CHECK FLIGHT CERTIFICATE

M^c^Donnell Douglas DC-10 Series 10 (CF6-6D1)

CFS 161 Issue 1

Date:	Crew:	Observer:	Registration:

Performance	Climb #1	Climb #2	
Average Weight			
Average Altitude			ft
Average Temp.			°C
Speed			KIAS
Achieved Rate			fpm
Scheduled Rate			fpm
Margin			fpm
Permitted Margin	-80	-120	fpm

Airfield:

Start Weight Kg/Lbs*:

Takeoff cg:

Performance:

SATIS/UNSATIS/NOT APPLICABLE*

*(delete as applicable)**

Defects

No.	Defect	-/R/FT	Action?

(use a continuation sheet as necessary)

Conclusions/Comments

I CERTIFY that I have tested the above aircraft and have detailed the deficiencies and unsatisfactory features above. Those items annotated R or FT must be dealt with as shown in the notes on the reverse side.

Name:	Signed:	Date:	Licence No.:
For CAA Use only	Report Logged by:	Date:	Report No.:

NOTES

General

Only CAA personnel or pilots specifically briefed to carry out CAA airtests may conduct the test.

General notes on test conduct can be found in the CAA Handbook for Airworthiness Flight Testing.

This sheet replaces any flight test certificate given in the schedule.

Registration: If the aircraft is not on the UK register, add the manufacturers serial number and expected UK registration (if known).

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

Airfield: Departure airfield.

Start Weight: Actual all up weight at first engine start. Also delete Kg or Lbs as appropriate.

Takeoff cg: Actual cg at lift-off, preferably as a % of the Mean Aerodynamic Chord.

Performance

A full description of climb analysis is given in the CAA Handbook for Airworthiness Flight Testing.

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 re-checking 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 import that CAA 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 may be entered.

Name: Only the pilot who carried out the test may sign this sheet.

CAA Check Flight Schedules

All CAA Check Flight Schedules (CFSs) are prepared based on a design standard which, before September 2003, was the UK Type Certificate. Following the creation of EASA there may be different design standards in service within the European Union (EU) - this may include modifications approved in any EU country.

It is the responsibility of the flight crew to ensure that the exercises and limitations in the CFS are correct for the aircraft under test.

The prime source of information will be the aircraft flight manual and in the event of conflict the flight manual should be taken as overriding.

CAA policy is that pilots who conduct airtests on the behalf of the Authority must be acceptable to the Authority, must have been briefed on techniques and safety considerations before carrying out the tests in these schedules and must have carried out an airtest within the last 4 years.

The CAA does not accept responsibility for the use of a CAA CFS on a test flight not directly under their control.

INTRODUCTION

This schedule is applicable only to DC-10 Series 10 aircraft. It is based on the assumption that the aircraft under test fully incorporates all the Modifications which may be required for UK type certification and it is essential in the interests of flight safety that no attempt be made to test an aircraft to this schedule if it is not so compliant. The tests are intended to cover items, including emergency systems, which are not routinely checked; however, the crew are expected generally to monitor the behaviour of all equipment and report any unserviceable items. In addition to noting items arising directly from tests in the schedule, any other characteristics which are considered unsafe or undesirable must be recorded.

The aircraft and its engines must be operated at all times within its Flight Manual limitations. Unless specified in this Schedule, normal operating procedures and checks should be used.

The minimum flight crew for this test should, whenever possible, be increased by one observer to record the results of the tests. When tests are scheduled above FL100, oxygen shall be available for all persons on board. The tests should be carried out in the sequence as written; altitude conditions must be observed.

Aircraft commanders are reminded that it is illegal to carry passengers on a flight without a valid Certificate of Airworthiness and that while it is legal to carry passengers on a test flight made with a valid C of A, the practice is not recommended. If passengers are carried, they must be informed that the risk is greater than that on a normal scheduled flight.

The data contained in this schedule is correct at the time of writing, but might not be in agreement with subsequent Flight Manual amendments. In cases of conflict, the current Flight Manual is over-riding and CAA (Flight Department) should be informed.

The crew of the aircraft must be familiar with the contents of this schedule before flight and the pilot conducting the tests must be specifically approved by the CAA for airworthiness test flights on DC10 Series 10 aircraft.

LOADING

The aircraft should be loaded with to a weight between 320,000 lb and 335,000 lb (145,000 – 152,000 kgs) with any convenient c.g. within normal limits.

