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VFR Navigation Progress Test Guide

AEROPLANE

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VFR NAVIGATION PROGRESS TEST GUIDE

Aeroplane

This reference sets out the skill requirements for the VFR navigation progress test required for students enrolled in CPL(A), CPL(A)/IR or ATP(A) integrated commercial pilot training courses.

The goal of the progress test is to ensure that the candidate has all the required skills to plan and execute a cross-country flight safely.

The VFR navigation progress test is conducted by check instructors appointed by the flight training unit in accordance with the requirements for an integrated course.

For more information, visit our web site at:

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General

Scope of the Progress Test

The VFR navigation progress test consists of the planning, preparation, and completion of a cross-country flight of at least 120 nautical miles which shall include one full stop landing at an intermediate destination. If possible, the intermediate destination shall be in a different class of airspace other than the point of departure. Although aeroplane performances and weight and balance are not tested as separate exercises, it is expected that the candidate will use all the applicable performance data as well as all the approved operating procedures required for a cross-country flight.

Prerequisite to the Progress Test

The VFR navigation progress test completes a phase in the CPL(A), CPL(A)/IR or ATP(A) integrated course. In order to be admitted to the progress test, the candidate shall have completed all the required dual and solo flight lessons. It is not a training flight but an evaluation at the end of a training phase in an integrated course. All progress tests will be conducted when weather conditions do not present a hazard to the operation of the aeroplane, the aeroplane is airworthy and the candidate and aeroplane documents required by the Canadian Aviation Regulations are valid. It is the sole responsibility of the check instructor to make the final decision as to whether or not any portion or the entire progress test may be conducted. A view limiting device must be provided to complete part D, *Lost Procedures*.

Airmanship

The candidate's airmanship will be assessed along with other factors in determining the mark awarded for each item. Actions such as looking out for other aeroplane, use of checklists, consideration for other aeroplane on the ground and in the air, choice of run-up areas, choice of runways and clearing the engine during prolonged glides will be assessed. The candidate will be expected to demonstrate good airmanship and complete accurate checks on a continuing basis.

Failure of a Progress Test

The failure of any progress test item constitutes failure of the progress test. The failure of one or two items will require a partial re-test on those items, and the failure of a third item will require a complete re-test.

Partial Re-test

Provided that there are no more than two failed test items, the skill requirement for the progress test may be met by completing a partial re-test of the item or items assessed "1".

The candidate will be required to successfully perform the item(s) assessed as "1" on the progress test. Test items not associated with the item(s) 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 if safety is compromised.

The partial re-test must be completed within 30 days of the original complete progress test. No more than one partial re-test will be allowed for each complete progress test.

Complete Re-test

A complete re-test will be required in the following situations:

- (a) failure of more than two items during a complete progress test;
- (b) failure of a test item during a partial re-test;
- (c) displaying unsafe flying or dangerous behaviour that is not linked to a skill or a lack of training or competency;
- (d) a demonstrated pattern of failing to use effective visual scanning techniques is displayed during the progress test; or

- (e) a partial progress test is not completed within 30 days of the original complete progress test.

Errors

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

Minor Error

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

An action or inaction that can lead to an undesired aeroplane 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

An action or inaction that is mismanaged and consequently leads to an undesired aeroplane state or compromises safety, such as:

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

Deviations

Deviation: a variance in precision with respect to a specified limit published for a test sequence/item, as a result of pilot error or faulty handling of the aeroplane.

Minor Deviation

A deviation that does not exceed a specified limit.

Major Deviation

A deviation that exceeds a specified limit or repeated minor deviations without achieving stability.

Critical Deviation

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

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

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.

4	<p>Performance is well executed considering existing conditions:</p> <ul style="list-style-type: none"> • Aircraft handling is smooth and positive with a high level of precision. • Technical skills indicate a thorough knowledge of procedures, aircraft systems, limitations and performance characteristics. • Situational awareness is indicated by continuous anticipation and vigilance. • Flight management skills are exemplary and threats are consistently anticipated, recognized and well managed. • Safety margins are maintained through consistent and effective management of aircraft systems and mandated operational protocols.
3	<p>Performance is observed to include minor errors:</p> <ul style="list-style-type: none"> • Aircraft handling with appropriate control input includes minor deviations. • Technical skills indicate an adequate knowledge of procedures, aircraft systems, limitations and performance characteristics to successfully complete the task. • 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. • Flight management skills are effective. Threats are anticipated and errors are recognized and recovered. • Safety margins are maintained through effective use of aircraft systems and mandated operational protocols.
2	<p>Performance is observed to include major errors:</p> <ul style="list-style-type: none"> • Aircraft handling is performed with major deviations and/or an occasional lack of stability, over/under control or abrupt control input. • Technical skills reveal deficiencies either in depth of knowledge or comprehension of procedures, aeroplane systems, limitations and performance characteristics that do not prevent the successful completion of the task. • 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. • 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. • Safety margins are not compromised, but poorly managed.
1	<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"> • 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. • Technical skills reveal unacceptable levels of depth of knowledge or comprehension of procedures, aeroplane systems, limitations and performance characteristics that prevent a successful completion of the task. • 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. • Flight management skills are ineffective, indecisive or noncompliant with mandated published procedures and/or corrective countermeasures are not effective or applied. • Safety margins are compromised or clearly reduced.

