

# Demonstration of Competency

## Type Rating

### Single Pilot Certificated - Aeroplane

This guide sets out the procedures, techniques and marking criteria for the demonstration of skill required for the issue of a New Zealand type rating in a single pilot aeroplane.

The guide describes an acceptable means of compliance for use in conjunction with the syllabus prescribed in the appropriate CAA Advisory Circular. Flight instructors are expected to use this guide when conducting the “Type Competency Demonstration”.

Flight instructors conducting type conversion training and the candidate should be familiar with this guide and refer to the competency standards during training.

#### **Change Notice**

Competency demonstration assessment criteria altered to align with those used in Flight Test Standards Guides (FTSG) for licence or rating issue. (Page 5)

Minor editorial changes.

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## General

### Eligibility

In order to be eligible for the Type Competency Demonstration for the issue of a Type Rating - Aeroplane the candidate shall provide:

- Proof of identification in the form of a licence or other official document bearing the signature and photograph of the candidate;
- A valid New Zealand Pilot Licence, or in the case of an RPL or PPL issue flight test a current medical certificate;
- A copy of their training records showing competence certified by a flight instructor in all exercises applicable to the aircraft type; and
- In the case of the first turbine powered aircraft, a Basic Turbine Knowledge examination credit (Subject 64) with the KDR's signed off.

### Conduct of the type competency demonstration

An appropriately type rated and qualified flight instructor shall only conduct the type competency demonstration when the weather will permit safe completion of the required exercises, the aeroplane is airworthy, the training records are correctly certified and the candidate's documents, as required by the New Zealand Civil Aviation Rules, are valid.

### Briefing

The flight instructor assessing type competency is required to brief the candidate on the following details:

- The sequence of exercises to be covered. There is no need for the candidate to memorise the sequence, as the instructor will give instructions for each exercise.
- If in doubt -- ask! Candidates who do not clearly understand what they are being asked to do should feel free to ask.
- Who is pilot-in-command? The pilot-in-command is the flight instructor.
- 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. A visual check is recommended to verify that the exchange has occurred.
- Ground references. Where are the intended touchdown zones and specific touchdown points?
- Method of simulating emergencies. What method will be used? Verbal? Simulated zero thrust setting? Note: Closing fuel valves or turning off magneto switches shall not be used.
- The role of the instructor in the event of an actual emergency. Who will fly the aircraft? What assistance is expected from the non-flying pilot?
- Use of checklists. What type of checklists will be used and when?

### Repeated Exercise

An exercise or manoeuvre shall not be repeated unless one of the following conditions applies:

**Incomplete or outcome uncertain:** If the flight instructor determines that an exercise or manoeuvre is incomplete, or the outcome uncertain, the flight instructor may require the candidate to repeat all or portions of an exercise or manoeuvre. When practical, the remaining exercises or manoeuvres should be completed before repeating the questionable one.

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

**Misunderstood requests:** Legitimate instances where the candidate did not understand the flight instructor's request to perform a specific manoeuvre.

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

**This provision has been made in the interest of fairness and does not mean that instruction, practice, or the repeating of an unacceptable exercise or manoeuvre is permitted during the type competency demonstration.**

### **Incomplete demonstration**

If the type competency demonstration can not be completed owing to circumstances beyond the candidate's control, the subsequent demonstration shall include those flight manoeuvres required to demonstrate the exercises not completed on the original flight.

### **Demonstration of competence not achieved**

If competence in any exercise during the type competency demonstration is not achieved then the candidate is deemed not yet competent for the issue of the type rating.

The instructor shall annotate the reverse of the training record with the further training believed to be required.

The instructor shall stop the demonstration and assess the candidate not yet competent if the candidate:

- Displays gross incompetence or dangerous flying; or
- Fails to use proper visual scanning techniques to clear the area before and while performing visual manoeuvres.

### **Type rating issue**

The instructor shall issue the type rating by endorsing the pilot's logbook when;

- The RPL or PPL (A) issue flight test is successfully completed; or
- The candidate has completed a type competency demonstration.