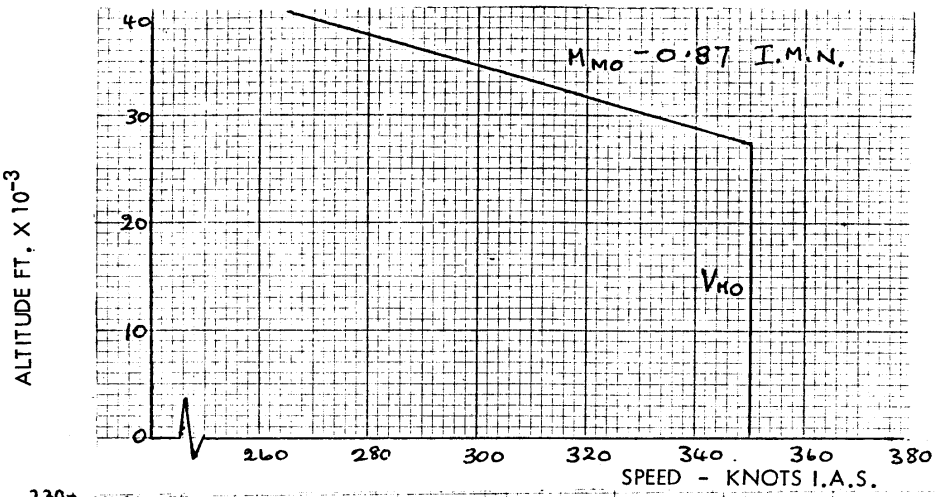
PRE FLIGHT ACTION

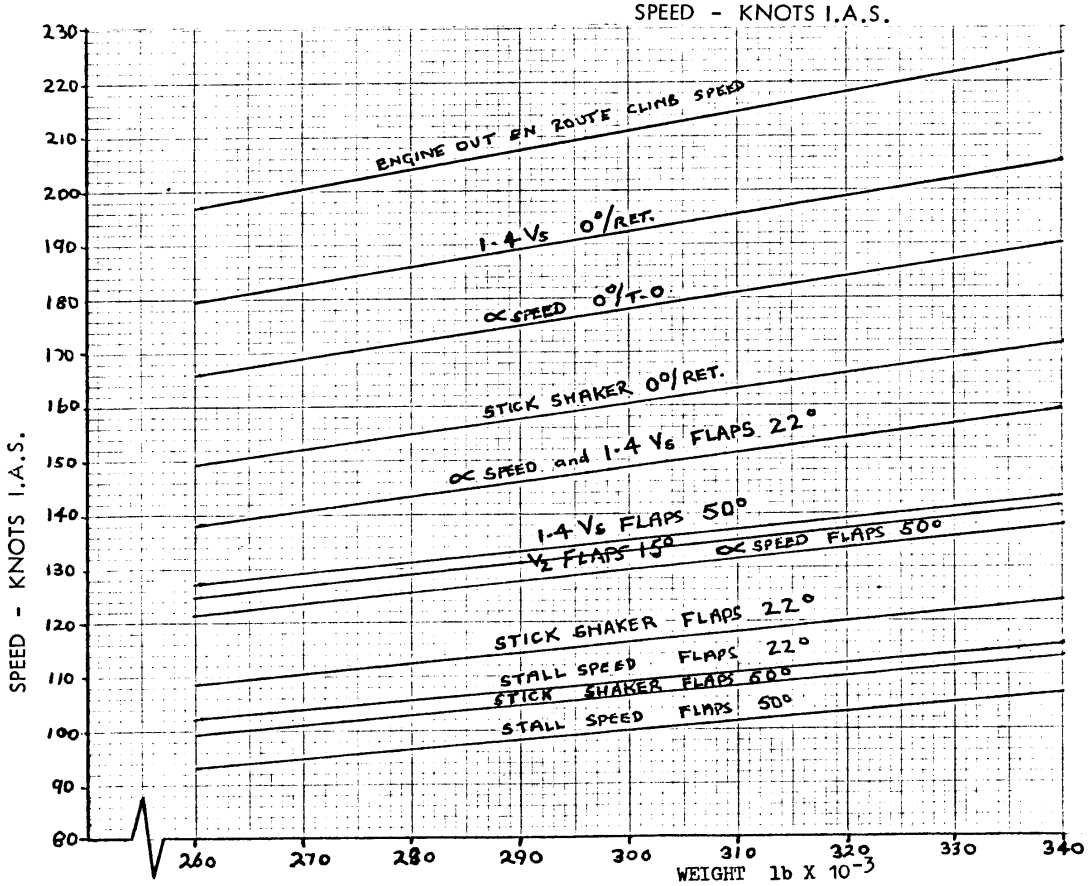
If passenger oxygen masks are fitted and are to be deployed, it is acceptable to prevent their complete deployment by the use of appropriate clips or tape; any such mechanism must, however, allow sufficient movement to verify correct functioning of the system.

