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(03/2019)

Flight Test Guide

Multi-Engine Class Rating

Aeroplane

Tenth Edition

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Canada

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FLIGHT TEST GUIDE

MULTI-ENGINE CLASS RATING

AEROPLANE

This flight test guide sets out the techniques, procedures and the marking criteria that will be used by Civil Aviation Inspectors and Pilot Examiners for the conduct of the flight test required for the issuance of the Multi-engine Class Rating - Aeroplane.

Flight Instructors are expected to use the *Instructor Guide - Multi-engine Class Rating (TP11575E)* and this guide when preparing candidates for flight tests. Candidates should be familiar with this guide and refer to the qualification standards during their training.

Detailed descriptions and explanations of the items numbered on the flight test form can be found by referring to the corresponding chapter number in the *Instructor Guide - Multi-engine Class Rating (TP11575E)* published under the authority of Transport Canada.

<http://www.tc.gc.ca/eng/civilaviation/publications/tp11575-menu-1191.htm>

Definitions

‘Examiner’ means a Pilot Examiner accredited under section 4.3 of Part 1 of the *Aeronautics Act* or a Civil Aviation Inspector authorized to conduct this flight test.

‘Flight test item’ means a task, manoeuvre or exercise listed on the flight test report.

‘Ground flight test items’ are the planning and preparatory tasks performed prior to the pre-flight inspection of the aircraft.

‘Air flight test items’ are tasks or manoeuvres performed with the aircraft, including the pre-flight inspection, start-up, run-up, taxiing and emergency procedures.

‘TTL’ is the acronym for Transport Canada Regional Technical Team Lead, Flight Operations.

Changes that affect prerequisites or competency standards are indicated by a bold vertical line along the right margin.

Aussi disponible en français

Changes in this edition

1. **Generic VFR Stabilized Approach** description added;
2. **Partial Retests**— must be completed within 30 days of the date of the failed flight test.
3. **Ex. 7 – Full flap changed to Landing flap**
4. **Ex. 11B** – The requirement to maintain a stabilized approach is added to the criteria.
5. **Ex. 8A and 8B** – amended to place emphasis on reducing the angle of attack during recovery.
6. The evaluation criteria for accuracy of landings with reference to a runway centerline has been added.

Stabilized approach – VFR (Generic Description)

On the correct final approach flight path:

- Aircraft must be in the proper landing configuration appropriate for wind and runway conditions;
- Briefings and checklists complete;
- Speed within +10/-5 knots. of the reference speed;
- Appropriate power settings applied;
- Maximum sink rate of 1,000 feet per minute;
- Only small heading and pitch changes required;
- Stable by 500 feet AGL.

Note: *If any of the conditions listed above are not established, an overshoot will be executed.*

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GENERAL

Admission to the Flight Test

For admission to a flight test required for the issuance of a Multi-Engine Class Rating and to meet the requirements of CAR Standard section 421.14 and Schedule 7 of Standard 428, the candidate will present:

- (a) an “Aviation Document” licensing booklet - Aeroplane category with medical certification validating the licence;
- (b) a letter of recommendation signed and dated within 30 days prior to the flight test from a person qualified in accordance with section 425.21(5) of the *Personnel Licensing and Training Standards* certifying that:
 - (i) the candidate has received training in accordance with the Instructor Guide – Multi-Engine Class Rating (TP 11575);
 - (ii) the candidate has successfully completed a pre-test evaluation of all the applicable flight test items;
 - (iii) the candidate is considered to have reached a sufficient level of competency to undertake the flight test for the issuance of a multi-engine class rating;
 - (iv) the candidate is recommended for the flight test.

Admission to a Partial Flight Test

A partial flight test must be conducted **within 30 days after the date of the failed test** [408.18(2)]. For admission to a partial flight test following failure of a flight test, the candidate will provide:

- (a) an “Aviation Document” licensing booklet - Aeroplane category with medical certification validating the licence;
- (b) a copy of the flight test report for the previously failed flight test;
- (c) a letter of recommendation for the partial flight test, signed by the person that conducted the remedial training, certifying that the candidate:
 - (i) has received further training on the failed flight test items(s);
 - (ii) is considered to have reached a sufficient level of competency to successfully complete the flight test;
 - (iii) is recommended by the qualified person for the partial flight test.

Sample letters of recommendation are included at the end of this flight test guide.

Aeroplane Requirements

The candidate will provide an aeroplane that:

- (a) has a flight authority pursuant to CAR 507 and that authority has no operating limitations that prohibit the performance of all the required manoeuvres; and
- (b) meets the requirements of subsections (1) and (2) of section 425.23 - *Training Aircraft Requirements* of the *Personnel Licensing Standards*.

Flight Test

All of the flight test items required by the flight test report and described in this guide must be completed and the minimum pass mark for the Multi-Engine Class Rating flight test of **73** (70%) must be achieved.

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

Note: Ground flight test items **1A to 1D** will be assessed before the flight portion of the flight test.

Repeated Flight Test Item

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

- (a) **Discontinuance:** Discontinuance of a manoeuvre for valid safety reasons; e.g., a go-around or other procedure necessary to modify the originally planned manoeuvre.
- (b) **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.
- (c) **Misunderstood Requests:** Legitimate instances when the candidate did not understand an examiner's request to perform a specific manoeuvre.
- (d) **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 safety and do not mean that instruction, practice, or the repeating of a flight test item or manoeuvre unacceptably demonstrated, are permitted during the flight test evaluation process.

Incomplete Flight Test (Refer to 5.16 of the PE Manual)

If the test is not completed due to circumstances beyond the candidate's control, the subsequent flight test will include the flight test items not completed on the original flight test and will be completed within the 30 days of the date of the original letter of recommendation.

