CHECK FLIGHT CERTIFICATE

TWIN, PISTON-ENGINED UNPRESSURISED AEROPLANES UP TO 5700 kg (12,000 lb) MAW			CFS Issue 1
Aircraft Type:			
Date:	Pilot:	Observer:	Reg:

Defects

No.	Defect	-/R/FT

(use a continuation sheet as necessary)

Conclusions/Comments

Note: The provision of false information, or failure to disclose information, relevant to the grant of an aviation document constitutes an offence under Section 17A(5)(b) of the Civil Aviation Authority Act 1979, and Regulation 128 of the Air Navigation Regulations 1981. The applicant will be subject to prosecution as well as the revocation, suspension or cancellation, of their aviation document, or in the event of initial issue, the rejection of the application.

PILOT-IN-COMMAND'S DECLARATION

I CERTIFY that I have tested the above aircraft, in accordance with this Check Flight Test Schedule, and have detailed the deficiencies and unsatisfactory features above.

Name:	Signed:	Date:	Licence No.:

Performance	Climb	
Average Weight		
Average Altitude		ft
Average Temp.		˚C
Speed		
Achieved Rate		fpm
Scheduled Rate		fpm
Margin		fpm
Permitted Margin	-70 (or 50 if climb speed < 90 kts)	fpm

(delete as applicable) The box below to be completed by the nominated engineer*

Airfield: **Nadi**

Start Weight	Kg/Lbs*

Takeoff cg:

ENGINEER'S DECLARATION

I certify that all the airtest results are within the specified allowable tolerances, and that the achieved climb rate was above*/below* scheduled. If below, complete box X:

Signed:_____ Licence No_____

Box X The climb rate was below scheduled but was accepted for the following reason:

_____

Note: aircraft with climb shortfalls more than permitted margin should not be accepted.

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For CAAF Use only				
Report Logged by:	**Appointment:**	**Date:**	**Sign:**	**Comments:**
	AA - AW			
Report seen by:	**AEI**			
	FOI - RW			
	SAMEI			
	SFOI - D			

General

Only CAAF personnel and pilots specifically accepted and briefed to carry out CAAF Airworthiness Check Flight Schedules Flight Tests may conduct the test.

***Crew**:* Captain, co-pilot (if applicable), Flight engineer.

***Airfield**:* Departure airfield.

***AUM**:* The aircraft shall be loaded to maximum all up weight if possible, and record the weight at first engine start. Also delete Kg or Lbs as appropriate. *Take-off cg:* Actual C of G at lift-off.

***Climb#1 / Climb#2**:* Enter in these columns data from the first and second climbs.

***Average Weight**:* The aircraft all up weight at the midpoint of the measured climb.

***Average Altitude**:* The altitude at which the line drawn to average the measured points passes through at the mid time.

***Average Temp**:* The temperature at which the line drawn to average the measured points passes through at the mid time.

***Speed**:* The target climb speed (Indicated Airspeed.)

***Achieved Rate**:* The climb rate as given by the slope of the line drawn to average the measured altitude points in feet per minute.

***Scheduled Rate**:* The expected gross rate of climb read from the appropriate graph in the Flight Manual with any adjustments for configuration differences. For large aircraft, the basic gross data are normally to be found in a separate supplement labelled 'Additional Flight Test Data'.

***Margin**:* The difference between the Scheduled and Achieved rates of climb (negative if achieved is lower than scheduled).

Defects Enter all defects from the flight. All defects must also be entered in the Technical Log. Procedural items entered in the Technical Log (such as re-stowing oxygen masks) need not be entered here. Items affecting flight safety which were known before the flight, whether or not they were deferred should be entered. In the latter case, the defect should be annotated accordingly after the details.

***No**:* The first column is to allow the items to be numbered.

***Defect**:* Enter details of the defect.

***-/R/FT**:* Classify each defect according to its impact on safety, regardless of whether it can be deferred according to the MEL. Any deferrals should be dealt with in the normal way in the Technical Log. Items requiring rectification (or deferral under the MEL) before further flight for hire or reward or before the issue of the CofA should be marked 'R'. Additionally, items that require rechecking in-flight following rectification (such as inadequate climb performance) should be marked 'FT'. Items requiring both should be marked 'R/FT'.

***Action?**:* This column should be left blank unless further information is required from the engineers or the item is considered to be of sufficient importance that CAAF action is considered necessary, then the person/department/agency from whom further action is required should be noted in this column. Annotate accordingly if an MOR or similar report is to be raised.