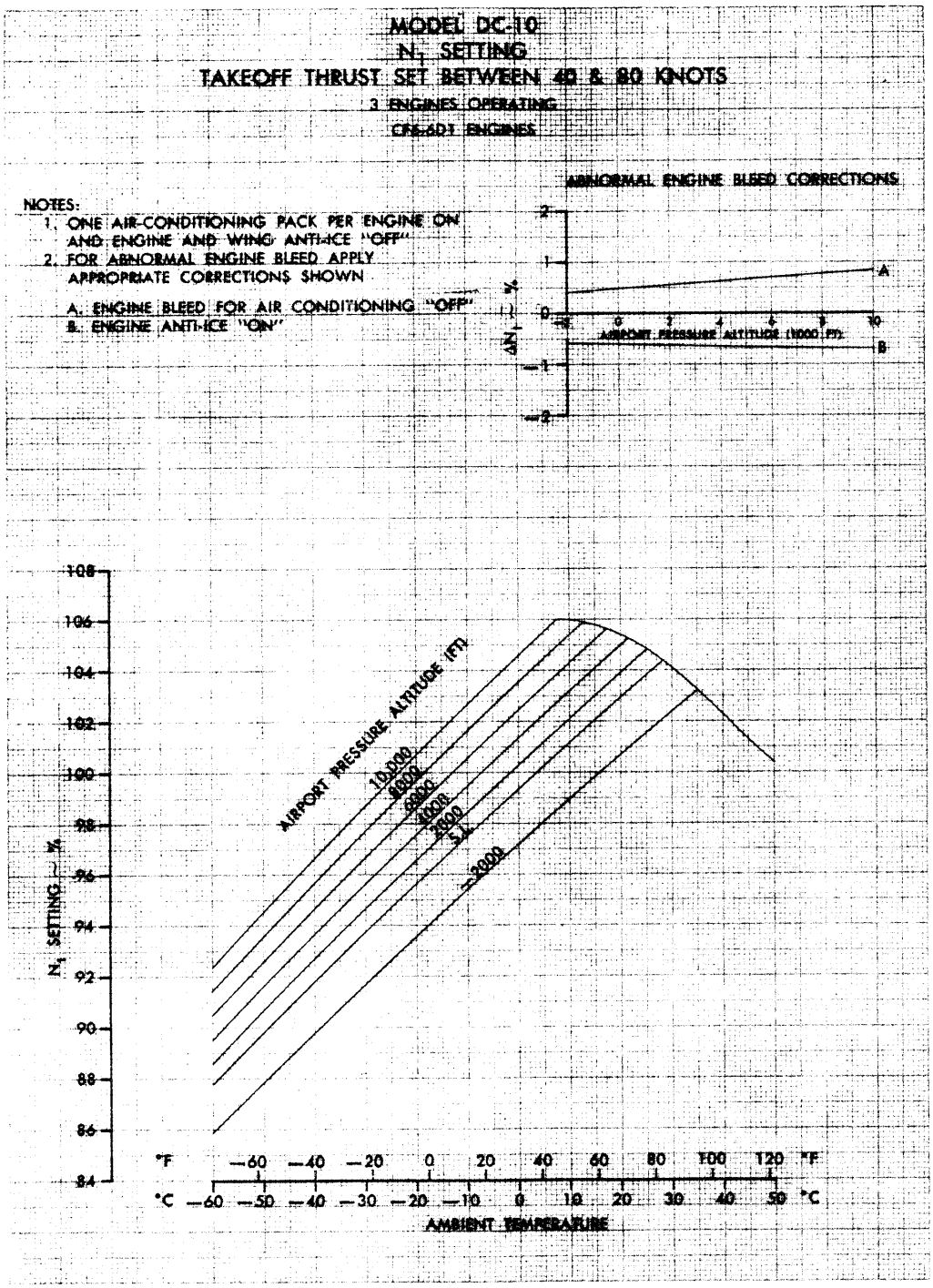
POST FLIGHT ACTION

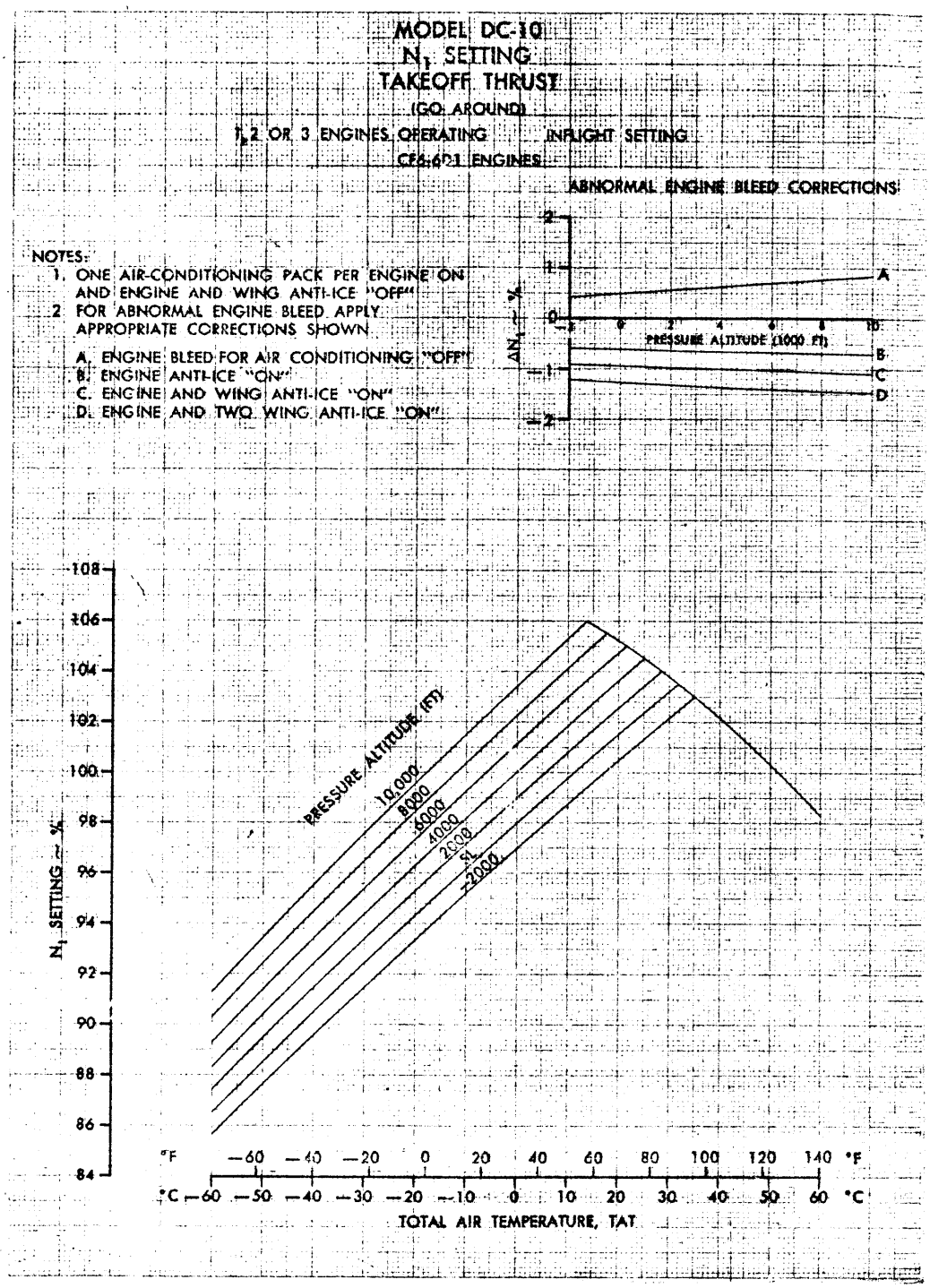
The Check Flight Report and Check Flight Certificate must be completed and signed by the pilot carrying out the test.