Record Keeping

Certification that the student has met the skill requirements of the VFR navigation progress test as well as the admission letter will be kept on the training record for the student. The training record shall be retained for one regulatory audit cycle.

Crew Resource Management

Crew resource management (CRM) refers to the effective use of all available resources, including working with such groups as dispatchers, other crew members, maintenance personnel, and air traffic controllers. CRM is a set of skill competencies that must be evident in all tasks in the VFR navigation progress test. Indicators of these competencies can be found in four main areas: problem solving and decision-making, situational awareness, communication, and workload management.

Problem Solving and Decision Making

- anticipates problems far enough in advance to avoid crisis reaction
- uses effective decision-making process
- makes appropriate inquiries
- prioritizes tasks to gain maximum information input for decisions
- makes effective use of all available resources to make decisions
- considers “downstream” consequences of decision being considered

Situational Awareness

- actively monitors weather, aeroplane systems, instruments and ATC communications
- avoids “tunnel vision” – is aware that factors such as stress can reduce vigilance
- stays ahead of the aeroplane in preparing for expected or contingency situations
- remains alert to detect subtle changes in the environment

Communication

- provides thorough briefings
- asks for information and advice
- communicates decisions clearly
- enunciates one’s location clearly

Workload Management

- organizes cockpit resources well
- recognizes overload in self
- eliminates distractions during high workload situations
- maintains ability to adapt during high workload situations

Progress Test Exercises

EX. 23 PILOT NAVIGATION

A. Pre-Flight Planning Procedures

Aim

To determine that the candidate can effectively and efficiently plan and prepare for a cross-country flight.

Description

The candidate will be requested to plan a cross-country flight of at least 120 nautical miles which shall include one (1) full stop landing at an intermediate destination. If possible, the intermediate destination should be in a different class of airspace other than the point of departure. The candidate will treat the check instructor as a fare-paying customer.

Note: The cross-country flight will be assigned in advance. The candidate is expected to complete all the preparation, including weight and balance, for the flight in order to be ready for a departure time that would permit reaching the destination at the requested time.

Performance Criteria

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

- (a) provide a departure time;
- (b) brief the passenger as far as appropriate clothing, maximum baggage allowed or any other information relevant to the flight;
- (c) use appropriate and current aeronautical charts and other current flight publications, extract and record pertinent information;
- (d) properly identify airspace, obstructions, and terrain features;
- (e) select a safe and efficient route;
- (f) obtain pertinent information about the routes and destination airports;
- (g) retrieve and interpret weather information and NOTAM relevant to the intended flight;
- (h) determine the acceptability of the departure and destination runways under existing or forecast conditions;
- (i) select the most favourable and appropriate altitudes, considering weather conditions and equipment limitations;
- (j) prepare a chart and navigation log, including estimated headings, fuel requirements and time en route;
- (k) accurately prepare weight and balance computations for the departures and landings
- (l) determine the appropriate departure procedure;
- (m) make a competent "GO/NO-GO" decision based on available information for the cross-country flight;
- (n) demonstrate that the weights and center of gravity are within acceptable limits;
- (o) ensure that flight authorization is confirmed and encompasses the requirements of the proposed flight in accordance with the applicable operational control system;
- (p) determine the impact on aeroplane operations of unserviceabilities or equipment configuration changes for the proposed flight;
- (q) accurately complete and file a VFR flight plan; and
- (r) organize and arrange material and equipment in a manner that makes the items readily available.

B. Departure Procedure

Aim

To determine that the candidate can perform an organized and efficient safe departure.

Description

The candidate will safely depart on the planned cross-country flight.

Performance Criteria

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

- (a) note take-off time;
- (b) use an organized and efficient procedure to intercept the pre-planned track;
- (c) comply with all departure clearances and instructions;
- (d) activate the flight plan with ATS;
- (e) set the heading indicator by reference to the magnetic compass or other acceptable means;
- (f) confirm departure angle;
- (g) note set heading time;
- (h) provide an estimated time of arrival (ETA) for destination;
- (i) confirm that the planned true airspeed (KTAS) has been achieved;
- (j) complete appropriate checklists.