Conclusions/

Comments: Any conclusions, notes or comments useful for tracking defects.

***Name**:* Only the pilot who carried out the test may certify and sign this sheet

CHECK FLIGHT SCHEDULE

TWIN, PISTON-ENGINED UNPRESSURISED AEROPLANES UP TO 5700 kg (12,000 lb) MAW	CFS Issue 1

Aircraft Type:		Registration:		Date:	
Engines:		Propellers:			

* Enter details if more than one type of propeller is permitted, otherwise state 'Standard'

WARNING

It is illegal to carry passengers on a test flight without a Certificate of Airworthiness in force, except persons performing duties in the aircraft in connection with the flight (normally the pilot and one observer). It is recommended that an observer is carried to record the results of the tests.

Check flights entail greater risk than normal flight, and although it may be legal to carry passengers on a test flight with a Certificate of Airworthiness in force, it is strongly recommended that the pilot in command should, before accepting any other persons on a test flight, inform them that the risk is greater than on an ordinary flight.

1. INTRODUCTION

The intention of this schedule is to allow a general check of an aircraft against the stated operation in the Flight Manual, Pilot's Operating Handbook or equivalent. Where data are not available or where an air test is required to clear a Modification, appropriate schedules will be agreed between the Applicant and the CAAF.

It is recommended that the tests are made in the sequence given. The results are to be written in ink in the spaces provided. Where measurement units are other than those specified (e.g. speed in kph), suitable conversions should be made and tolerances/units noted.

2. GENERAL

Operator/ Maintenance Organisation:					
Aerodrome Elevation:	ft	Aerodrome Temp:	°C	QNH:	mb

Weather Significant to Tests (eg. Cloud base and tops, any turbulence).

The aeroplane and its engines are at all times to be operated within the limitations imposed by the Certificate of Airworthiness (C of A), by cockpit placards and instrument colour coding, and by the Flight Manual. Aeroplanes for which there is no approved Flight Manual must be flown to the limitations in the appropriate Manual designated on the C of A. The normal operating checks and drills given in the Manual must be followed.
As a safety precaution an engine should not be deliberately shut down at an altitude less than 3,000 feet above terrain, for the purposes of this schedule.
During the flight test, the crew must monitor the behaviour of all equipment and report any unserviceable items. In particular, if the test flight follows maintenance work, it is important to make sure that the items involved function satisfactorily, and that no additional faults have resulted accidentally.

3. LOADING

Unless it is impractical to do so, the aircraft should be loaded to maximum take-off weight or maximum landing weight if it is lower. It is permissible to test at a lower weight if climb data and stall speeds are scheduled with weight. Ballast should be used in order to comply with any prescribed loading requirements. The loading should include some fuel in all tanks so that the tests of item 12 Fuel System can be completed. Any CG position is acceptable as long as it is within limits for take-off and will remain in limits throughout the flight as fuel is consumed.

Max Take Off /Max Landing Weight		Permissible CG range	
Take-off Weight (actual) (kg/lb)		CG Position (actual)	

If the aircraft is not flown at Max Take Off Weight explain why:

4. PRE-FLIGHT

Fitness for Flight or Permit to Test issued and signed or valid CofA	

Check that the following items are on board:-

(1)	Aeroplane Flight Manual or other designated manual (eg. Owner's Manual, Pilot's Operating Handbook, Pilot's Notes).	
(2)	Cabin fire extinguisher (if applicable).	SAT/UNSAT/NOT FITTED

5. **GROUND TESTS**

5.1 **Flying Controls and Engine Controls**

Flying Controls - Check for full travel, freedom and correct functioning:-

Elevator/Stabilizer	SAT/UNSAT	Elevator/Stabilizer trimmer	SAT/UNSAT
Ailerons	SAT/UNSAT	Aileron trimmer	SAT/UNSAT
Rudder	SAT/UNSAT	Rudder trimmer	SAT/UNSAT
Wing flaps	SAT/UNSAT	Slats (including locking)	SAT/UNSAT

Engine Controls (including friction/locking mechanisms)

	Left	Right
Throttle	SAT/UNSAT	SAT/UNSAT
Propeller pitch	SAT/UNSAT	SAT/UNSAT
Mixture	SAT/UNSAT	SAT/UNSAT
Carburettor heat	SAT/UNSAT	SAT/UNSAT
Cooling flap	SAT/UNSAT	SAT/UNSAT
Fuel booster pump	SAT/UNSAT	SAT/UNSAT

5.2 **Equipment**

Check the following items for security and correct functioning:-

Safety harness/lap straps	SAT/UNSAT
Door fastening	SAT/UNSAT
Fuselage and wing baggage compartment doors	SAT/UNSAT
Adjustment of pilots' seats and locking	SAT/UNSAT

5.3 **Engine Run**

The aeroplane should face cross-wind; if wind strength makes parking cross-wind hazardous, face into wind.