**Note:** The candidate should be advised that the aircraft type will be endorsed on the pilot's licence by submitting to CAA; application form CAA 24061/04, the actual licence, a copy of the type rating training and competency demonstration record (CAA 24061/13) and the fee.

### **Records**

**In all cases of a type rating issue (other than at the time of a licence issue flight test);**

- The instructor shall submit to CAA a copy of the candidate's training and competency demonstration record (CAA 24061/13 available from the CAA website); and
- In the case of the first turbine powered type, a copy of the candidate's Basic Turbine Knowledge examination credit (with KDR's appropriately addressed).

## Assessment of Performance

The "Performance Criteria" section of each exercise prescribes the marking criteria. These criteria assume no unusual circumstances. Where variances exist between the owner/operator's published Standard Operating Procedures (SOP) and the manufacturer's recommendations, the candidate should follow the SOP and must be able to explain the logic for variances.

Consideration shall 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, demonstrations should be conducted under normal conditions whenever possible.

## Marking Scale

<p><b>Ideal</b></p> <p><b>Score 1</b></p>	<p>Performance is without errors under existing conditions.</p> <p>Aircraft handling is smooth and accurate.</p> <p>Technical skills and knowledge meet a higher than expected level of competency.</p> <p>Behaviour indicates continuous and highly accurate situational awareness.</p> <p>Flight management skills are excellent.</p> <p>Safety of flight is assured.</p>
<p><b>Competent</b></p> <p><b>Score 2</b></p>	<p>Performance includes minor errors that are corrected promptly.</p> <p>Aircraft handling is smooth and within specified tolerances.</p> <p>Technical skills and knowledge meet the expected level of competency.</p> <p>Behaviour indicates that situational awareness has been maintained.</p> <p>Flight management skills are effective.</p> <p>Safety of flight is maintained.</p>
<p><b>Not yet competent</b> (requires further training)</p> <p><b>Score 3</b></p>	<p>Performance includes significant errors that are <u>not</u> recognised or are <u>not</u> corrected promptly.</p> <p>Aircraft handling is rough or includes uncorrected or excessive deviations from specified tolerances.</p> <p>Technical skills and knowledge <u>do not</u> meet an acceptable level of competency.</p> <p>Behaviour indicates lapses in situational awareness that are <u>not</u> identified or corrected.</p> <p>Flight management skills are ineffective.</p> <p>Safety of flight is jeopardised.</p>

# DEMONSTRATION OF COMPETENCY REQUIREMENTS

## OPERATION OF AIRCRAFT SYSTEMS

### Aim

To determine that the candidate can operate aircraft systems competently in accordance with the POH/AFM.

### Description

The candidate will demonstrate practical knowledge of the operation of four of the systems installed on the aeroplane.

### *Performance Criteria*

The candidate will operate the aeroplane systems in accordance with the POH/AFM and explain four of the following systems:

- **Primary flight controls and trims:** Layout of various components and management, safety devices, precautions to be observed in operation, fault finding and layout of bilge system.
- **Carburettor heat and/or alternate air:** Layout of various components and management, precautions to be observed in operation, fault finding.
- **Cowl flaps:** Operating procedure and precautions to be observed in operation.
- **Mixture:** Principle of operation, location and purpose of various components, operating procedure, precautions to be observed in operation, fault finding
- **Propeller:** Principle of operation, location and purpose of various components, operating procedure, feathering and un-feathering procedure, safety devices, fault finding.
- **Fuel:** Grade and specification of fuel, system layout and management, dumping facilities, fuel tank location, capacities, unusable fuel, consumption rates and safety devices, location and purpose of various components, emergency operation, precautions to be observed in operation, fault finding.
- **Oil:** Grade and specification of engine oil, system layout and management, tank capacities and location, safety devices, operating pressures, functional checks, emergency operation, location and purpose of various components, precautions to be observed in operation, fault finding.
- **Hydraulic systems:** Grade and specification of fluid, system layout and management, reservoir capacity and location, safety devices, operating pressures, functional checks, emergency operation, location and purpose of various components, precautions to be observed in operation, fault finding and remedial action to be taken in flight.
- **Pneumatic systems:** Layout and management, purpose and location of various components, operating pressures, emergency operation, functional checks, safety devices, precautions to be observed in operation, fault finding.
- **Electrical systems and associated instruments:** Layout and management, location and purpose of various components and circuits, functional checks, operating voltages, capacity and number of generators, inverters and batteries, safety devices, primary flight display (PFD), multi function display (MFD), precautions to be observed in operation, emergency operation, fault finding and remedial action to be taken in flight.
- **Flaps:** Layout and management, location and purpose of various components, functional checks, safety devices, precautions to be observed in operation, fault finding and remedial action to be taken in flight.
- **Landing gear:** Layout and management, location and purpose of various components, functional checks, safety devices, precautions to be observed in operation, fault finding and remedial action to be taken in flight.