The following process will apply:

- (a) a copy of the flight test report must be given 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 letter of recommendation remains 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 candidate displays unsafe or dangerous flying;
- (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 initial flight test included one or two failed air flight test items, the partial flight test for these may be conducted during the subsequent flight test flight, after the candidate has completed all of the required items, provided:

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

Failure of a Flight Test

Failure to obtain the minimum pass mark or the failure of any flight test item on the flight test report constitutes failure of the flight test. The failure of any ground item will exclude the possibility of conducting the flight portion and will require a complete re-test. Ground items 1A to 1D are not eligible for a partial flight test. The failure of one or two air items will require a partial flight test, and the failure of a third item will require a complete re-test.

The examiner will stop a test, assess the item with a "1", and a complete re-test will be required if the candidate jeopardizes safety by:

- (a) displaying unsafe or dangerous flying; or
- (b) demonstrating a pattern of failing to use proper visual scanning techniques to check for traffic before and while performing visual manoeuvres.

Following a failed flight test, the candidate will obtain a copy of the flight test report to meet the requirements for admission to a partial flight 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 pilot 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 Regional TTL responsible for Flight Training, 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 alternate pilot examiner.

Partial Flight Test

Provided that the applicable pass mark has been achieved and there are no more than two failed air flight test items, the skill requirement for the rating may be met by completing a partial flight test of the item or items assessed “1”.

The candidate will be required to successfully perform the air item(s) assessed as “1” during the failed complete flight test. Flight 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 safety is compromised.

The partial flight test must be completed within 30 days after the date of the failed test [408.18(2)]. No more than one partial flight test will be allowed for each complete flight test.

Complete Re-test

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

- (a) the required pass mark is not obtained during a complete flight test;
- (b) failure of a ground item;
- (c) failure of more than two air items during a complete flight test;
- (d) failure of an item during a partial flight test;
- (e) displaying unsafe flying or dangerous behaviour that is not linked to a skill, lack of training or competency;
- (f) a demonstrated pattern of failing to use proper visual scanning techniques is displayed during the flight test; or
- (g) a partial flight test is not completed within 30 days of the original complete flight test.

Note: The candidate should not present the flight test report from the previously failed complete flight test to the examiner.

Pre-Test Briefing

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

- (a) **The sequence of flight test items.** 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 was not clear in giving instructions.
- (c) **Who is pilot-in-command?** The examiner will be the pilot-in-command, pursuant to CAR 401.03. In all cases, the examiner reserves the right to exercise all reasonable duty of 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.

Pursuant to the *Aeronautics Act*: “**pilot-in-command**” means, in relation to an aircraft, the pilot having responsibility and authority for the operation and safety of the aircraft during flight time. The responsibility and authority of an examiner, while conducting any flight test, is illustrated by the following non-exhaustive list.

An examiner:

- (i) determines the route of the aircraft;
- (ii) establishes the conditions for the takeoff and landing;
- (iii) directs the candidate when conducting air exercises;

- (iv) manipulates the flight and power controls at their own discretion when preparing for certain exercises;
- (v) intervenes, when necessary and at any time, to ensure the safe continuation of the flight;
- (vi) makes decisions with respect to the continuation or termination of the flight.

If the examiner performs the duties listed in the short list above and pursuant to CAR 401.03, the Pilot Examiner is the Pilot-in-Command. Whether the examiner signs off as PIC or not during the dispatching process, he or she, as the most qualified on board, may be held responsible for any negligence or for not exercising all reasonable duty of care as any other reasonable person in the same position would have exercised.

- (d) **Who will do what in the event of an actual emergency?** A briefing by the candidate should detail the actions to be taken by the candidate and examiner in the event of an actual emergency.
- (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.** What method will be used? Verbal? Simulated zero thrust setting? Engine failures will only be simulated in accordance with the manufacturer's recommendations or, in their absence, by closing the throttle or by reducing power to flight idle. The moving of mixture controls to idle cut-off will only be used where specifically recommended by the manufacturer. No simulated engine failure will be initiated below 500 feet AGL.

Note: The practice of closing fuel valves, shutting off magneto switches or pulling of circuit breakers will not be used during a flight test.

Definitions

- (a) **Critical engine** - The engine that, upon failure, would most adversely affect the performance or handling qualities of an aeroplane.
- (b) **Design Flap Speed (V_F)** - the maximum speed at which wing flaps may be extended.
- (c) **Intentional One Engine Inoperative Speed (V_{SSE})** - a speed above both (V_{MC}) and stall speed, selected to provide a margin of lateral and directional control when one engine is suddenly rendered inoperative. Intentional failing of one engine below this speed is not recommended. In the event that the POH/AFM does not state a V_{SSE} , use a speed equal to $V_{MC} + 10$ knots.
- (d) **Manoeuvring Speed (V_A)** - the maximum speed at which the application of full available aerodynamic control will not overstress the aeroplane.
- (e) **Maximum Flap Extended Speed (V_{FE})** - the maximum speed permissible with the wing flaps in a prescribed extended position.
- (f) **Maximum Landing Gear Extended Speed (V_{LE})** - the maximum speed permissible with the landing gear extended.
- (g) **Maximum Landing Gear Operating Speed (V_{LO})** – the maximum speed permissible for operating the landing gear.
- (h) **Minimum Control Speed (V_{MC})** - the minimum flight speed at which it is possible to retain control of the aeroplane and maintain straight flight, with maximum rudder deflection and not more than 5 degrees of bank, following sudden failure of the critical engine.

NOTE: (V_{MC}) for an aeroplane type is generally determined under the following conditions:

- (i) all engines developing maximum rated power at the time of critical engine failure;
- (ii) the aeroplane is at a minimum practical test weight with a rearmost center of gravity;
- (iii) landing gear retracted, flaps in take-off position and the propeller of the failed critical engine windmilling.