FROM AFM, POH

Magneto test RPM or RPM at which tested	Max split permitted	Max drop permitted
Carburettor hot air or Alt airtest RPM		
	Left	Right
Carburettor hot air RPM drop		
No.1 magneto off, RPM drop		
No.2 magneto off, RPM drop		
Maximum power check:-		

Power Check RPM from AFM

	Left	Right
Manifold pressure		
RPM		
Fuel pressure/flow (booster pump off)		
Fuel pressure/flow (booster pump on)		

6. **TAXYING**

Brake system pressure (if available)	___/___/___
Parking brake (including Lock and Release)	SAT/UNSAT
Brakes (including freedom from binding and normal ability to hold aircraft at high engine power)	SAT/UNSAT
Taxying (including nose-wheel steering/ tail-wheel steering/differential braking)	SAT/UNSAT

7. **TAKE-OFF**

Wing flap setting	
Trimmer settings - Elevator/Stabilizer	
Behaviour during take-off:- Record any abnormal features, eg. unusual tendency to swing, ease or difficulty of raising nose-wheel/tail-wheel, control forces (including any unusual control forces) or wing heaviness.	

Was artificial stall warning triggered? YES/NO

8. **CLIMB PERFORMANCE**

Flight conditions: Not less than 3,000 feet above terrain, clear of cloud and turbulence, and well clear of any hills which could produce wave conditions.

Configuration: Normal for en-route climb (see Manual).

Power: Inoperative engine (the critical engine - if defined in the Flight Manual - otherwise either engine) ; propellor feathered with cooling flap closed. Operative engine : Maximum Continuous with air intake in 'Cold' or 'Ram' air position.

Altimeter: 1013 mb (29.92 in Hg).

Scheduled en-route climb speed ; Maintain speed ±2 knots/mph (From AFM, POH)			knots/mph
Wing-flap position		Engine cooling - flap position	
Fuel used (annotate if estimated)	kg/lb	Climb Weight	(kg/lb)

Time (min)	Altitude (ft) 1013 mb	IAS (knots/mph)	OAT (°C)
0			
½			
1			
1½			
2			
2½			
3			
3½			
4			
4½			
5			

NOTE: If no Outside Air Temperature gauge is fitted, obtain the temperature at the climb altitude for the local area from the Meteorological Office. State this figure and annotate accordingly. Towards the end of the climb record:

Operating engine	Left/Right	Manifold pressure	
RPM		Fuel pressure	
Oil pressure		Cylinder head temperature	
Oil temperature			
Trim positions:	Elevator/Stabilizer:		Rudder:

If there is any difficulty in recording these figures during the timed climb, maintain the climb speed and power, and record them at the end of the climb. Turbo-charged engines with automatic pressure controllers should maintain maximum MP with the throttles fully forward. If the throttle cannot be opened fully without overboosting, note throttle position at which maximum permissible manifold pressure is achieved (this will assist post flight rectification of the defect).

Restart engine and record:

Unfeathering behaviour, including any Excessive vibration or roughness	

9. **STALLS**

To be made with propeller control fully fine and throttle closed.

Fuel used (annotate if estimated)	kg/lb	Stalling Weight	(kg/lb)
		Weight at which stall speeds derived	(kg/lb)

Stall	**1**	**2** (1)	**3**
Landing Gear (unless fixed) Flaps	Up Up	Up Take-Off	Down Landing
Trim, power off, at 1.5 x Scheduled stall speed (knots/mph IAS) (2)			
Stall warning (knots/mph IAS)			
Type of artificial stall warning (eg Horn/Light)			
Stall (knots/mph IAS)			
Scheduled stall speed at stated weight (knots/mph IAS) (2)			
Did control column reach back stop?			
Sequence of nose and wing drop (if any)			
Total angle of wing drop (see notes below)			
Other characteristics (eg buffet prior to stall)			

(1) To be made on aeroplanes where a take-off wing-flap setting is specified.