- **Brakes:** Layout and management, location and purpose of various components, functional checks, safety devices, precautions to be observed in operation and remedial action to be taken in flight.
- **Avionics:** To include any flight management system, attitude and heading reference system (AHRS), purpose and location of various components, precautions to be observed in operation, functional checks, safety devices, emergency operation, fault finding and remedial action to be taken in flight.
- **Auto-pilot:** Operating limitations, location and purpose of main components, operating procedure, safety devices, precautions to be observed in operation, fault finding and remedial action to be taken in flight.
- **Pitot-static system:** Layout and management, location and purpose of various components, safety devices, functional checks, emergency operations, fault finding and remedial action to be taken in flight.
- **Vacuum/pressure system and associated flight instruments:** To include air data computer (if applicable), layout and management, purpose and location of various components, precautions to be observed in operation, functional checks, safety devices, emergency operation, fault finding and remedial action to be taken in flight.
- **Heater and environmental systems:** Layout and management, location and purpose of various components, functional checks, precautions to be observed in operation, safety devices, fault finding.
- **De-icing and anti-icing systems:** Layout and management, purpose and location of various components, precautions to be observed in operation, safety devices, functional checks.
- **Fire extinguisher systems:** Layout and management, location and purpose of various components, fire warning devices, functional checks, action in event of fire, precautions to be taken in operation.
- **Pressurisation:** Layout and management, location and purpose of various components, functional checks, emergency operation, precautions to be observed in operation, safety devices, fault finding and remedial action to be taken in flight.
- **Oxygen systems:** Layout and management, location and purpose of various components, operating pressures, functional checks, emergency operation, safety devices, supply duration under various conditions, precautions to be observed in operation, fault finding and remedial action to be taken in flight.
- **Any other** ancillary controls fitted to the aeroplane

## PERFORMANCE AND LIMITATIONS

### **Aim**

To determine that the candidate has a practical knowledge of the elements related to performance and limitations for the aeroplane.

### **Description**

The candidate will be required to demonstrate practical use of charts, tables and appropriate data to determine performance, including (as applicable) take-off, climb, one engine inoperative, cruise, endurance and landing.

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

### ***Performance Criteria***

The candidate will state from memory (as applicable) the following essential speeds:

- Stall speed – landing configuration ( $V_{so}$ );
- One engine inoperative best rate of climb speed ( $V_{yse}$ );
- Manoeuvring speed ( $V_a$ );
- Minimum control speed ( $V_{mc}$ );
- Maximum landing gear extension speed ( $V_{le}$ );
- Maximum flap extension speed ( $V_{fe}$ );
- Maximum turbulence penetration speed

The candidate will calculate (as applicable) for the proposed flight:

- The accelerate–stop distance;
- The total take-off distance required to clear a 50 foot obstacle;
- Time and fuel required to climb to a specified altitude;
- The single-engine rate of climb;
- The available flight time with the fuel load and power settings proposed for the flight;
- The total landing distance required to clear a 50 foot obstacle.



## **WEIGHT AND BALANCE, LOADING**

### **Aim**

To determine that the candidate can competently complete weight and balance calculations for the aeroplane.

### **Description**

The candidate will be required to complete accurate computations for a practical load that addresses all or most of the passenger and baggage stations, using actual weights and weight and balance data applicable to the aeroplane, 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 utilised.