At speeds below V_{MC} , the aeroplane will yaw and roll towards the failed engine. It cannot be too strongly emphasized that control will be regained only by a reduction in power of the good engine or by increasing airspeed through a change in pitch attitude, or both.

- (i) **One Engine Inoperative Best Angle-of-Climb Speed (V_{XSE})** - the speed that provides the maximum altitude gain for the horizontal distance travelled with one engine inoperative.
- (j) **One Engine Inoperative Best Rate-of-Climb Speed (V_{YSE})** - the speed that provides the maximum altitude gain per minute with one engine inoperative.
- (k) **Stalling Speed (V_{SO})** - the minimum steady flight speed at which the aeroplane is controllable in the landing configuration.

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 an item or task can often be explained by weaknesses in flight management competencies.

Problem Solving and Decision Making

- (a) anticipates threats 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

Workload Management

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

Airmanship

The candidate's airmanship will be assessed along with other factors in determining the mark awarded for each item. Items such as looking out for other aircraft, use of checklists, consideration for other aircraft 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.

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 the candidate and, through identification of the Flight Training Unit responsible for the training, the performance of the Chief Flight Instructor of 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 *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 the candidate's competence to meet 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 item prescribes the qualification standards to be used for marking. These criteria assume no unusual circumstances as well as operation of the aeroplane in accordance with the manufacturer's specifications, recommended speeds and configurations in the Pilot's Operating Handbook/Aircraft Flight Manual (POH/AFM) or other approved data.

Candidates should action and complete the published "Performance Criteria" of each flight test item or exercise.

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. Certain elements may be executed by memory. In this case, a review of the checklist will be carried out after the elements have been accomplished.

Division of attention and proper visual scanning will be evaluated 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.

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

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 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

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 deviation that does not exceed a specified tolerance:

Major Deviation

A deviation that exceeds a specified tolerance 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 tolerance limits; or
- More than doubling the specified value of a tolerance limit; or
- Not identifying and correcting major deviations.

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 but 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, aircraft 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 to 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, aircraft 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 corrective countermeasures are not effective or applied. • Safety margins are compromised or clearly reduced.

FLIGHT TEST ITEMS

EX. 1 - AEROPLANE FAMILIARIZATION AND PREPARATION FOR FLIGHT

A. Documents and Airworthiness (Ground Item)

Aim

To determine that the candidate can correctly assess the validity of the required documents to be carried on board and, as far as can be determined by reviewing the documents, determine that the aircraft is airworthy, released for service and has adequate air time remaining for the proposed flight before the next maintenance action is due.

Description

The candidate is expected to determine the validity of all documents required to be carried on board the aeroplane and determine that required maintenance certifications have been completed and that no maintenance actions will become due during the proposed flight.

Performance Criteria

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

- (d) determine that the documents required on board are valid;
- (e) determine that the maintenance certification/release ensures aeroplane serviceability and currency of inspection for the proposed period of flight;
- (f) determine the number of flying hours remaining before the next service or maintenance task;
- (g) ensure that any conditions or limitations on the maintenance release can be complied with;
- (h) determine the impact of deferred defects on aeroplane operations for the proposed flight; and
- (i) explain the process for dealing with aeroplane unserviceabilities discovered during a flight.

Note: *There is no requirement for the candidate to demonstrate knowledge of the Maintenance Control Manual of the FTU or the Approved Maintenance Schedule for the aircraft type used.*

B. Performance and Limitations (Ground Item)

Aim

To determine that the candidate has practical knowledge of the elements related to performance and limitations of the aeroplane being used for the flight test, including the essential memory speeds that are quoted from memory.

Description

The candidate is expected to demonstrate a practical use of charts, tables and appropriate data to determine performance, including take-off distance, climb, cruise, single-engine cruise, and endurance and landing distance and explain the adverse effects of exceeding limitations.

Essential performance speeds will be quoted from memory. Other aeroplane performance data may be determined from the POH/AFM.

Performance Criteria

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

- (a) state from memory the following essential speeds;
 - (i) stall speed - landing configuration (V_{SO}) at maximum landing weight;
 - (ii) one engine inoperative best rate of climb speed (V_{YSE});
 - (iii) one engine inoperative best angle of climb speed (V_{XSE});
 - (iv) manoeuvring speed (V_A);
 - (v) minimum control speed (V_{MC});
 - (vi) maximum landing gear extended speed (V_{LE});
 - (vii) maximum landing gear operating speed (V_{LO});
 - (viii) maximum flap extended speed (V_{FE});
 - (ix) intentional one engine inoperative speed (V_{SSE}).
- (b) calculate, for the proposed flight:
 - (i) the accelerate-stop distance, where data is available;
 - (ii) the total take-off distance required to clear a 50 foot or existing obstacle;
 - (iii) time and fuel required to climb to a specified altitude;
 - (iv) one engine inoperative rate of climb;
 - (v) one engine inoperative enroute performance at the planned cruising altitude;
 - (vi) the power setting proposed for the planned cruising flight (percentage, manifold pressure and RPM) and the expected cruise speed in KTAS;
 - (vii) the available flight time with the fuel load and power settings proposed for the flight; and
 - (viii) the total landing distance required to clear a 50 foot or existing obstacle;

C. Principles of Flight – One Engine Inoperative (Ground Item)

Aim

To determine that the candidate has practical knowledge of the elements related to principles of flight with one engine inoperative.

Description

The candidate is expected to demonstrate a practical knowledge of the elements related to principles of flight with one engine inoperative by explaining the importance of several elements affecting aeroplane performance and control during flight, following loss of power from the critical engine.

