft is established on the final approach course;
- (k) maintain the declared approach airspeeds within  $+10/-5$  knots;
- (l) on the intermediate and final segments of the final approach course:
  - (i) maintain GNSS track bar within  $\frac{1}{2}$  scale deflection;
  - (ii) fly the approach in a relatively stable manner, using a CDFA final approach profile where possible, without descending below the applicable minimum altitudes depicted on the approach chart (+as required/  $-0$  feet);
  - (iii) confirm approach active mode within 2 nm prior to reaching the Final Approach Waypoint (FAWP) inbound;
  - (iv) descend to and accurately maintain the Minimum Descent Altitude (MDA) and track to the Missed Approach Waypoint (MAWP) or to the recommended minimum visibility distance that would permit safe completion of the visual portion of the approach with a normal rate of descent and minimal manoeuvring.

**Note:** During an RNP APCH to LNAV/VNAV minima, the aircraft might cross the FAF below the FAF Crossing Altitude at colder temperatures, which is acceptable provided the approach is flown at or above the lowest use temperature indicated on the chart (applicable to aircraft without the temperature compensation feature)

- (m) initiate the missed approach procedure when the required visual references for the intended runway are not obtained prior to the MAWP; or

- (n) execute a normal landing from a straight-in or circling approach as required.

## 9. Missed Approach

### *Aim*

To determine the candidate's competency to safely carry out a missed approach, as published or as modified by ATC.

### *Description*

Following an approach, the candidate will carry out a missed approach in accordance with the published procedure or ATC instructions. The candidate will control the aeroplane solely with reference to flight instruments.

### *Performance Criteria*

Assessment will be based on the candidate's competency to:

- (a) promptly initiate the missed approach at the MAP/MAWP or the DH/DA;
- (b) report beginning the missed approach procedure;
- (c) comply with the published missed approach procedure or missed approach instructions from ATC;
- (d) notify ATC (or the examiner) anytime there is an inability to comply with a clearance, restriction, or climb gradient;
- (e) perform the check items appropriate to the go-around procedure;
- (f) request another approach clearance, a clearance to an alternate airport or as directed by the examiner;
- (g) maintain recommended airspeeds (+10/-5 knots);
- (h) maintain heading, track or bearing ( $\pm 10$  degrees); and
- (i) climb to and maintain the published missed approach altitude, or as cleared by ATC or the examiner ( $\pm 100$  feet).

## 10. Transition to Landing

### *Aim*

To determine the candidate's competency to safely carry out a visual descent to landing from the minimum altitude for the approach or, if required, complete a successful circling approach.

### *Description*

The candidate will carry out a visual descent and landing from an approach MDA or DH/DA without excessive manoeuvring; or, after completion of an instrument approach to circling minima, carry out a circling approach to landing.

### *Performance Criteria*

Assessment will be based on the candidate's competency to:

- (a) take into consideration NOTAMs and weather factors such as turbulence, wind shear, wind and visibility;
- (b) take into consideration respecting wake turbulence, runway surface, braking conditions and other operational factors;
- (c) confirm the direction of traffic, advise intentions and adhere to all restrictions and instructions issued by ATC or the examiner;
- (d) execute a landing from the minimum altitude for the approach when the required visual references for the intended runway are obtained;
- (e) where the clear intent is to complete a circling approach:

- (i) select and comply with the appropriate circling approach procedure considering the approach category and manoeuvring capabilities of the aeroplane;
- (ii) manoeuvre the aeroplane, between the cloud ceiling and the minimum authorized circling approach altitude, by visual references to maintain a flight path that permits a normal landing on a runway not aligned with the final approach course flown;
- (iii) use the appropriate procedure and aeroplane configuration for normal or abnormal situations;
- (iv) perform the procedure without excessive manoeuvring and without exceeding the normal operating limits of the aeroplane (the angle of bank should not exceed 30°);
- (v) accurately maintain the authorized minimum circling approach altitude and maintain the recommended airspeed within +10/-5 knots, until in a position from which a descent to a normal landing can be safely executed;
- (vi) when a missed approach is dictated during the circling approach, turn in the appropriate direction, and use the correct procedure and aeroplane configuration for the transition to the missed approach for the approach procedure flown ; and
- (vii) perform all procedures required for the circling approach and aeroplane control in a smooth, positive, and timely manner.

## 11. Emergency Procedures

Note: The examiner will test the candidate on **three** emergency procedures or system malfunctions. At least one engine failure item (11A) will be tested for the Group 1 and Group 2 Instrument Rating qualifications. Group 3 candidates will be evaluated on items 11B, 11C and 11D only.

### 11. A. Engine Failure

#### *Aim*

To determine the candidate's competency to safely maintain control of the multi-engine aeroplane and carry out the appropriate engine failure drill after an engine failure and complete a safe landing with one engine inoperative.