GRAPH OF STANDARD SPEEDS






MODEL DC-10
N1 SETTING
TAKEOFF THRUST SET BETWEEN 40 & 80 KNOTS
3 ENGINES OPERATING
CF6-6D1 ENGINES
NOTES:
1. ONE AIR-CONDITIONING PACK PER ENGINE ON AND ENGINE AND WING ANTI-ICE "OFF"
2. FOR ABNORMAL ENGINE BLEED APPLY APPROPRIATE CORRECTIONS SHOWN
A. ENGINE BLEED FOR AIR CONDITIONING "OFF"
B. ENGINE ANTI-ICE "ON"
ABNORMAL ENGINE BLEED CORRECTIONS
ΔN1 — %
AIRPORT PRESSURE ALTITUDE (1000 FT)
A
B
N1 SETTING — %
AIRPORT PRESSURE ALTITUDE (FT)
10,000
8000
6000
4000
2000
S.L.
−3000
°F
°C
AMBIENT TEMPERATURE


MODEL DC-10
N1 SETTING
TAKEOFF THRUST
(GO AROUND)
1, 2 OR 3 ENGINES OPERATING
INFLIGHT SETTING
CF6-6D1 ENGINES
ABNORMAL ENGINE BLEED CORRECTIONS
NOTES:
1. ONE AIR-CONDITIONING PACK PER ENGINE ON AND ENGINE AND WING ANTI-ICE "OFF"
2. FOR ABNORMAL ENGINE BLEED APPLY APPROPRIATE CORRECTIONS SHOWN
A. ENGINE BLEED FOR AIR CONDITIONING "OFF"
B. ENGINE ANTI-ICE "ON"
C. ENGINE AND WING ANTI-ICE "ON"
D. ENGINE AND TWO WING ANTI-ICE "ON"
ΔN1 ~ %
PRESSURE ALTITUDE (1000 FT)
A
B
C
D
N1 SETTING ~ %
PRESSURE ALTITUDE (FT)
10,000
8000
6000
4000
2000
SL
-2000
°F
°C
TOTAL AIR TEMPERATURE, TAT

MODEL DC-10
N_1 SETTING
MAXIMUM CONTINUOUS THRUST

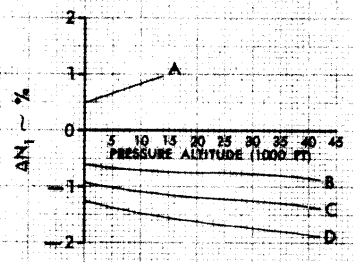
1 OR 2 ENGINES OPERATING — INFLIGHT SETTING

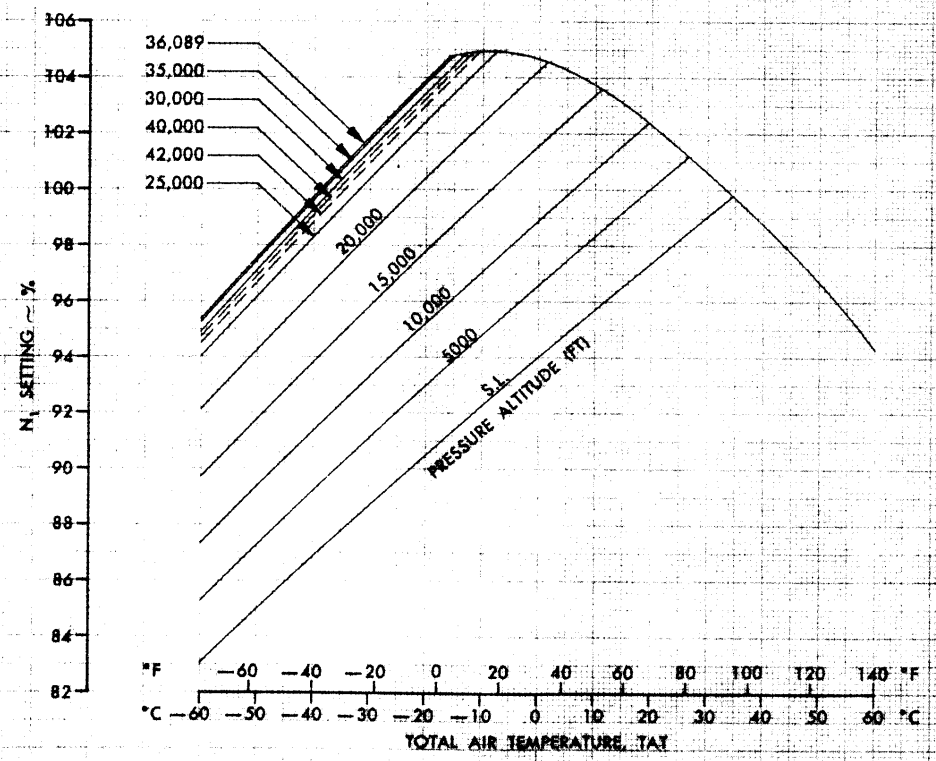
CF6-6D1 ENGINES

NOTES:

1. ONE AIR-CONDITIONING PACK PER ENGINE ON AND ENGINE AND WING ANTI-ICE "OFF"
2. FOR ABNORMAL ENGINE BLEED APPLY APPROPRIATE CORRECTIONS SHOWN
   - A. ENGINE BLEED FOR AIR CONDITIONING "OFF"
   - B. ENGINE ANTI-ICE "ON"
   - C. ENGINE AND WING ANTI-ICE "ON"
   - D. ENGINE AND TWO WING ANTI-ICE "ON"

ABNORMAL ENGINE BLEED CORRECTIONS





PRE-FLIGHT PREPARATION

Oxygen shall be available to all persons on board. If the Passenger drop out oxygen mask system is fitted, the covers should be loosely taped before the flight.

PRE-FLIGHT INFORMATION

Aircraft Registration			
Operator			
Location		Date	
1st Pilot		2nd Pilot	
Observer			
Total airframe hours			

Engine Serial Nos

Port	Starboard

LOADING AND CALCULATION OF WEIGHT

The aircraft if to be loaded to a weight of between 320,000 ob and 335,000 lb (145,000 – 152,000 kgs) with any convenient c.g. within normal limits.