Performance Criteria

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

- (a) explain the importance of reducing drag and banking properly towards the operative engine for best performance;
- (b) explain the importance of establishing and maintaining recommended airspeed;
- (c) explain the importance of maintaining proper pitch and bank attitudes, coordination of controls and use of trim;
- (d) explain the meaning of "critical engine";
- (e) explain the factors affecting V_{MC} ;
- (f) explain V_{SSE} ; and
- (g) explain the one engine inoperative performance available based on the following configurations:
 - (i) extension of landing gear;
 - (ii) extension of flaps;
 - (iii) extension of both landing gear and flaps;
 - (iv) windmilling propeller on the inoperative engine.
- (h) explain the configuration, airspeed and flight profile that the aeroplane must be in to successfully complete a one-engine inoperative overshoot with the aeroplane to be used for the test.

D. Weight and Balance, Loading (Ground Item)

Aim

To determine that the candidate can correctly complete weight and balance calculations for the aeroplane to be used for the flight test.

Description

The candidate is expected to complete accurate computations for an assigned practical load requirement that addresses all or most of the passenger and baggage stations, using actual weights and approved weight and balance data applicable to the aeroplane to be used for the test, including take-off weight, landing weight and the zero fuel weight. If a loading graph or computer is available with the aeroplane, it may be utilized.

Knowledge of weight and balance graphs and envelopes, and the effect of various center of gravity locations on aeroplane flight characteristics will be demonstrated. The candidate is expected to demonstrate a practical knowledge of how to correct a situation in which the center of gravity is out of limits or in which the gross weight has been exceeded.

Performance Criteria

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

- (j) determine if the take-off, landing and zero fuel weights as well as center of gravity locations in each case are within permissible limits with the assigned load;
- (k) demonstrate practical knowledge of how to correct a situation in which the center of gravity location is out of limits and/or a weight limit is exceeded; and
- (l) explain the effect of various center of gravity locations on aeroplane flight characteristics.

E. Pre-Flight Inspection (Air Item)

Aim

To determine that the candidate can systematically complete internal and external checks, in accordance with the POH/AFM, to ensure that the aeroplane is ready for the intended flight. The candidate will also demonstrate knowledge of how to deal with irregularities, if found.

Description

The candidate is expected to determine that the aeroplane is ready for the intended flight. All required equipment and documents will be located and, as far as can be determined by pre-flight inspection, the aeroplane will be confirmed to be airworthy. Visual checks for fuel quantity, proper grade of fuel, fuel contamination and oil levels will be carried out in accordance with the POH/AFM. If, due to aircraft design, the POH/AFM does not prescribe a visual check of fuel levels, fuel chits, fuel logs or other credible procedures may be used to confirm the amount of fuel actually on board.

After the candidate has completed the pre-flight inspection, questions relating to the flight test aircraft will be asked. The candidate should be able to explain what appropriate action would be taken if an unsatisfactory item were detected during the pre-flight inspection. The candidate should demonstrate knowledge of the consequences, if such items were undetected.

The candidate will conduct an oral passenger safety briefing. If the candidate omits the passenger safety briefing the examiner will ask the candidate to provide a briefing.

Performance Criteria

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

- (a) inspect the aeroplane, using an orderly procedure, including at least those items listed by the manufacturer and aeroplane owner/operator;
- (b) identify and verify switches, circuit breakers/fuses and spare fuses pertinent to day and night operations;
- (c) confirm that there is sufficient fuel and oil for the intended flight, contingencies and required reserves;
- (d) verify that the aeroplane is in a condition for safe flight;
- (e) describe the appropriate action to take for any unsatisfactory item, detected or described by the examiner;
- (f) identify and verify the location and security of baggage and required equipment;
- (g) organize and arrange flight material and equipment in a manner that makes them readily available;
- (h) perform an effective passenger safety briefing, including:
 - (i) door operation and security;
 - (ii) use of seat belts and shoulder harnesses;
 - (iii) the location and use of emergency exits, emergency locator transmitter, fire extinguisher;
 - (iv) smoking limitations;
 - (v) action to take in the event of an emergency landing;
 - (vi) passenger considerations for aircraft evacuation;
 - (vii) items specific to the aeroplane type being used;
 - (viii) other items for use in an emergency.

F. Engine Starting, Run-up and Use of Checklists

Aim

To determine that the candidate can complete the engine start, warm-up, run-up and system checks in accordance with the POH/AFM to assure readiness for flight.

Description

The candidate is expected to use the checklists provided by the aircraft manufacturer or owner/operator and use the recommended procedures for engine starting, warm-up, run-up and aeroplane systems checks to determine that the aeroplane is airworthy and ready for flight.

The candidate is expected to demonstrate practical knowledge of the elements related to recommended engine starting procedures, including the use of external power source, starting under various atmospheric conditions and the effects of using incorrect starting procedures.

The candidate is expected to demonstrate practical knowledge and take appropriate action with respect to unsatisfactory conditions encountered or specified by the examiner.

Performance Criteria

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

- (a) demonstrate an awareness of other persons and property before and during engine start;
- (b) use the appropriate checklist provided by the manufacturer or aeroplane owner/operator;
- (c) demonstrate knowledge of the effects of incorrect starting procedures;
- (d) demonstrate knowledge of recommended starting procedures;
- (e) accomplish recommended starting procedures;
- (f) conduct run-up checks over a clean and suitable maneuvering area;
- (g) accurately complete the engine and aeroplane system checks;
- (h) check flight controls for freedom of operation and correct movement;
- (i) take appropriate action with respect to actual unsatisfactory conditions;
- (j) demonstrate practical knowledge of how to deal with unsatisfactory conditions specified by the examiner; and
- (k) determine that any radio navigation aids to be used during the flight test are serviceable.

Note: Failure to use the appropriate checklist will constitute failure of this item.

EX. 2 - ANCILLARY CONTROLS/OPERATION OF AIRCRAFT SYSTEMS

Aim

To determine that the candidate can demonstrate practical knowledge of selected systems, and operate aircraft systems in accordance with the POH/AFM.