### ***Performance Criteria***

The candidate will, during the competency demonstration:

- Determine if the take-off, landing, and zero fuel weights as well as centres of gravity in each case are within permissible limits with the assigned load;
- Demonstrate a practical knowledge of how to correct a situation in which the centre of gravity is out of limits and/or a weight limit has been exceeded;
- Explain the effect of various centre of gravity locations on aeroplane flight characteristics;
- Demonstrate a practical knowledge of floor loading.

The candidate will demonstrate during training:

- All normal manoeuvres at MAUW (or as near to as possible); it is recommended that this training requirement is met by completing a short cross country flight with a landing at other than the departure aerodrome (i.e. operating the aircraft).
- Abnormal procedures at MAUW appropriate to the aircraft and in accordance with NZCAR's and the aircraft's flight manual; the use of correctly distributed and secured ballast is recommended.

## **DOCUMENTS AND AIRWORTHINESS**

### **Aim**

To determine that the candidate can competently assess the validity of the required documents to be carried on board and, from these documents, determine that the aircraft is airworthy and released for service.

### **Description**

The candidate shall determine the validity of all documents required to be carried on board the aeroplane and determine that required maintenance certification has been completed.

### ***Performance Criteria***

The candidate will:

- Determine that the documents required on board are valid;
- Determine the number of flying hours before the next service or maintenance task is due;
- Ensure that any conditions or limitations on the technical log can be complied with;
- Determine the impact of deferred defects on aeroplane operations for the proposed flight;
- Explain the process for dealing with aeroplane un-serviceability's discovered during a flight.

## **PRE-FLIGHT INSPECTION**

### **Aim**

To determine that the candidate can competently complete internal and external checks in accordance with the approved checklist to verify that the aeroplane is ready for the intended flight.

### **Description**

The candidate shall determine that the aeroplane is ready for the intended flight. All required equipment and documents shall be located and, so far as can be determined by pre-flight inspection, the aeroplane shall be confirmed to be airworthy. Visual checks for fuel quantity, proper grade of fuel, fuel contamination and oil level shall be carried out in accordance with the POH/AFM. If the aircraft design precludes a visual check, fuel chits, fuel logs or other credible procedures may be used to confirm the amount of fuel actually on board.

The candidate shall conduct an oral passenger safety briefing. Should the candidate omit the passenger safety briefing the instructor will ask the candidate to provide one (which will result in a maximum score of competent regardless of how well the briefing is executed).

### ***Performance Criteria***

The candidate will:

- Using an orderly procedure, inspect the aeroplane including at least those items listed by the manufacturer;
- Identify and verify switches, circuit breakers/fuses, and spare fuses pertinent to day and night operations;
- Confirm that there is sufficient fuel and oil for the intended flight;
- Verify that the aeroplane is in a condition for safe flight;
- Identify and verify the location and security of baggage and required equipment;
- Organise and arrange documents and equipment in a manner that makes the items readily available;
- Perform an effective passenger safety briefing which shall include:
  - the location and use of emergency exits, emergency locator transmitter, fire extinguisher;
  - smoking limitations;
  - use of seat belts;
  - action to take in the event of an emergency landing;
  - passenger considerations for aircraft evacuation;
  - items specific to the aeroplane type being used;
  - other items for use in an emergency.

## **ENGINE STARTING AND RUN-UP**

### **Aim**

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

### **Description**

The candidate shall 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 will demonstrate a 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 shall take appropriate action with respect to unsatisfactory conditions encountered or specified by the instructor.

### ***Performance Criteria***

The candidate will:

- Demonstrate knowledge of the effects of incorrect starting procedures;
- Use the appropriate checklist provided by the manufacturer or aeroplane owner/operator;
- Demonstrate knowledge of recommended starting procedures;
- Accomplish recommended starting procedures;
- Accurately complete the engine and aeroplane systems checks;
- Take appropriate action with respect to unsatisfactory conditions;

## **TAXIING**

### **Aim**

To determine that the candidate can competently manoeuvre the aeroplane on the ground.