(2) From AFM, POH. If speeds at a single weight are given, scheduled speeds at a different weight may be calculated as $V_{S2} = V_{S1} \times (W_2/W_1)^{1/2}$

Notes: Deceleration to stall to be at 1 kt/sec (1 mph/sec).
Required limits -

- stall warning 4 KIAS to 12 KIAS (4 mph to 14 mph) above measured stall speed
- Stall speed +3 to -5 kts/mph relative to scheduled stall speed
- Wing drop to be contained within 20° of roll (note that it is permissible to use small amounts of aileron)

10. **Functioning Checks**

10.1 **Engine control at altitude (turbo-charged engines only)**

Climb to 10,000 feet at the scheduled en-route climb speed (2 engines) with the engine cooling flaps set as recommended (see Manual) and with propeller pitch controls fully forward. On engines with automatic pressure controllers, check that, with throttles fully forward, the manifold pressure does not exceed the maximum permissible, and can be maintained on each engine within 1 in. Hg. of the maximum permissible. Note any fluctuation of engine RPM, manifold pressure, or fuel flow/pressure and any tendency for the engine to overheat.

Notes (1) At 10,000 feet on engines without automatic pressure controllers, it will not usually be possible to set throttles fully forward without exceeding maximum permissible manifold pressure.

(2) If fuel pressure/flow fluctuates, switch on booster pump(s), reset fuel pressure/flow if necessary and note if indication is then steady.

Towards end of climb, record:-

Engine	Left	Right
Manifold pressure		
RPM		
Booster pump on/off		
Stability of RPM, Manifold pressure or fuel/flow pressure		
Oil temperature		
Cylinder head temperature		

11 **DIVE TO V_{NE}**

THIS TEST MUST ONLY BE FLOWN IN SMOOTH AIR CONDITIONS

With the landing gear and wing-flaps retracted, accelerate the aircraft in level flight using maximum continuous power, but with propeller controls set to give approximately 200 RPM below maximum permissible.

In level flight record :

IAS	Kts/mph	Elevator/stabilator trimmer setting	
RPM left engine		Rudder trimmer setting	
RPM right engine		Aileron trimmer setting	

Increase speed up to V_{NE}. Keep RPM within maximum permissible. If any unusual airframe or control vibration is felt, immediately reduce speed by gradually pulling the control column back and by closing the throttle. Record:-

Scheduled V_{NE}

Any unusual behaviour

Whether the control forces and responses over small angles are normal Steadiness of propeller governing (if applicable)

Maximum RPM

Maximum IAS (knots/mph)

Left	Right

Regain cruising flight by closing throttle and gradually pulling the control column back. Record:-

	Left	Right
Engine behaviour on closing throttle	SAT/UNSAT	SAT/UNSAT
Propeller governing (if applicable)	SAT/UNSAT	SAT/UNSAT

12. **FUNCTIONING CHECKS**

When appropriate during the flight, check the following:-

12.1 **Flying Controls**

	Friction	Backlash	Are control forces normal?
Elevator/Stabilizer	SAT/UNSAT	SAT/UNSAT	YES/NO
Aileron	SAT/UNSAT	SAT/UNSAT	YES/NO
Rudder	SAT/UNSAT	SAT/UNSAT	YES/NO
Elevator/Stabilizer Trimmer	SAT/UNSAT	SAT/UNSAT	YES/NO
Aileron trimmer	SAT/UNSAT	SAT/UNSAT	YES/NO
Rudder Trimmer	SAT/UNSAT	SAT/UNSAT	YES/NO

During normal cruise, check that aeroplane:-	
(a) can be trimmed to fly level	YES/NO
(b) has no tendency to fly one wing low	SAT/UNSAT
(c) flies straight with slip indicator central	YES/NO

12.2 **Engines**

12.2.1 Check for excessive mal-alignment of throttles, pitch and mixture controls when set to the same power on each engine.

12.2.2 At a typical two-engines en-route climb speed, shut down and re-start opposite engine to that shut down during engine-out climb.

Engine	Left/Right
Time to feather	secs
Propellor un-feathering behaviour, including excessive vibration or roughness	

12.3 **UnPowered Wing-flaps**

Confirm no roll induced when operating flaps SAT/UNSAT

12.4 **Powered Wing-flaps** (Omit for unpowered flaps)

Operate as follows recording time and any unusual change of longitudinal trim with flap position and any significant change in lateral trim.