Description

The candidate is expected to demonstrate a practical knowledge of the operation of systems installed in the aeroplane being used for the flight test and operate the aeroplane systems in accordance with the POH/AFM.

Performance Criteria

Assessment will be based on the candidate's competence to operate aeroplane systems in accordance with the POH/AFM as applicable to the installations in the aircraft, and explain the operation of any three (3) of the following systems, as specified by the examiner:

- (a) primary flight controls and trim system
- (b) carburetor heat or alternate air
- (c) cowl flaps
- (d) mixture
- (e) propeller
- (f) fuel and oil systems
- (g) fuel injection system
- (h) turbo-charger
- (i) hydraulic system
- (j) electrical system
- (k) flaps
- (l) landing gear
- (m) brakes
- (n) avionics suite
- (o) auto-pilot
- (p) propeller synchrophaser
- (q) pitot-static system, vacuum/pressure system and associated flight instruments
- (r) heater and environmental systems
- (s) de-icing and anti-icing systems
- (t) any other system or ancillary control specific to the aeroplane used for the test.

EX. 3 - TAXIING

Aim

To determine that the candidate can manoeuvre the aeroplane safely on the ground and avoid unnecessary interference with the movement of other traffic.

Description

The candidate is expected to taxi the aircraft to and from the runway in use and as otherwise required during the test. If traffic permits, the candidate will taxi along taxiway centerlines where they exist.

While taxiing, the candidate is expected to confirm the proper functioning of the flight instruments. Should the candidate omit flight instrument checks, the examiner will ask the candidate to complete these checks prior to taking off.

Performance Criteria

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

- (a) perform a brake check;
- (b) use power controls, flight controls and brakes appropriately;
- (c) use appropriate taxiing speeds;
- (d) safely manoeuvre the aeroplane, considering other traffic on aprons and manoeuvring areas;
- (e) adhere to local directives, procedures and Air Traffic Services (ATS) clearances and instructions;
- (f) identify and correctly interpret aerodrome taxiway and runway signs, markings and lighting;
- (g) confirm the proper functioning of flight instruments;
- (h) after landing, clear the runway/landing area and taxi to a suitable parking/refueling area; and
- (i) park the aeroplane correctly and appropriately, considering the safety of nearby persons or property.

EX. 4 - TAKEOFF, CIRCUIT AND LANDING

A. Takeoff

Aim

To determine that the candidate can take off safely using the correct technique and procedure for the actual wind conditions, runway surface and length, and can assess the possibility of further conditions such as wind shear and wake turbulence.

Description

The candidate is expected to demonstrate a normal takeoff. If possible, the takeoff should be completed under crosswind conditions. Prior to taking off, in the interest of better cockpit co-ordination, the candidate, who is role-playing as a PIC, will complete a crew briefing on the procedures and speeds during takeoff or initial climb and to be used in the event of an actual engine failure.

Note: *The candidate must be able to explain the operational necessity for variation from recommended speeds, e.g., gusty or crosswind conditions.*

Performance Criteria

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

- (a) perform an effective passenger safety review;
- (b) complete appropriate pre-takeoff checklists;
- (c) position the flight controls and configure the aeroplane as recommended for existing conditions;
- (d) clear the area, taxi into the take-off position and align the aeroplane on the runway centerline;
- (e) advance the throttles smoothly to take-off power;
- (f) confirm that take-off power has been achieved;
- (g) maintain smooth control along the runway centerline throughout the take-off run;
- (h) rotate at the recommended airspeed;
- (i) accelerate to and maintain the recommended climb speed (+10/-5 knots);
- (j) retract the landing gear after a positive rate of climb is established or in accordance with the POH;
- (k) retract flaps at a safe height, if applicable;
- (l) maintain take-off power to a safe manoeuvring height, then set climb power ($\pm 0.5''$ MP, ± 50 RPM);
- (m) synchronize propellers;
- (n) eliminate drift and track along the runway centerline and extended centerline;
- (o) comply with noise abatement procedures, where applicable; and
- (p) complete appropriate after-takeoff checks.

B. Circuit

Aim

To determine that the candidate can operate the aeroplane in the vicinity of an aerodrome in a safe manner and with a degree of accuracy.

Description

The candidate is expected to demonstrate correct circuit procedures, including departure and joining procedures for the aerodrome(s) being used.

The candidate will demonstrate competence to comply with ATF/MF procedures and ATS clearances or instructions, while maintaining separation from other aircraft.

Performance Criteria

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

- (a) comply with actual ATS clearances or instructions;
- (b) comply with circuit entry and departure procedures;
- (c) comply with established circuit patterns;
- (d) fly an accurate circuit maintaining correct position and separation from other aircraft;
- (e) correct for wind drift to maintain proper ground track;
- (f) remain oriented with the runway/landing area in use;
- (g) maintain circuit altitude (± 100 feet) and a declared and appropriate airspeed (± 10 knots);
- (h) complete appropriate checks; and
- (i) comply with other procedures that may be in effect at the time.

Note: The accuracy of lateral positioning on the runway during takeoffs and landings will be assessed in accordance with the following criteria:

- (i) 4 - The fuselage remains over the centerline of the runway/landing surface;
- (ii) 3 - The wing remains over the centerline of the runway/landing surface;
- (iii) 2 - The aeroplane is at or drifts to a position where the centerline of the runway/landing surface is beyond the wing tip;
- (iv) 1 - The aeroplane's longitudinal axis is at or drifts to more than halfway from the centerline of the runway/landing surface towards the edge of the pavement/prepared surface.

C. Approach and Landing

Aim

To determine that the candidate can select a suitable touchdown point, fly a stabilized approach and land safely using the correct procedure and technique for the actual wind conditions, runway surface and length, and can assess the possibility of conditions such as wind shear and wake turbulence.