### **Description**

Provided that traffic permits, the candidate shall taxi along taxiway centrelines where they exist. The candidate shall position the flight controls appropriately for wind conditions. During calm wind conditions the instructor will specify a wind speed and direction in order to test this ability.

While taxiing, the candidate will be expected to confirm the proper functioning of the flight instruments.

### ***Performance Criteria***

The candidate will:

- Perform a brake check (if applicable);
- Use flight controls and brakes correctly;
- Safely manoeuvre the aeroplane using appropriate taxiing speeds;
- Demonstrate a step taxi (if applicable and appropriate);
- Demonstrate sailing (if applicable and appropriate);
- Confirm the proper functioning of the flight instruments;
- After landing, clear the runway/landing area, complete after landing checks as appropriate and taxi to a suitable parking/refuelling area.

## TAKE-OFF

### Aim

To determine that the candidate can take off competently using the correct procedure and technique for the actual wind conditions, runway surface and length.

### Description

The candidate shall demonstrate at least two of the following take-off procedures:

- Normal
- Crosswind
- Short field
- Soft surface
- Rough water and/or
- Glassy water

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

### *Performance Criteria*

The candidate will:

- Complete appropriate checklists;
- Perform a take-off safety briefing;
- Clear the area, taxi into the take-off position, and align the aeroplane on the runway centreline;
- Advance the throttle(s) smoothly to take-off power;
- Confirm that take-off power has been achieved;
- Maintain the nose wheel within 10 feet of the centreline during the take-off roll;
- Rotate at the recommended airspeed (+/-5 knots);
- Accelerate to and maintain the recommended climb speed (+10/-5 knots);
- Retract the landing gear after a positive rate of climb is established (if applicable);
- Maintain take-off power to a safe manoeuvring altitude, then set climb power (+/-0.5" MAP, +/-50 RPM);
- Eliminate drift and track along the extended centreline;
- Comply with noise abatement procedures, where applicable;
- Complete appropriate checks.

## **INTENTIONAL ENGINE SHUTDOWN AND AIR START (Multi-engine only)**

### **Aim**

To determine that the candidate can confirm the need for an intentional engine shutdown, complete the engine securing procedure and air start the secured engine.

### **Description**

At an operationally safe height or the manufacturer's recommended minimum height, whichever is higher, the candidate will respond to a scenario presented by the instructor that requires an intentional engine shutdown. The candidate will then shut down and feather the appropriate engine (unless the POH/AFM advises against it) and complete the appropriate checklist(s).

The candidate will be asked to turn toward and away from the inoperative engine.

The instructor will require the candidate to restart the secured engine.

### ***Performance Criteria***

The candidate will:

- Analyse the situation as presented by the instructor;
- Shut down and feather the engine by completing all necessary checks in accordance with the appropriate emergency checklist;
- Maintain altitude within +/-100 feet of the assigned altitude, if the aeroplane is capable;
- Maintain heading within +/-20° initially then 10°;
- Maintain airspeed +10/-5 knots of the recommended airspeed.

### ***Performance Criteria – Decision Making***

The candidate will:

- Take and/or describe appropriate subsequent actions.

### ***Performance Criteria – Engine Out Manoeuvring***

The candidate will:

- Use appropriate bank angles while manoeuvring;
- Demonstrate proper power management;
- Maintain airspeed within +10/-5 knots of the selected airspeed;
- Maintain the specified altitude within +/-100 feet of the assigned altitude, if the aeroplane is capable.

### ***Performance Criteria – Air Start***

The candidate will:

- Restart the secured engine using the appropriate checklist;
- Maintain altitude within +/-100 feet of the assigned altitude, if the aeroplane is capable;
- Maintain heading within +/-10°;
- Maintain airspeed +10/-5 knots of the recommended airspeed.

## **ENGINE FAILURE (CRUISE FLIGHT)**

### **Aim**

To determine that the candidate can maintain control of the aeroplane after an engine failure during cruising flight.