The actual values shall be recorded; where specific tests require the aircraft weight to be recorded, it shall be calculated from the “fuel gone” indicators.

Zero Fuel Weight			
Fuel Contents	No.1	CTR	No.2
Ramp Weight			
Ramp cg % MAC			

TEST SCHEDULE

Except where otherwise indicated, the flight techniques are those associated with normal operation of the aircraft, for example all dampers engaged. Fuel symmetry must be maintained across the aircraft particularly during and after the engine out climb.

1. FUNCTIONING ONE

1.1 Before Starting Engines

1.1.1 Emergency Power

This check should be completed within 2 minutes in order not to deplete the INS batteries.

(a)	With external power off, battery switch on and emergency power switch off, check that lights above centre instrument panel are on	SAT/UNSAT
(b)	With external power off, battery switch on and emergency power switch on check that the following items are powered.	

VHF Nav 1	SAT/UNSAT
VHF Comm. 1	SAT/UNSAT
Captain's Pitot Heat	SAT/UNSAT
Captain's Altimeter	SAT/UNSAT
Captain's V.S.I.	SAT/UNSAT
Captain's Airspeed	SAT/UNSAT
Captain's Compass	SAT/UNSAT
Captain's A.D.I.	SAT/UNSAT
Main Instrument Panel Lights	SAT/UNSAT
P.A. System	SAT/UNSAT
Flight Interphone	SAT/UNSAT
N_1 (No. 1 engine only)	SAT/UNSAT
E.G.T.	SAT/UNSAT
N_2	SAT/UNSAT

Return the emergency power switch to the off position and select external power on.

1.1.2 Cockpit Placards

Check the following placards for presence, legibility and accuracy.

Airframe Limitations Placard	SAT/UNSAT
Engine Instrument Colour Coding	SAT/UNSAT
Max. Speed for prolonged flight slat and flap extended	SAT/UNSAT

1.2 After Start A.P.U.

1.2.1 Take-off Configuration Test

With the aircraft initially set in the take-off configuration with the parking brake off, check that the take-off configuration warning operates when :-

(a) Flaps are selected to 35° and No. 1 throttle is advanced SAT/UNSAT
(b) Flaps are selected to 0° and slats retracted and No. 2 throttle is advanced SAT/UNSAT
(c) Speed brakes are extended and No. 2 throttle is advanced SAT/UNSAT
(d) The trim is set beyond the take-off green band and No. 1 throttle is advanced SAT/UNSAT

Check that stabiliser trim motion warning operates when a continuous application of more than one division of trim is made SAT/UNSAT

Reset trim to take-off position
(e) The parking brake is on SAT/UNSAT

1.2.2 Ground Spoiler Auto Retract

Select ground spoilers out manually and then select full throttle on No. 2 engine. Check that ground spoilers knock down automatically. SAT/UNSAT

1.2.3 Thrust Computer

With wing anti-icing selected off record :-

(a) Airfield pressure altitude at 1013 mb [ ]

(b) Tower O.A.T. [ ] T.A.T. [ ] S.A.T. [ ]

(c) Take-off N_1. Air conditioning on, engine anti-icing off.

Achieved [ ] Scheduled [ ]

(d) Take-off N_1. Air conditioning off, engine anti-icing off.

Achieved [ ] Scheduled [ ]

1.2.4 Elevator Load Feel Manual

System 1

(a) Operate controls to ascertain base feel forces.

(b) Pull elevator load feel and flap limited 2 circuit breakers.

Check that:-

Flap limited channel inoperative	SAT/UNSAT
Elevator feel channel inoperative light on	SAT/UNSAT

(c) Select elevator feel switch manual.

(d) Manually slew the feel to high indicated airspeed and note increase in elevator feel force` SAT/UNSAT

(e) Re-set elevator load feel and flap limiter 2 circuit breakers.

System 2

(a) Pull elevator load feel and flap limiter 1 circuit breakers.

Check that :-

Flap limiter channel inoperative	SAT/UNSAT
Elevator feel channel light on	SAT/UNSAT

(b) Manually slew the feel to high indicated airspeed and note increase in elevator feel force. SAT/UNSAT

(c) Re-set elevator load feel and flap limiter 1 circuit breakers.

(d) Re-set elevator load feel switch to auto.

Check that :-

Elevator feel manual light extinguishes	SAT/UNSAT
Reference airspeed indicator moves to the minimum indication.	SAT/UNSAT

1.3 After Starting Engines

1.3.1 Emergency Hydraulics

When making rudder checks on the ground hold the nosewheel steering handle to prevent nosewheel scuffing. With reversible motor pumps off and the auxiliary hydraulic pumps off and rudder standby switch at arm.

(a) Depressurise Nos. 1 and 2 hydraulic systems.

(b) Move rudder pedals and note that only lower rudder moves. SAT/UNSAT

(c) Check operation of stabiliser. SAT/UNSAT

(d) Pressurise operation of stabiliser.

(e) Depressurise No. 3 hydraulic system.

(f) Move rudder pedals and observe both rudders move. SAT/UNSAT

(g) Check operation of stabiliser on suitcase handles. SAT/UNSAT

(h) Select all 3 hydraulic systems back on.

1.3.2 Brakes and Nosewheel Steering

With reversible motor pumps off and the auxiliary hydraulic pumps off, check whilst taxying.

(a) Depressurise No. 3 hydraulic system.
Exhaust brake accumulator in No. 3 system whilst stationary.
(b) Check brake operation. SAT/UNSAT
(c) Check nosewheel steering over small angles. SAT/UNSAT
(d) Pressurise No. 3 hydraulic system.
(e) Depressurise No. 1 hydraulic system.
Exhaust brake accumulator in No. 1 system whilst stationary.
(f) Check brake operation. SAT/UNSAT
(g) Check nosewheel steering over small angles. SAT/UNSAT
(h) Select No.1 hydraulic system back on.