12.4.1 Limit Speed	Time	Comments
From Up to Take-off*	(sec)	
From Take-off to Down*	(sec)	

*at about 5 kts/mph below limiting speed for setting.

If the flap does not move to the full down position:- (a)

Record angle at which flaps stops	
(b) With flap selected Down, reduce speed until flap reaches full down position. Record IAS (knots/mph).	

12.4.2 From Down to Take-off†	sec
From Take-off to Up†	sec

†at any convenient speed below limiting speeds.

12.5 **Landing Gear - Normal Operation**

Power-operated systems - time extension and retraction at limiting speed(s).

From Up to Down	sec	From Down to Up	sec

Manually operated systems - check operation is satisfactory.	SAT/UNSAT

Check landing gear unsafe warning. At a typical circuit speed with landing gear retracted, for each engine in turn select pitch control fully fine, and close throttle until warning sounds, record :-

Engine	Left	Right
Manifold Pressure		
RPM		

13. **Fuel System**

Fuel System

During the flight, feed each engine from each fuel tank in turn for not less than 3 minutes (normal and cross-feed).
Record :-

Engine	Left		Right	
Left wing tank 1				
Left wing tank 2				
Right wing tank 1				
Right wing tank 2				
Auxiliary tank 1				
Auxiliary tank 2				
Fuel selector operation				
Fuel gauges				

14. Auto-pilot (if fitted)

Check for smooth engagement and disengagement, and general functioning during level flight, turn, climb and dive.	
With the autopilot engaged, apply a load to each main flying control and check satisfactory ability to overpower autopilot.	

15. **Electrical/Avionics Systems**

Check all electrical and avionics equipment for satisfactory operation:-

Record generator charging rate under maximum electrical load.	

16. **Gyro Instruments**

Check behaviour of gyro instruments. Record unsatisfactory items:-

If air-pump driven, record:-	Press gauge		during cruise at	RPM

17. **Other Instruments**

Check for satisfactory functioning. Record unsatisfactory items:-

18 **De-Icing Equipment (if fitted)**

Check functioning of systems for de-icing of :-

Airframe		Propeller		Windscreen	

19. **Radio**

Complete Radio Check Flight Report, if required. Schedule available on application.

20. **Emergency Extension of Landing Gear**

(Note: This check should only be conducted if the normal system operation can be restored in-flight.)

Final extension of the gear before landing to be made on the emergency system.

Record operation:- SAT/UNSAT

21. **LANDING**

With landing gear extended and wing-flaps in the landing position, carry out a normal landing following an approach at the speed specified in the Manual:-

Behaviour during landing:
Record any abnormal features, eg. inability to trim, unusual control forces, difficulty in flaring, 'wheelbarrowing' or porpoising after touchdown.

Was artificial stall warning triggered? YES/NO

22. **POST-FLIGHT**

22.1 **Placards**

Check that all Cockpit, Cabin, Baggage Space and external placards are fitted and legible.

22.2 **Lighting**

Check that all external and internal lighting is serviceable.

22.3 **Check Flight Certificate**

Complete the Check Flight Certificate at the front of this Schedule.

23. **Climb Performance**

Plot results on the attached graph. Drawing a straight line in a position which is a best fit to the points. Take the slope of this line as the average climb rate. Compare results with those in the AFM or POH. If none given in AFM POH use any available data but state origin and attach a photocopy. If no information is available, compare achieved results with previous measurements on the same aircraft/aircraft type (this information can be obtained from CAAF Air Safety Department). Where climb rate is given at specific weights, temperatures or altitudes use interpolation (for each parameter affected) to find the value at the conditions flown (i.e. if the climb rate at the actual input value [such as weight] is not given, determine a climb rate that is proportionately between the rates given at the points either side of the actual input value according to how close it is to either).