### **Description**

At an operationally safe height or the manufacturer's recommended minimum height, whichever is higher, the instructor will simulate an engine failure during straight flight and/or during a medium turn. The candidate will be expected to control the aeroplane, carry out a forced landing; and in the case of a multi-engine aircraft, identify the failed engine, perform the cause checks, and simulate feathering the propeller and shutting down the failed engine in accordance with the checklist.

### ***Performance Criteria – Aeroplane Control***

The candidate will:

- Control the aeroplane;
- Recognise the simulated engine failure promptly;
- Maintain directional control within  $\pm 20^\circ$  initially of an assigned heading then  $\pm 10^\circ$ ;
- Set the power controls, confirm cruise configuration, and identify and verify the inoperative engine (if applicable);
- Establish a bank toward the operating engine, as necessary, for best performance (if applicable);
- Locate the necessary controls and switches to restore power; and then;
- Simulate the action required to feather the propeller and shut down the failed engine (if applicable);
- Maintain airspeed within  $\pm 10/-5$  knots of the recommended airspeeds;
- Maintain altitude within  $\pm 100$  feet of the assigned altitude, if the aeroplane is capable;
- In the case of single engine aircraft, carry out the recommended forced landing procedure;
- In the case of multi-engine aircraft, carry out a (simulated) single engine approach and landing at a suitable aerodrome.

### ***Performance Criteria – Cockpit Checks***

The candidate will:

- Complete engine failure vital action checks from memory;
- Attempt to determine the probable cause of the (simulated) engine failure;
- Complete other necessary checks in accordance with the appropriate emergency checklist(s);
- In the case of a multi-engine aeroplane, monitor the operating engine and take appropriate action to keep it within operating limitations.

### ***Performance Criteria – Decision Making***

The candidate will:

- Determine whether or not the engine should be re-started and explain the reason for the decision;
- Take and/or describe appropriate subsequent actions.



## **RECOVERY FROM AN APPROACH TO V<sub>mc</sub> (Multi-engine only).**

### **Aim**

To determine that the candidate can recognise and recover from the approach to V<sub>mc</sub>.

### **Description**

At an operationally safe height or the manufacturer's recommended minimum height, whichever is higher, the candidate will demonstrate an approach to V<sub>mc</sub> with one engine windmilling and recover by reducing power on the operating engine and reducing pitch attitude.

### ***Performance Criteria – V<sub>mc</sub> recognition and recovery***

The candidate will:

- Allow airspeed to decrease slowly while maintaining directional control;
- Maintain specified heading within +/-10°;
- Maintain the specified altitude within +/-100 feet;
- Recover as soon as directional control cannot be maintained (or stall onset, whichever occurs first).

## **ENGINE FAILURE DURING TAKE-OFF**

### **Aim**

To determine that the candidate can maintain control of the aeroplane following an engine failure during the take-off roll and carry out the appropriate emergency actions.

### **Description**

At an operationally safe speed the instructor will simulate an engine failure during the take-off and/or an emergency that dictates an aborted take-off as the most desirable option.

### ***Performance Criteria – Aeroplane Control***

The candidate will:

- Recognise the simulated engine failure promptly;
- Control the aeroplane;
- Close the throttle(s);
- Bring the aircraft to a stop, remaining on the runway.

### ***Performance Criteria – Cockpit Checks***

The candidate will:

- Complete vital action checks from memory;
- Complete engine shutdown checks (if appropriate) and other necessary checks in accordance with the appropriate emergency checklist(s).

### ***Performance Criteria – Decision Making***

The candidate will:

- Make an appropriate decision based on the nature of the simulated emergency;
- Take and/or describe appropriate subsequent actions.

## **ENGINE FAILURE AFTER TAKE-OFF**

### **Aim**

To determine that the candidate can maintain control of the aeroplane following an engine failure after take-off and carry out the appropriate emergency actions.

### **Description**

At an operationally safe height or the manufacturer's recommended minimum height, whichever is higher, the instructor will simulate an engine failure. The instructor will establish zero-thrust on the simulated inoperative engine (if applicable) after the candidate has simulated feathering the propeller.