2. TAKE-OFF

Carry out a normal take-off.

Record any unusual characteristics.

3. FUNCTIONING TWO – ENGINE ACCELERATIONS

Pressurisation on, anti-icing off.
With gear up flaps 22° at 160 kts.
Between 4,000 ft and 7,000 ft.

Record: Altitude [ ] T.A.T. [ ]

Thrust Computer Go-around N_1 [ ]

Thrust Manual Go-around N_1 [ ]

For each engine record the engine flight idle stabi9lised N_1 and the time to accelerate to 2% N_1 r.p.m. below the scheduled go-around N_1.

Engine	1.	2.	3.	
Idle N_1				
Time to accelerate				8 secs max.

4. PERFORMANCE - TAKE-OFF CLIMB

4.1 Clear of cloud and turbulence carry out a measured climb for 5 minutes from a starting altitude between 2,000 ft and 6,000 ft.

Conditions :

Gear up

Flaps 15°, Slat Take-off

No. 1 engine Idle

Nos. 2 and 3 engines go-around power

Pressurisation on

Engine anti-icing off

Airframe anti-icing off

Take-off safety speed V_2 for the weight V_2- [ ]

Captain's altimeter set at 1013 mb.

Record: Altitude [ ] T.A.T. [ ]

Thrust Computer Go-around N_1 [ ]

Thrust Manual Go-around N_1 [ ]

If any discrepancy use the flight manual power for the climb.

Fuel gone at start of climb.

1. [ ] 2. [ ] 3. [ ]

Time Mins.	**Altitude Captain's Altimeter**	**Speed Captain's A.S.I.**	**T.A.T.**	**N_1**	
				No. 2	No. 3
0					
½					
1					
1 ½					
*2					
2 ½					
3					
3 ½					
4					
4 ½					
5					

TRIM POSITIONS		
	Elevator	
	Aileron	
	Rudder	

ASI Comparisons Captain [ ] First Officer [ ]
(Max. difference 5 knots)

Fuel gone at end of climb :

1. [ ] 2. [ ] 3. [ ]

* After 2 minutes record the following engine parameters.

Engine	2.	3.
E.G.T.		
N_2		
Fuel Flow		

Check satisfactory functioning of fuel cross feeding SAT/UNSAT

5. **FUNCTIONING THREE**

Low Cabin Pressure

During a climb to flight level 180.

(a) Place no smoking and seat belt switches and cabin ceiling lights off.

(b) Pull standby cabin pressure controller rate knob out and observe standby blue light on. SAT/UNSAT

(c) Raise the cabin altitude at a comfortable rate and monitor cabin altitude indicator.

(d) When cabin pressure warning occurs note :

Cabin altitude and warning [ ] 10,250 ft. max.

(e) Depress and release cabin altitude warning horn button and check that aural warning ceases. SAT/UNSAT

(f) Check that the following lights illuminate in the cabin
Fasten seat belt SAT/UNSAT
No smoking SAT/UNSAT
Cabin ceiling lights SAT/UNSAT

(g) Return no smoking and seat belt switches to auto.

(h) Check crew oxygen masks for oxygen flow and ensure SAT/UNSAT

all personnel on oxygen

(i) Check crew oxygen mask microphones SAT/UNSAT

(j) Manually raise cabin altitude at a comfortable rate until passenger oxygen masks are deployed.

Record: Cabin altitude at mask deployment [ ] 13,500 ft 15,000 ft

(k) Return cabin pressurisation to normal schedule by using the standby control.

(l) As cabin pressure approaches normal schedule put standby cabin pressure controller rate knob in and allow semi-auto controller to control the pressure.

(m) Check each seat position and the toilets for mask deployment.

Record any failures to deploy. [ ]

6. PERFORMANCE

Engine Out En-route Climb

Note: Leave No. 3 engine at flight idle for 3 minutes before shutting off the fuel.

Clear of cloud and turbulence, carry out a measured climb for 5 minutes from a starting altitude the higher of 5,000 ft above terrain or flight level 100 but not above flight level 200.

Conditions :

Gear up

Flaps up, slats retracted

No. 3 engine inoperative

Nos. 1 and 2 engines M.C.T.

Pressurisation on

Engine anti-icing off

Airframe anti-icing off

Engine out en-route climb speed for the weight

Captain’s altimeter set to 1013 mb.

Record: Altitude [ ] T.A.T. [ ]

Thrust Computer M.C.T. N_1 [ ]

Thrust Manual M.C.T. N_1 [ ]

If any discrepancy between flight manual and thrust computer, use the flight manual power for the climb.

Fuel gone at start of climb.

1. [ ] 2. [ ] 3. [ ]

Time Mins.	**Altitude Captain's Altimeter**	**Speed Captain's A.S.I.**	**T.A.T.**	**N_1**	
				No. 2	No. 3
0					
½					
1					
1 ½					
*2					
2 ½					
3					
3 ½					
4					
4 ½					
5					

TRIM POSITIONS

Elevator	
Aileron	
Rudder	

Fuel gone at start of climb.

1. [ ] 2. [ ] 3. [ ]

* After 3 minutes record the following engine parameters.

Engine	2.	3.
E.G.T.		
N_2		
Fuel Flow		

7. FUNCTIONING FOUR

7.1 Engine Relighting

At the altitude prevailing at the end of the en-route climb, relight No. 3 engine at 260 knots.

Record:	Altitude		T.A.T.
Engine windmilling speed	N_1		N_2
Time to E.G.T. rise			45 sec. max.
Maximum E.G.T. during relight			750°C continuous 751-900°C for 40 secs
Time to idle N_1			90 secs.

Leave No. 3 engine at flight idle for 1 minute before opening the throttle.

7.2 High Cabin Pressure

During a climb to flight level 350.