C. En Route Procedure

Aim

To determine that the candidate can effectively apply systematic navigation techniques in order to ensure arrival at the destination.

Description

After setting heading, the flight will continue as planned.

Performance Criteria

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

- (a) maintain airspeed (± 10 knots), cruising altitude (± 100 feet), and heading ($\pm 10^\circ$);
- (b) navigate by applying systematic navigation techniques, such as dead reckoning;
- (c) orient the chart in the direction of flight;
- (d) determine the position of the aeroplane within 15 minutes from the time of setting heading;
- (e) maintain a navigation log that accurately reflects the progress of the flight;
- (f) correct for and record the differences between groundspeed and heading calculations and those determined en route;
- (g) apply an organized method that would:
 - (i) verify the position of the aeroplane;
 - (ii) revise headings to correct any existing track error to maintain the aeroplane position within 1 nautical mile of the route;
 - (iii) confirm or revise the ETA at destination with a degree of accuracy that would make arrival predictable within a 5 minute margin; and
 - (iv) confirm fuel requirements.
- (h) advise appropriate flight following services of the revised ETA; and
- (i) arrive at the first destination within 5 minutes of the revised ETA.

D. Lost Procedures

Aim

To determine that the candidate can apply effective procedures when uncertain of position.

Description

The candidate is required to demonstrate the procedures to be used when uncertain of one's position. The check instructor will require the candidate to descend to an altitude of approximately 1,000 feet AGL and maintain a heading for ten minutes while using a suitable view-limiting device. After this time, the device will be removed and the candidate will respond by locating the aeroplane's position and determining the best method to intercept the intended route.

Performance Criteria

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

- (a) note the time and maintain the original or an appropriate heading;
- (b) draw a circle of uncertainty;
- (c) apply a map reading technique of "watch to ground to map";
- (d) use available navigation aids or contact an appropriate facility for assistance;
- (e) take a course of action to return to the en route track, once position is established and confirmed; and
- (f) select a power setting and altitude appropriate for the situation.

E. Diversion to an Alternate

Aim

To determine that the candidate can perform the required in-flight planning using dead reckoning and map reading to safely carry out a diversion to a suitable alternate destination.

Description

When requested by the check instructor, the candidate shall demonstrate ability to select a suitable alternate destination that is within the actual fuel range of the aeroplane. The candidate shall carry out a diversion towards the selected destination or, in the interest of progress test efficiency, towards another destination selected by the check instructor.

The candidate will use dead reckoning for navigation, as though over barren terrain, and is not allowed to follow geographical features as on the Private Pilot flight test.

When practicable, a part or all of the diversion will be conducted at a height of approximately 500 feet above ground or at a minimum safe altitude, whichever is higher. The candidate may change altitudes to suit the topography or the scenario but is expected to communicate intentional altitude changes to the check instructor. Estimated en route and arrival times may be approximate but should have a reasonable degree of accuracy. The diversion will be continued until at least the stage where the aeroplane is established on the proposed track to the alternate; in a manner demonstrating that arrival at the destination is predictable.

The candidate's ability to proceed to an alternate using dead reckoning will be assessed. Rulers, protractors, computers, or radio navigation aids shall not be used for this procedure.

Performance Criteria

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

- (a) perform the following tasks without undue delay:
 - (i) identify and record present position;
 - (ii) select an appropriate alternate destination and route;
 - (iii) estimate an initial heading to fly, based on a track drawn on the chart;
 - (iv) estimate the approximate time en route to the alternate destination; and
 - (v) estimate the approximate available flight time that will remain with the fuel on board upon arrival at the destination (Example: 2 hours+15 minutes);
- (b) without delay intercept the proposed track, divert toward the alternate destination;
- (c) identify the highest Maximum Elevation Figure (MEF) along the selected route and determine a minimum safe altitude for the actual route;
- (d) select an aeroplane configuration and airspeed appropriate for the actual or simulated conditions, if those conditions include poor visibility (for optimum "see and avoid");
- (e) provide an initial ETA when setting heading and confirm or revise that time, as required, while en route;
- (f) provide an estimated time of arrival that is sufficiently accurate to ensure that the diversion can be conducted as planned;
- (g) maintain the selected airspeed (+/- 10 knots), selected altitude (+/- 100 feet), and required headings (+/- 10°); and
- (h) contact or simulate contact with ATC to amend the flight plan.

END