### ***Performance Criteria – Aeroplane Control***

The candidate will:

- Recognise the simulated engine failure promptly;
- Control the aeroplane;
- Set the power controls, reduce drag, and identify and verify the inoperative engine (if applicable);
- Simulate feathering of the failed engine (if applicable);
- Establish speed at the one engine inoperative best rate-of-climb speed ( $V_{yse}$ )  $\pm 10/-5$  knots (if applicable);
- Establish a bank toward the operating engine, as necessary, for best performance (if applicable);
- Establish a positive rate of climb, if the multi-engine aeroplane is capable;
- Continue the overshoot towards a specified altitude (multi-engine only);
- In the case of a multi-engine aeroplane, maintain directional control within  $\pm 20^\circ$  initially then  $\pm 10^\circ$  of assigned heading;
- In the case of a single engine aeroplane, select a suitable landing area.

### ***Performance Criteria – Cockpit Checks***

The candidate will:

- Complete engine failure vital action checks from memory;
- Complete engine shutdown checks and other necessary checks in accordance with the appropriate emergency checklist(s);
- In the case of a multi-engine aeroplane, monitor the operating engine and take appropriate action to keep the operating engine parameters within limitations.

### ***Performance Criteria – Decision Making***

The candidate will:

- Take and/or describe appropriate subsequent actions.

## **CRUISING FLIGHT**

### **Aim**

To determine that the candidate can establish the aeroplane in cruising flight in accordance with the POH/AFM at the flight planned true airspeed.

### **Description**

The candidate will establish the aeroplane in cruise flight at the flight planned true airspeed in accordance with the performance charts in the POH/AFM, placards displayed in the aeroplane, or any other means authorised by the manufacturer.

### ***Performance Criteria***

The candidate will:

- Maintain assigned heading(s)  $\pm 10^\circ$  and altitude  $\pm 100$  feet;
- Achieve the specified true airspeed by setting the throttles, propeller and mixture controls for existing conditions as recommended by the POH/AFM;
- Apply any additional measures recommended by the manufacturer with respect to aircraft configuration or other considerations;
- Confirm cruise performance;
- Complete appropriate cruise checks.

## **STEEP TURN**

### **Aim**

To determine that the candidate can perform a level co-ordinated steep turn.

### **Description**

At an operationally safe height, the candidate will be asked to execute a steep turn through at least 180° at 45° angle of bank.

### ***Performance Criteria***

The candidate will:

- Complete appropriate safety precautions before entering the steep turn;
- Enter a smooth, co-ordinated steep turn with 45° bank;
- Divide attention appropriately between outside visual references and instrument indications;
- Maintain altitude within +/-100 feet;
- Maintain angle of bank within +/-10°;
- Maintain an effective lookout.

## **STALLING**

### **Aim**

To determine that the candidate can recognise and recover smoothly and correctly at the onset and/or after the stall with a minimum loss of altitude.

### **Description**

At an operationally safe height or the manufacturer's recommended minimum height, whichever is higher, stalls will be approached from various phases of flight and in various configurations appropriate to the aeroplane type and in accordance with the flight manual. The instructor will ask for two stalls, one in the clean configuration and one in the landing configuration with recovery at the stall or onset as appropriate to the aeroplane type, with minimum height loss.

### ***Performance Criteria***

The candidate will:

- Complete appropriate safety precautions and checks before entering the stall;
- Establish the specified configuration;
- Transition smoothly to an attitude that will induce a stall;
- Recognise and announce the onset of the stall by identifying the first indication (stall warning light/horn, aerodynamic buffeting);
- Maintain directional control;
- Recover using control application in the proper sequence;
- Retract flaps and landing gear (if applicable) as recommended by the manufacturer;
- Avoid a secondary stall, excessive airspeed, or excessive altitude loss;
- Return to the altitude, heading and airspeed specified by the instructor.

## **CIRCUIT**

### **Aim**

To determine that the candidate can operate the aeroplane competently in the vicinity of an aerodrome under normal and abnormal conditions.

### **Description**

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

The candidate shall demonstrate the overshoot procedure (one engine inoperative for multi-engine aircraft) on command by the instructor or as required by ATS.