Description

The candidate is expected to demonstrate a stable approach and landing to an appropriate runway. If possible, the landing should be completed under crosswind conditions.

The assessment of approaches and landings will be based on the candidate's competence to select the proper approach profile for the actual conditions.

Note: *The candidate must be able to explain the necessity for any variation from recommended speeds, e.g., gusty or crosswind conditions.*

Performance Criteria

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

- (a) perform an effective passenger safety review;
- (b) complete appropriate pre-landing checks;
- (c) consider the wind conditions, landing surface and obstructions;
- (d) select a suitable touchdown point;
- (e) establish the recommended approach and landing configuration;
- (f) maintain runway centerline on final;
- (g) maintain a stabilized approach in accordance with the stabilized approach – VFR (Generic Description) criteria (+10/-5 knots);
- (h) maintain crosswind correction and directional control throughout the approach and landing roll;
- (i) make smooth, timely and correct control application during the flare and touchdown;
- (j) touch down in the attitude recommended for the type;
- (k) touch down smoothly at a minimum safe airspeed for existing conditions, at a specified touchdown point (+300 feet/ –100feet);
- (l) touch down with the longitudinal axis aligned with and over the runway centerline/landing path;
- (m) control nose wheel contact with the runway;
- (n) apply brakes, as required, without excessive lockup or skidding; and
- (o) complete appropriate checks.

EX. 5 - CRUISING FLIGHT

Aim

To determine that the candidate can establish the aeroplane in cruising flight at the pre-planned power settings in accordance with the POH/AFM, as specified by the candidate in Item 1B – Performance and Limitations.

Description

The candidate is expected to establish the aeroplane in cruising flight at the pre-planned power settings in accordance with the performance charts in the POH/AFM, placards displayed in the aeroplane or any other means authorized by the manufacturer.

Performance Criteria

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

- (a) maintain assigned heading(s) (± 10 degrees) and altitude(s) (± 100 feet);
- (b) set the throttles, propeller and mixture controls at the pre-planned power setting, as recommended by the POH/AFM;
- (c) synchronize propellers;
- (d) apply any additional measures recommended by the manufacturer with respect to aircraft configuration or other considerations;
- (e) confirm cruise performance and demonstrate good decision-making to deal with the consequences of variances from the expected performance (ETA revision, fuel requirement); and
- (f) complete appropriate checks.

EX. 6 - ENGINE FAILURE (CRUISE FLIGHT) AND MANOEUVRING WITH ONE ENGINE INOPERATIVE

Aim

To determine that the candidate can maintain control of the aeroplane after an engine failure during cruising flight and manoeuvre the aeroplane with one engine inoperative.

Description

At an operationally safe altitude or the manufacturer's recommended minimum height, whichever is higher, the examiner will simulate the failure of an engine during straight and level flight or during a medium level turn. If the failure occurs during a turn, the candidate will be expected to continue the turn towards the assigned heading, immediately after gaining control and completing the emergency drill memory items for the aeroplane.

The candidate is expected to control the aeroplane, identify the failed engine, perform the cause checks, simulate feathering the propeller and simulate shutting down the failed engine in accordance with the appropriate checklist. The candidate will be asked to turn toward and away from the inoperative engine to specific headings (using appropriate angles of bank, not to exceed 30°), climb and descend to assigned altitudes and maintain straight and level flight.

The candidate will demonstrate good decision-making to deal with the consequences of such a failure during cruising flight.

A - Aeroplane Control

Performance Criteria

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

- (a) control the aeroplane;
- (b) maintain directional control and maintain an assigned heading or continue the turn to an assigned heading (± 20 degrees), using angles of bank not exceeding 30 degrees, immediately after gaining control of the aeroplane;
- (c) set the power controls, confirm cruise configuration (gear and flaps up), and identify and verify the inoperative engine;
- (d) establish a bank toward the operating engine, as recommended for best performance;
- (e) take appropriate action to restore power; and then
- (f) simulate the action required to feather the propeller and shut down the failed engine;
- (g) trim the aeroplane as required;
- (h) maintain recommended airspeeds (± 10 knots); and
- (i) maintain assigned altitudes, if the aeroplane is capable (± 100 feet).

B – Cockpit Checks

Performance Criteria

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

- (a) complete engine failure vital action checks from memory;
- (b) attempt to determine the possible cause of the (simulated) engine failure;
- (c) complete all actions in accordance with the emergency checklist (Engine Failure in Flight);
- (d) determine the feasibility of restarting the affected engine, and if feasible, follow the appropriate restart procedures; if not,
- (e) complete shut-down checks and other necessary checks in accordance with the appropriate emergency checklist(s);
- (f) monitor the operating engine and take appropriate action to keep the operating engine parameters within limitations; and
- (g) demonstrate good decision-making to deal with the consequences of the failure.

C – Single-engine Manoeuvring

Performance Criteria

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

- (a) use appropriate pitch and bank attitudes;
- (b) properly use controls and trim while climbing and descending and turning to assigned headings.

Ex. 7 - MANOEUVRING AT REDUCED AIRSPEED

Aim

To determine that the candidate can demonstrate good energy management skills (power/drag) by maintaining safe flight control in all configurations while manoeuvring at **speeds in the final approach speed range**.

Note: This item is NOT “Slow Flight”.

Description

At an operationally safe altitude or the manufacturer’s recommended minimum height, whichever is higher, the candidate is expected to stabilize the aeroplane at **1.3 V_{SO} KIAS** or **V_{MC}+10** knots, whichever is greater. The examiner will then ask the candidate to extend the gear and landing flap deflection and to manoeuvre the aircraft while maintaining this reduced airspeed.

In colder temperatures, good airmanship may dictate the extension of initial approach flap to a maximum of one-half (½) of full deflection to reduce adverse effects on the engines while slowing to and stabilizing at the required speed.