**NOTE: The simulated engine failure is NOT to be combined with Item 9 – Missed Approach**

#### *Description*

At a safe height of **1000 feet AGL or higher**, the examiner will simulate an engine failure. The candidate will identify the failed engine, complete the engine failure drill in accordance with the emergency checklist, and subsequently execute an approach during one of the Item 8 approaches to a safe landing or execute a missed approach if the required visual runway references are not obtained, with the power setting of one engine at flight idle or zero thrust,. The candidate will control the aeroplane solely with reference to flight instruments.

#### *Performance Criteria*

Assessment will be based on the candidate's competency to:

- (a) recognize an engine failure, as simulated by the examiner, or the need to shut down an engine in accordance with a scenario presented by the examiner;
- (b) maintain control of the aeroplane;
- (c) set the power controls and reduce drag by using control application, in the proper sequence;
- (d) identify and verify the inoperative engine;
- (e) establish the best one-engine inoperative airspeed as appropriate to the aeroplane and trim the aeroplane;
- (f) verify the completion of prescribed checklist procedures for restoring power and for securing the inoperative engine, if time permits;
- (g) establish and maintain the recommended flight attitude and configuration for the best performance for all manoeuvring necessary for the phase of flight;
- (h) maintain, where applicable, the specified altitude ( $\pm 100$  feet) and desired heading ( $\pm 10$  degrees); and

- (i) monitor all functions of the operating engine, make necessary adjustments and adhere to the engine inoperative operating limitations for the aeroplane and execute a safe landing with one engine inoperative.

## **11. B. C. D. System Malfunctions and Emergency Procedures**

### *Aim*

To determine the candidate's competency to complete recommended checks and procedures in the event of system malfunctions or emergency situations related to IFR flight.

### *Description*

The candidate will complete the recommended checks and procedures based on simulated malfunctions or emergency scenarios impacting the continuation of safe flight in IFR/IMC that are presented by the examiner.

These situations will be applicable to the aeroplane being used for the test. These items may be tested on the ground or in flight, however at least one item should be tested in flight. Nevertheless, the examiner will determine if aeroplane performance, weather conditions and other factors permit their safe conduct in flight.

The following lists some of the system malfunctions that may be assessed:

- (a) radio and navigation equipment;
- (b) electrical system;
- (c) vacuum system;
- (d) anti-ice and de-icing systems;
- (e) any other installed system required for IFR flight.

### *Performance Criteria*

Assessment will be based on the candidate's competency to:

- (a) promptly identify the malfunction;
- (b) perform applicable memory items, as appropriate;
- (c) apply in a timely manner, the correct checks and procedures in accordance with the applicable checklist, POH/AFM, or other approved data;
- (d) consider any restrictions or limitations to the operation of a system(s) and apply appropriate procedures in order to continue the flight; and
- (e) develop a reasonable course of action for the remainder of the flight.

# RECOMMENDATION FOR INITIAL FLIGHT TEST Instrument Rating

## GROUPS 1, 2 AND 3 - AEROPLANE

Name of Candidate (Print)	Licence Number
Name of Flight Training Unit	Flight Training Unit ID
<b>Flight Experience</b> Total Instrument Time;  Dual Instrument Flight Time provided by a qualified person (425.21(9))  Dual Instrument Flight Time with the holder of a Flight instructor Rating:  Instrument Flight Time in Aeroplanes:  Instrument Ground Time;	<b>Cross-Country Experience</b> Total Cross Country Flight Time – Hours (PIC):  Dual Cross-Country IFR Flight - Miles:  Cross Country Time in Aeroplane Category:

I, the undersigned, certify that the above named candidate meets the minimum experience requirements of CAR Standard 421.46 of the *Personnel Licensing and Training Standards Respecting Flight Training*.

I consider the candidate to have reached a sufficient level of competency to complete the flight test required for the issuance of an Instrument Rating.

I further certify that I am qualified in accordance with Subsection 425.21(9) and the privileges of my pilot licence to make this recommendation.

Name of the Qualified Person Recommending the Test (Print)	Licence Number
Signature	Date
Flight Training Unit	

**RECOMMENDATION FOR PARTIAL FLIGHT TEST  
Instrument Rating  
GROUPS 1, 2 AND 3**

Name of Candidate (Print)	Licence Number
Flight Training Unit  Flight Training Unit ID	Additional Flight Experience in Review Dual

I have conducted a review of the test item \_\_\_\_\_ and have completed additional training with this candidate.

I consider the candidate to have reached a sufficient level of competency to successfully complete the flight test for the issuance of an Instrument Rating.

I further certify that I am qualified in accordance with Subsection 425.21(9) and the privileges of my pilot licence to make this recommendation.

Name of the Qualified Person Recommending the Test (Print)	Licence Number
Signature	Date
Flight Training Unit	