(a)	With cabin pressure controller in the semi auto mode and a low cabin altitude selected record maximum cabin differential pressure		8.4 to 8.8 psi
(b)	Select cabin pressure controller to auto with barometric selection of 1013 mb/29.92” Hg. Record cabin differential pressure		8.4 to 8.8 psi
(c)	Select Nos. 2 and 3 air conditioning packs off and check that cabin altitude does not increase		SAT/UNSAT
(d)	Select No. 2 pack on and Nos. 1 and 3 packs off and check cabin altitude does not increase		SAT/UNSAT
(e)	Select pack No. 3 on and Nos. 1 and 2 packs off and check cabin altitude does not increase		SAT/UNSAT
(f)	Reselect packs on.		
(g)	Pull out cabin rate controller knob to engage standby and note no change in indications		SAT/UNSAT
(h)	Rotate cabin altitude knob towards down and establish a cabin rate of descent of 200 to 300 ft/min.		
(i)	Observe cabin pressure relief light illuminates and cabin altitude stops descending. Record cabin differential when the relief light illuminates		8.75 to 9.1 psi

Note: Do not allow differential pressure to exceed 9.1 psi

(j) Return the pressurisation to the auto mode

8. CONTROLS AND TRIMS

During the climb to flight level 350 at any convenient time note :

Mean altitude	
I.A.S.	
Mach	

Trims: Stabiliser [ ] Rudder [ ] ±1 Div. Aileron [ ] ±1 Div.

(a) Check controls for:

	Breakout	Centering	Weight	Response
Elevator	SAT/UNSAT	SAT/UNSAT	SAT/UNSAT	SAT/UNSAT
Ailerons	SAT/UNSAT	SAT/UNSAT	SAT/UNSAT	SAT/UNSAT
Rudder	SAT/UNSAT	SAT/UNSAT	SAT/UNSAT	SAT/UNSAT

(b) Check operation of trimmers:

Stabiliser on control column switches	SAT/UNSAT
Stabiliser on console suitcase handles	SAT/UNSAT
Stabiliser on alternate trim switches	SAT/UNSAT
Rudder	SAT/UNSAT
Aileron (note effectiveness weak over small angles)	SAT/UNSAT

(c) Check operation of yaw dampers by initiating a Dutch roll with a rudder input with all dampers off.

Check that each yaw damper in turn stops the Dutch roll oscillation.

Channel A	Upper	SAT/UNSAT	Lower	SAT/UNSAT
Channel B	Upper	SAT/UNSAT	Lower	SAT/UNSAT

Reselect all yaw dampers on.

9. **HIGH MACH**

Trim the aircraft at flight level 350 in a level cruise at 0.82 IMN.

Record: Altitude [ ] I.A.S. [ ] Mach [ ] T.A.T. [ ]

A.S.I. limit speed hand [ ] 292-304 knots

Apply maximum continuous thrust and accelerate slowly to 0.90 IMN. Do not trim above 0.87 IMN.

Record indicated mach number at high speed warning.

Captain		Co-pilot
[ ]	0.875 to 0.89 IMN	[ ]

Note handling qualities at 0.90 IMN (slight push force required). SAT/UNSAT

Extend airbrakes at 0.90 IMN (no roll and a gentle pitch up). SAT/UNSAT

10. **FUNCTIONING FIVE**

Engine relighting. Flight level 330.

(a) Idle No. 2 engine for 3 minutes.

(b) Shut the fuel off No. 2 engine.

(c) After 3 minutes relight No. 2 engine at 33,000 ft. and 225 knots. (Note starter assist if N_2 below 10%).

Record:	Altitude	[ ]	T.A.T.	[ ]
Engine windmilling speed	N_1	[ ]	N_2	[ ]
Time to E.G.T. rise		[ ]	45 sec. max.	
Maximum E.G.T. during relight		[ ]	750°C continuous 751-900°C for 40 secs	
Time to idle N_1		[ ]	90 secs.	

Leave No. 2 engine at flight idle for 1 minute before opening the throttle.

11. **HIGH I.A.S.**

At any convenient altitude between flight level 150 and 200 clear of cloud and turbulence, trim the aircraft in level flight at 350 knots.

Record: Limit speed hand pointer [ ]

Trims: Stabiliser [ ] Rudder [ ] ±1 Div. Aileron [ ] ±1 Div.

Note throttle setting at equal N_1 SAT/UNSAT
½ knob max.

Operation of controls over small angles.

Elevator SAT/UNSAT Rudder SAT/UNSAT Aileron SAT/UNSAT

Accelerate slowly by applying power to 370 knots I.A.S.

Record indicated airspeed at high speed warning

Captain [ ] 353-362 knots

Co-Pilots [ ]

Extend speed brakes at 370 knots (gentle nose up pitch with no roll). SAT/UNSAT

12. **ALPHA SPEED CHECKS AND FUNCTIONING SIX**

Between flight level 140 and 100
Time the slat retract to Take-off at 260 knots [ ] 6 to 10 seconds

Record Aircraft Weight [ ]

Scheduled speed for flap 0°/slat Take-off [ ]

Trim the aircraft with flap 0°, slats Take-off on autopilot height lock in with No. 1 autothrottle engaged at a speed 20 knots greater than the scheduled α speed.

When stabilised select a speed on the autothrottle controller 20 knots below the scheduled α speed.

When the speed stabilises in the α speed mode record the stabilised speed.

Captain's ASI	speed scheduled ± 10 knots	Co-Pilot's ASI	speed scheduled ± 10 knots
[ ]		[ ]	

Time the flaps 0° - 22° at 210 knots [ ] 10 to 14 secs

Record: Aircraft Weight [ ]

Scheduled α speed for gear up flap 22° slat T.O. [ ]

Repeat the α speed check as for previous configurations but with No. 2 autothrottle engaged.

Record: Stabilised α speed.