Performance Criteria

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

- (a) demonstrate good power management;
- (b) use sufficient rudder for coordinated flight throughout the manoeuvre;
- (c) maintain the selected airspeed (+10/-5 knots);
- (d) use appropriate bank angles while manoeuvring;
- (e) maintain specified heading(s) during straight flight (±10 degrees); and
- (f) maintain the specified altitude (±100 feet).

NOTE: This exercise is to be conducted in level flight. There is no requirement to climb or descend at the target airspeed.

EX. 8A - STALL

Aim

To determine that the candidate can recognize and safely recover smoothly and correctly from an actual stall in a clean configuration by reducing the angle of attack and returning to normal flight.

Description

At an operationally safe altitude that would allow recovery at or above 2,000 feet AGL or the minimum height recommended by the manufacturer, whichever is higher, a stall will be entered in a clean configuration from straight and level flight, with the power set at or near idle on all engines. The candidate is expected to recognize, enter and recover smoothly by reducing the angle of attack to break an actual stall and return to normal flight.

Note: *In cases where the POH/AFM states that intentional stalls should be avoided or are prohibited, the candidate will be expected to recover at the first indication of an imminent stall.*

Performance Criteria

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

- (a) complete appropriate safety precautions before approaching the stall;
- (b) establish the specified configuration;
- (c) transition smoothly to an attitude that will induce a stall;
- (d) **recognize and announce** the onset of the stall by identifying the stall warning, the first aerodynamic buffeting or decay of control effectiveness;
- (e) enter a stall;
- (f) smoothly recover using control applications in the correct sequence by promptly reducing the angle of attack to break the stall and leveling the wings;
- (g) avoid a secondary stall and add power as required to minimize the loss of altitude;
- (h) establish an attitude to return to the altitude, heading and airspeed specified by the examiner.

EX. 8B – APPROACH TO STALL

Aim

To determine that the candidate can recognize and safely recover smoothly and correctly from an approach to a stall in a landing configuration by reducing the angle of attack and returning to normal flight.

Description

At an operationally safe altitude that would allow recovery at or above 2,000 feet AGL or the minimum height recommended by the manufacturer, whichever is higher, a stall will be approached in the landing configuration from straight and level flight, with the power set at or near idle on all engines. The candidate is expected to recognize an imminent stall **at the first indication, announce “STALL”** and recover smoothly by reducing the angle of attack and accelerating to minimize the loss of altitude.

Performance Criteria

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

- (a) complete appropriate safety precautions before approaching the stall;
- (b) establish the aeroplane in a landing configuration with landing gear extended and full flap deflection;
- (c) transition smoothly to an attitude that will induce a stall;
- (d) **recognize and announce “STALL”** at the first indication of an imminent stall by identifying the first indication (warning horn or light, buffet or decaying control effectiveness);
- (e) avoid entering a stall;
- (f) promptly and smoothly recover at the first indication using control application in the proper sequence by reducing the angle of attack;
- (g) maintain directional control;
- (h) avoid a secondary stall and add power as required to minimize the loss of altitude;
- (i) retract flaps as recommended;
- (j) retract the landing gear after a positive rate of climb is established, or as recommended by the manufacturer;
- (k) return to the altitude, heading and airspeed specified by the examiner..

EX. 9 - STEEP TURN

Aim

To determine that the candidate can perform a level and coordinated steep turn.

Description

At an operationally safe altitude, the candidate is expected to execute a steep turn through 180°, with an angle of bank of 45°, then without pause, reverse the turn to roll out on the original heading. The examiner will specify the selected altitude, initial heading and airspeed for the manoeuvre prior to entering the turn.

Performance Criteria

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

- (a) maintain an effective lookout;
- (b) roll into and out of turns, using smooth and coordinated pitch, bank and power control;
- (c) maintain the specified altitude (± 100 feet) and assigned airspeed (± 10 knots);
- (d) maintain the bank angle of 45° ($\pm 5^\circ$) while in smooth stabilized flight;
- (e) after 180° of turn, reverse the direction of turn and repeat the manoeuvre in the opposite direction;
- (f) roll out of the turn at the reversal heading and the entry heading ($\pm 10^\circ$); and
- (g) divide attention appropriately between outside visual references and instrument indications.

EX. 10 - ENGINE FAILURE DURING OVERSHOOT

Aim

To determine that the candidate can maintain safe control of the aeroplane following an engine failure during a takeoff or an overshoot and carry out the appropriate emergency actions.

Description

At an operationally safe altitude that would allow recovery at or above 2,000 feet AGL or the minimum height recommended by the manufacturer, whichever is higher, the candidate is expected to establish the aircraft in a final approach descent to a simulated landing in a landing configuration at the recommended final approach speed.

Once the approach descent is stabilized, the examiner will call for an overshoot and simulate failure of an engine by bringing one throttle/power lever to idle/flight idle immediately after the power has been increased to a take-off power setting and while the candidate retracts the landing gear or flaps.

Using control application in the proper sequence, the candidate is expected to control the aeroplane, perform the vital actions and establish the best single-engine rate of climb speed to achieve a safe go-around.

The examiner will establish zero-thrust on the simulated inoperative engine immediately after the candidate has simulated feathering the propeller.