The ability to comply with ATS clearances or instructions while maintaining separation from other aircraft shall also be demonstrated.

### ***Performance Criteria***

The candidate will:

- Comply with actual ATS clearances or instructions as appropriate;
- Comply with circuit entry and departure procedures;
- Comply with established circuit patterns and speeds;
- Fly an accurate circuit maintaining correct position and separation from other aircraft;
- Correct for wind drift to maintain proper ground track;
- Remain oriented with the runway/landing area in use;
- Maintain circuit altitude (+/-100 feet) and an appropriate airspeed (+/-10 knots);
- Complete appropriate checklists;
- Comply with other procedures that may be in effect at the time;
- Carry out an overshoot on demand or as operationally required.

## APPROACH AND LANDING

### Aim

To determine that the candidate can select a suitable touchdown point, approach and land using the correct procedure and technique for the actual wind conditions, surface and available length.

### Description

The candidate will be required to demonstrate at least three of the following landing procedures;

<ul style="list-style-type: none"><li>• Normal</li><li>• Cross-wind</li><li>• Short field</li><li>• Soft surface</li><li>• Flapless</li><li>• Glide</li></ul>	<ul style="list-style-type: none"><li>• One engine inoperative (compulsory for multi-engine)</li><li>• Wheel</li><li>• 3 point</li><li>• Glassy water</li><li>• Rough water</li><li>• Snow (4 required to be demonstrated)</li></ul>
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**Note:** The candidate must be able to explain the necessity for any variation from recommended speeds, e.g. gusty or crosswind conditions.

In the interest of safety and candidate work load, full stop landings are recommended.

### *Performance Criteria*

The candidate will:

- Consider the wind conditions, landing surface and obstructions;
- Select a suitable touchdown zone and specify a touchdown point;
- Establish the recommended approach and landing configuration;
- Maintain a stabilised approach at the recommended airspeed;
- Make smooth, timely, and correct control application during the round out and touchdown;
- Touch down smoothly at a minimum safe airspeed for existing conditions, at or within 400 feet beyond a specified touchdown point;
- Touch down with no drift and remain within 10 feet of the centreline;
- Touch down in the attitude recommended for the type;
- Control nose wheel contact with the runway (if applicable);
- Maintain crosswind correction and directional control throughout the approach and landing roll;
- Apply brakes as required, without excessive lockup or skidding (as applicable);
- Complete appropriate checks.



## EMERGENCY PROCEDURES

### Aim

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

### Description

The instructor will assess the candidate's knowledge of emergency procedures or abnormal conditions. Assessment may be carried out during any portion of the demonstration.

### Performance Criteria

Assessment will be based on the candidate's ability to analyse simulated or real situations, take appropriate action and follow the appropriate emergency checklists or procedures for any three (3) of the following simulated emergencies/malfunctions:

<ul style="list-style-type: none"><li>• Propeller over speed</li><li>• Cabin fire</li><li>• Engine fire</li><li>• Electrical fire</li><li>• Heater overheat</li><li>• Loss of oil pressure</li><li>• Loss of fuel pressure</li><li>• Cross-feed</li><li>• Primary flight display (PFD)</li></ul>	<ul style="list-style-type: none"><li>• Multi function display (MFD)</li><li>• Vacuum system failure</li><li>• Electrical malfunctions</li><li>• Landing gear malfunctions</li><li>• Brake failure</li><li>• Flap failure</li><li>• Door opening in flight</li><li>• Emergency descent</li><li>• Any other unique emergency</li></ul>
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The candidate will:

- Control the aeroplane;
- Recognise the simulated emergency promptly.

### Performance Criteria – Cockpit Checks

The candidate will:

- Complete vital action checks from memory;
- Complete subsequent actions in accordance with the emergency checklist.

### Performance Criteria – Decision Making

The candidate will:

- Take and/or describe appropriate subsequent actions.

**Note:** Most emergency procedures listed above can be examined orally, with “touch checks” carried out by the candidate. It is the sole responsibility of the instructor to determine if aeroplane performance, weather conditions and other factors permit the safe conduct of simulated emergencies in flight.