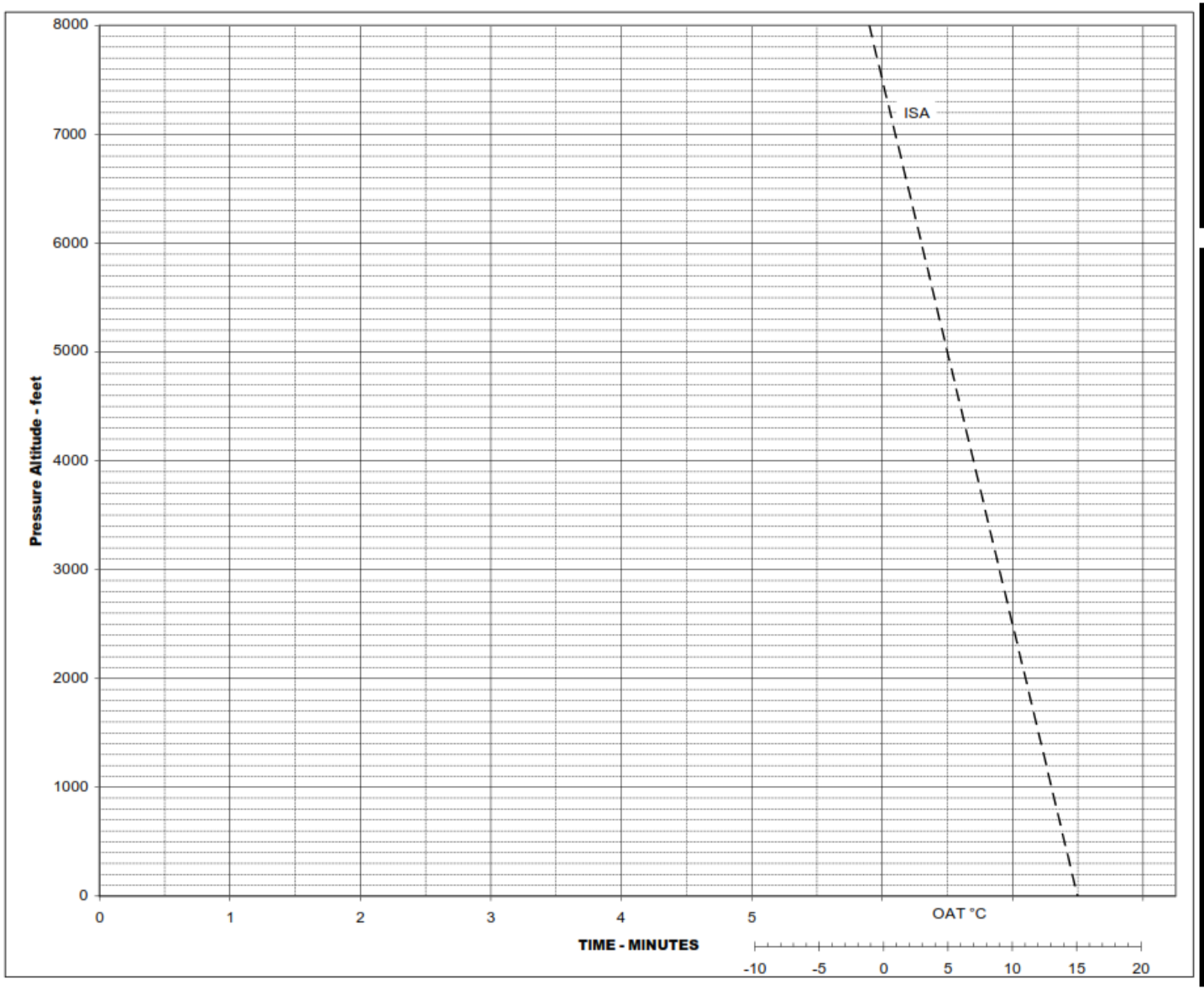
It is important that the results are presented as observed, and that any significant meteorological conditions are noted.

To assist CAAF checks of scheduled climb rates, note any corrections made to the basic scheduled values for items such as temperature, CAAF change sheet etc. on the graph in the spaces provided. Annotate scheduled climb rate with the weight for which it is applicable if it is different to the actual climb weight.

NOTE: Where no correction for temperature is given in the designated Manual, the following temperature correction is to be applied:-

Where the indicated outside air temperature is above International Standard Atmosphere for the altitude, the scheduled rate of climb may be reduced by 4 ft/min/°C (2.2 ft/min/°F). When the indicated OAT is below ISA, the scheduled rate of climb is to be increased by the same amount.

Transfer the relevant numbers on the graph to the Check Flight Certificate at the front of this schedule.



AIRCRAFT TYPE	
REGISTRATION	
DATE OF TEST	

Mean Weight	_____ Kg/lb
Mean Altitude	_____ feet
Mean OAT	_____ °C

SCHEDULED ROC	
Basic	_____ ft/min
Correction	_____ ft/min
Correction	_____ ft/min
Final SROC	_____ ft/min

Observed ROC	_____ ft/min
Difference from Scheduled	_____ ft/min (Observed ROC minus Final SROC)