Captain's ASI	speed scheduled ± 7 knots	Co-Pilot's ASI	speed scheduled ± 7 knots
[ ]		[ ]	

Time the gear down at 170 knots	[ ]	17 secs max.
Time the flaps 22° to 50° at 160 kts	[ ]	18 – 26 secs.
and the slats T.O. to land	[ ]	1-3 secs.
Record: Aircraft Weight	[ ]	

Scheduled α speed for gear down flaps 50° T.O. [ ]

Repeat the α speed check as for previous configuration but with No. 1 autothrottle engaged.

Record: Stabilised α speed.

Captain's ASI	speed scheduled ± 6 knots	Co-Pilot's ASI	speed scheduled ± 6 knots
[ ]		[ ]	

Flap Limiter Check

With gear down flaps 50° trim the aircraft at 160 knots. Increase speed slowly to 190 knots.

Record: Flap angle achieved at 192 knots 37° max

Reduce speed back to 160 knots.

Check that flaps re-extend		SAT/UNSAT
Time the flaps 50 to 22° at 160 knots	[ ]	122 – 16 secs
and the slats land to take-off	[ ]	7 – 11 secs
Time gear up at 170 knots	[ ]	7.7 to 13.5 secs
Time the flaps 22° to up at 200 knots	[ ]	9 to 11 secs

Time the slat Take-off to retract at 260 knots

13. STALLS

Stalls must be carried out at least 10,000 ft above terrain but not above flight level 200 clear of cloud and turbulence.

(a) Gear up, flaps up slats retract. Stall approach.
Trim the aircraft at 1.4 V_S with power off.
Reduce speed at approximately 1 knot/sec until the start of heavy buffet occurs and then take recovery action.

Record:	Aircraft weight		
	Trim Speed		
	Scheduled stick shaker speed		
	Achieved stick shaker speed		±8 knots on scheduled
	Functioning of auto slat extend	SAT/UNSAT	
	Speed at buffet onset		
	Speed at start of heavy buffet		

Record any unusual characteristics (e.g. rolling tendency)

Check operation of auto slat reset SAT/UNSAT

(b) Gear up, flaps 22° slats T.O.

Isolate No. 2 stall warning by pulling “autothrottle and speed command 2 stall warning” circuit breaker. Trim the aircraft at 1.4 V_S with power off. Reduce speed at approximately 1 knot/sec until the aircraft stalls with a positive nose down pitch.

Record:	Aircraft weight		
	Trim speed		
	Scheduled stick shaker speed		
	Achieved stick shaker speed No.1		Scheduled ±5 knots

Speed at buffet onset		
Scheduled stall speed		
Achieved stall speed		Scheduled ±5 knots
Margin between stall warning and stall		5 knots min.

Record any unusual characteristics (e.g. rolling tendency)

Reinstate No. 2 stall warning circuit breaker.

(c) Gear down, flaps 50° slat land.

Isolate No. 1 stall warning by pulling “autothrottle and speed command 1 stall warning” circuit breaker.

Trim the aircraft at 1.4 V_S with power off. Reduce speed at 1 knot/sec until the aircraft stalls with a positive nose down pitch.

Record:

Aircraft weight		
Trim speed		
Scheduled stick shaker speed		
Achieved stick shaker speed No.2		Scheduled ±5 knots
Speed at buffet onset		
Scheduled stall speed		
Achieved stall speed		Scheduled ±5 knots
Margin between stall warning and stall		5 knots min.

Record any unusual characteristics (e.g. rolling tendency)

Reinstate No. 1 stall warning circuit breaker.

14. FUNCTIONING SEVEN

Flight level 100. (Flight level 100-50 for 14.2 onwards).

14.1 Engine Relight

(a) Idle No. 1 engine for 3 minutes

(b) Shut the fuel off No. 1 engine.

(c) After 3 minutes make a starter assisted relight on No. 1 engine at 10,000 ft and 150 knots with gear up and flaps 22°.

Record:	Altitude		T.A.T.	
Engine windmilling speed	N_1		N_2	
Time to E.G.T. rise			45 sec. max.	
Maximum E.G.T. during relight			750°C continuous 751-900°C for 40 secs	
Time to idle N_1			90 secs. max.	

Leave No. 1 engine at flight idle for 1 minute before opening the throttle.

14.2 Alternate Static

10,000 ft – 5,000 ft

With gear and flaps up at 250 knots in level flight, operate the pilot's and co-pilot's alternate static.

Record:	Captain		Co-Pilot	
Change in altimeter reading		+30 -60 ft.		+30 -60 ft.
	Captain		Co-Pilot	
Maximum E.G.T. during relight		+2 -4 kts		+2 -4 kts

14.3 Gear Free Fall

10,000 ft – 5,000 ft.

At 230 knots with gear up flaps up slat retract, check aileron response for a small wheel input.

With No. 3 hydraulic system off and power exhausted

(a) Operate the gear free fall by pulling the free fall handle. SAT/UNSAT

(b) Check improved aileron responses for a similar wheel input to that previously applied. SAT/UNSAT
(If there is any doubt the outboard aileron can be observed to be unlocked from the cabin).

(c) Re-select No. 3 hydraulic system on.

(d) Select the normal landing gear lever to down.

(e) Restow the gear free fall handle.

14.4 A.D.G. Deployment

At 10,000 ft – 5,000 ft and 250 knots, check ADG deployment as follows:-

(a) Turn off both No. 3 engine hydraulic pumps and place 1-3 and 2-3 motor pumps to arm and allow system pressure to decay.

(b) Verify ADG switch in the hydraulic position, break safety wire on the ADG handle and pull up firmly to deploy ADG.

Check ADG deploys SAT/UNSAT

Aux. hydraulic pump starts to pressurise No. 3 system SAT/UNSAT

(c) Switch ADG to electrics and record ADG voltage and frequency.

Voltage	112-118V	Frequency	380 to 420 Hz.

(d) Re-select No. 3 hydraulic system back on.

15. LANDING

Carry out a normal landing.

Note any unusual characteristics.