A - Aeroplane Control

Performance Criteria

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

- (a) promptly recognize that one engine has lost power;
- (b) control 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) bank toward the operating engine, as recommended for best performance;
- (f) maintain directional control within ± 20 degrees of assigned heading.
- (g) establish a positive rate of climb, if the aeroplane is capable;
- (h) accelerate to and maintain one engine inoperative best angle-of-climb speed (V_{XSE}) (+10/-5 knots), if required for obstacle clearance, or accelerate to and maintain one engine inoperative best rate-of-climb speed (V_{YSE}) (+10/-5 knots);
- (i) trim the aeroplane, as required; and
- (j) continue the overshoot towards a specified altitude;

B – Cockpit Checks

Performance Criteria

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

- (a) locate the necessary controls and switches to carry out and complete the emergency procedures in accordance with the approved emergency procedures checklist (Engine Failure during Takeoff or Overshoot):
 - (i) complete prescribed engine failure vital action checks from memory;
 - (ii) complete the emergency drill, in accordance with the emergency checklist;
 - (iii) complete engine shutdown checks and other necessary checks in accordance with the appropriate emergency checklist(s).
- (b) monitor the operating engine and take appropriate action to keep the operating engine parameters within limitations.

EX. 11A - PRECAUTIONARY ENGINE SHUTDOWN

Aim

To determine that the candidate can confirm the need for a precautionary engine shutdown, complete the procedure simulating an intentional engine shutdown.

Description

The candidate is expected to respond to a scenario (i.e.: major oil leak or mechanical problem) presented by the examiner that requires a precautionary engine shutdown. The candidate will then simulate the shutting down of an engine and complete the appropriate checklist(s). The examiner will establish zero-thrust on the simulated inoperative engine after the candidate has simulated feathering the propeller.

The candidate will then describe the subsequent course of action to be taken. (e.g. find nearest appropriate airport, advise ATC, etc.)

Performance Criteria

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

- (a) analyze the situation as presented by the examiner;
- (b) simulate the procedure for shutting down the engine by completing all necessary checks in accordance with the appropriate emergency checklist (Emergency Engine Shutdown);
- (c) maintain altitude (± 100 feet);
- (d) maintain heading (± 20 degrees);
- (e) maintain the recommended airspeed ($+10/-5$ knots);
- (f) demonstrate an understanding of the possible cascade of system failures resulting from an engine shutdown;
- (g) determine whether or not the engine should be re-started and explain the reason for the decision; and
- (h) demonstrate good decision-making when dealing with the consequences of the failure.

EX. 11B - ARRIVAL, APPROACH AND LANDING - ONE ENGINE INOPERATIVE

Aim

To determine that the candidate can safely fly an arrival procedure and an approach and land with one engine simulated as inoperative.

Description

The candidate is expected to carry out a safe arrival procedure and landing in accordance with the recommended procedures in the POH/AFM for "Single-Engine Approach and Landing".

Performance Criteria

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

- (a) fly an appropriate circuit with regard for other traffic;
- (b) complete the arrival, approach and landing;
- (c) complete the appropriate checklist(s);
- (d) maintain a stabilized approach in accordance with the Stabilized approach – VFR (Generic Description) criteria ($+10/-5$ knots);
- (e) land in the normal touchdown zone; and
- (f) touch down with the longitudinal axis aligned with and over the runway centerline/landing path.

EX. 12 - EMERGENCY PROCEDURES/MALFUNCTIONS

Aim

To determine that the candidate can react promptly and correctly to emergencies and system or equipment malfunctions.

Description

The examiner will assess the candidate's competency and practical knowledge of emergency procedures or abnormal conditions. Simulated emergencies or malfunctions may be carried out during any portion of the flight test. Vital action checks are expected to be carried out by memory and followed up with the applicable emergency checklist.

Performance Criteria

Assessment will be based on the candidate's competence to analyze simulated or real situations, take appropriate action and follow the appropriate emergency checklists or procedures for any three (3) of the following emergencies/malfunctions applicable to the aeroplane type, as specified by the examiner:

- (a) partial power loss
- (b) rough engine operation or overheat
- (c) turbocharger failure
- (d) propeller over-speed
- (e) engine fire
- (f) loss of oil pressure
- (g) fuel starvation
- (h) boost pump failure
- (i) crossfeed
- (j) electrical fire
- (k) vacuum system failure
- (l) electrical malfunctions
- (m) landing gear malfunctions
- (n) brake failure or seizure
- (o) flap failure
- (p) heater overheat
- (q) door opening in flight
- (r) emergency descent
- (s) any other emergency, unique to the aeroplane flown

Note: Although it is recommended that one of these emergencies be tested in flight, it is the sole responsibility of the examiner to determine if aeroplane performance, weather conditions and other factors permit the safe conduct of this item in flight or on the ground with engines running. Some of the items may be tested on the ground with engines shut down. The malfunctions chosen should be systems that were not discussed under Ex 2 Ancillary Controls.

RECOMMENDATION FOR FLIGHT TEST MULTI-ENGINE CLASS RATING

Candidate's Name	Licence No.
Multi-engine Flight Time	

I, the undersigned, certify that:

- (a) the candidate received training in accordance with the Instructor Guide – Multi-Engine Class Rating (TP 11575);
- (b) the above noted candidate has successfully completed a Pre-Test Evaluation of all flight test items;
- (c) the candidate is considered to have reached a sufficient level of competency to complete the flight test required for the issuance of a Multi-Engine Class Rating and I hereby recommend the candidate for the flight test; and
- (d) I am qualified through the privileges of my pilot licence and experience on aeroplane class and type to make this recommendation.

Flight Training Unit:	FTU Code No.:
Person Recommending:	Licence No.:
Signature:	Date:

RECOMMENDATION FOR PARTIAL FLIGHT TEST MULTI-ENGINE CLASS RATING

Candidate's Name	Licence No.
Multi-engine Flight Time	

I, the undersigned, certify that:

- (a) I have conducted a review of flight test item(s) _____
and have completed additional training with the above named candidate;
- (b) I consider the candidate to have reached a sufficient level of competency to successfully complete
the flight test for the issuance of the Multi-Engine Class Rating; and
- (c) I hereby recommend the candidate for the partial flight test.

Flight Training Unit:	FTU Code No.:
Person Recommending:	Licence No.:
Signature:	Date: