CHECK FLIGHT CERTIFICATE

Eurocopter AS332L2 Super Puma Mk II
Turbomeca Makila 1A2

CFS 245A 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	-20	-20	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 check flights may conduct the test.
General notes on test conduct can be found in the CAA Check Flight Handbook.
This sheet replaces any check flight certificate given in the schedule.
Registration: If the aircraft is not on the UK register, add the manufacturer's 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 Check Flight Handbook.
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 check flights on 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 a check flight 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.

CHECK FLIGHT SCHEDULE

Eurocopter AS332L2 Super Puma Mk II **CFS 245A Issue 1**
Turbomeca Makila 1A2

Registration	
Flight Date	

1. INTRODUCTION

This schedule is only applicable to the Aerospatiale AS332L2 Super Puma Mk II helicopter with Turbomeca Makila 1A2 engines. It is based on the assumption that the everyday operation of the helicopter serves as a continuous check of the correct functioning of all normal services.

The check flight must be carried out by an experienced pilot acceptable to the Airworthiness Division of the CAA in accordance with this schedule and the general guidance given in the CAA Check Flight Handbook. The crew are expected generally to monitor the behaviour of all equipment and report any unserviceable items.

In addition to completing all the tests in the schedule any characteristics which are considered to be unsafe or undesirable must be recorded.

It is illegal to carry passengers on a test flight made under 'A' or 'B' conditions except passengers performing duties in the aircraft in connection with the flight. Although it may be legal to carry passengers on a test flight with a Certification of Airworthiness in force, it is strongly recommended, for airworthiness Flight Tests and other tests entailing greater risk than normal flight, that:

1. It is preferable to use ballast, and

2. Before accepting any passengers on a test flight the pilot in command should inform them that the risk is greater than on an ordinary flight.

Under no circumstances are the limitations contained in the CAA approved Flight Manual to be exceeded.

Should there be any query regarding the Flight Test or the results, the local CAA Surveyor or the Helicopter Flight Test Section at Airworthiness Division Flight Department, Aviation House, Gatwick, must be consulted.

It is recommended that the tests are performed in the sequence given. The results are to be written in ink in the spaces provided

2. PRE-FLIGHT INFORMATION

Aircraft Variant:	Aerospatiale AS332L2	**Engine Variant:**	Makila 1A2

			Eng 1	**Eng 2**
Registration:		Engine No.		
Airframe No.		Hours Total:		
Airframe Hrs:		TSO:		

Operator/Maint. Organisation:	
Airfield:	
Pilot(s):	
Observer(s):	

3. LOADING

Note: The helicopter shall be loaded to maximum all up weight if possible or to a lower weight if required to comply with the operators company policy. The CoG should be approximately in the neutral position.

Take-off Weight:	Kg/lb
Fuel:	Kg/lb
CoG Position:	m./in aft of datum

4. GENERAL FLIGHT INFORMATION

Airfield Press Alt	ft	QFE/QNH	/
Wind	/	OAT	ºC
Weather:			
Engine Start:		Land:	
Take-Off:		Shut Down:	

5. PRE-START CHECKS

			Remarks
5.1	Carry out the normal external inspection	SAT/UNSAT	
5.2	Doors & windows: Condition & operation	SAT/UNSAT	
	Seats & harnesses:	SAT/UNSAT	
	Placards: Legibility & accuracy	SAT/UNSAT	

5.3 Instrument marking: Legibility, general condition and accuracy of colour bands & marking:

ASI:	SAT/UNSAT	
Torquemeter:	SAT/UNSAT	
Triple Indicator (Nr/Nf):	SAT/UNSAT	
Co-Pilot's Nr Gauge	SAT/UNSAT	
T4 Gauges:	SAT/UNSAT	
Diff Ng Gauges:	SAT/UNSAT	
All Other Instruments:	SAT/UNSAT	

5.4 After self test of engine computers, confirm the following captions are extinguished:

GOV1, GOV 2, PWR 1, PWR 2	SAT/UNSAT	

5.5 Select Aux. Hyd. Pump ON

Check for freedom, range of travel, friction:

Cyclic control:	SAT/UNSAT	
Collective control:	SAT/UNSAT	
Freedom, range of travel & adjustment of yaw control:	SAT/UNSAT	

Select Aux Hyd Pump OFF

Note accumulator holds pressure:	SAT/UNSAT	

Re-select Aux Hyd Pump as required for start.

5.6	Test Warning Lamps: (**Note:** Markings clearly visible)	SAT/UNSAT	
	Test overhead/inst panel warning lamps	SAT/UNSAT	

5.7 Ensure Fuel Shut Off levers (RED) are forward (open) and Fuel Control Levers (Yellow) are aft (closed)

Confirm satisfactory operation of engine crank buttons:

Eng 1	SAT/UNSAT	
Eng 2	SAT/UNSAT	

Complete Pre-start checks as required

6. ENGINE START

6.1 Check the rotor brake/starter interlock as follows:

6.1.1 Move the rotor brake safety lever aft, and the braking lever to the 21 bar detent.

6.1.2 Attempt an engine start. The starter circuit should be Inhibited.

SAT/UNSAT	

WARNING: If the starter does engage, abort the start immediately.

Start Time: [ ]

6.2 Perform a High Wind Start – Rotor Brake selected to 105 bar

6.2.1 Move the rotor brake to the static braking (105) bar position.

Release the rotor brake safety lever and the braking lever.

SAT/UNSAT	

Confirm the Static Braking Inhibiting lever returns to the 21 bar position automatically.

6.2.2 Reapply the static rotor brake. Start each engine in accordance with normal drills and **record:**

	Eng 1	Eng 2
Residual T4		
Starter cut-out by 45% Ng		
Max T4		
Eng P1/P2 warning lights extinguished at 1.7b		
OVSPD light extinguishes by 23% Nf		
(Following rotor brake release)		
Satisfactory Acceleration		
ELEC extinguished by 92.5% Nr		

7. POST START CHECKS

7.1 Perform all post start checks in accordance with normal drills

SAT/UNSAT	

7.2 <u>P2 valve Automatic Shut off</u>

Check the functioning of the P2 auto shut off in accordance with the FM, thus:
Select the cockpit or cabin heater ON

Confirm the P2 valve open symbol appears in the FLI		
Eng 1 ΔNg Pushbutton	TEST	
Confirm P2 valve symbol extinguishes		
Release Eng 1 ΔNg pushbutton and repeat for Eng 2		

Release Eng 2 ΔNg pushbutton and deselect heater.

7.3 <u>P2 Heater Valve leak Check</u>

Cockpit/Cabin Heater	OFF	
Eng 1 FFCL (yellow handle)	FAST REDUCTION	
Confirm Eng 1 Nf split		
P2 Valve switch	TEST	
Confirm P2 Valve Open symbol on FLI		
Confirm Eng 2 T4 rise of approx 20°C		
P2 valve switch	NORM	
Eng 1 FFCL (yellow handle)	FLIGHT	
Eng 2 FFCL (yellow handle)	FAST REDUCTION	
Confirm Eng 2 Nf split		
P2 valve switch	TEST	
Confirm P2 Valve Open symbol on FLI		
Confirm Eng 1 T4 rise of approx 20°C		
P2 valve switch	NORM	
Eng 2 FFCL (yellow handle)	FLIGHT	

7.4 Press cooling fan TEST button

Confirm RUN illuminated during test	SAT/UNSAT	
Confirm RUN, MAIN, 2nd and B UP FAIL. extinguished at end of test		

7.5 Confirm satisfactory operation of OEI Training Mode:

Select TRAINING IDLE on Eng 1

Confirm Eng 1 Nf drops to approx 90%	SAT/UNSAT	

Retard Eng 2 Fuel Flow Lever to Fast Reduction

Confirm Eng 1 Ng increases slightly	SAT/UNSAT	

Advance Eng 2 Fuel flow lever to the Flight Position

Set Eng 1 training switch to Normal and guard

Confirm Eng 1 Nf recovers to normal	SAT/UNSAT	
Repeat with Eng 2 selected to TRIANING IDLE	SAT/UNSAT	

7.6 Enter fuel data in IFDS for comparison post flights

Zero Fuel Weight		lb-kg
Fuel		lb-kg
Weight Entered		lb-kg

8. TAXI

8.1	Satisfactory operation of parking brake, nosewheel lock and toe brakes	SAT/UNSAT	
8.2	Turns to left and right	SAT/UNSAT	
8.3	Fast taxi (30 kt approx)	SAT/UNSAT	
	- Confirm absence of nosewheel shimmy:	SAT/UNSAT	
	- Check toe brake operation	SAT/UNSAT	

9. BLEED VALVE CHECK

Prior to departure, check the bleed valve opening (lamp illuminates) and closing (lamp extinguishes) points for each engine in turn:

	Normal		Offset	
	Closing	**Opening**	**Closing**	**Opening**
Eng 1 Ng				
Eng 2 Ng				

Note: For 1013 mb, +15ºC, sea level, the thresholds are:

Normal:	Opening	81.3 – 84.6%	Offset:	Opening	95 ± 0.5%
	Closing	0.6 – 3.6% above opening threshold		Closing	98 ± 0.5%

Determine the corrected thresholds from the following:

Corrections for temp and press variations from ISA are as follows:

Temp: 10ºC temp rise INCREASES thresholds by 1.4%

Press: 3000ft press alt rise INCREASES thresholds by 0.8%

OAT	ºC		P. Alt	ft			
Temp Correction	%	+	Alt Correction	%	=	Total Correction	%

Corrected Thresholds:

	Normal
Opening	%
Closing	0.6 – 3.6% above opening threshold

10. TAKE OFF

Take off Time:	

11. HOVER MANOEUVRES

11.1	Axial turns:	Right	SAT/UNSAT	
		Left	SAT/UNSAT	
11.2	Sideways flight at 20 kt	Right	SAT/UNSAT	
		Left	SAT/UNSAT	
11.3	Rearwards flight at 20 kt		SAT/UNSAT	
11.4	Note autopilot performance:	Pitch	SAT/UNSAT	
		Roll	SAT/UNSAT	
		Heading Hold	SAT/UNSAT	
11.5	Perform gentle hover manoeuvres with autopilot disengaged		SAT/UNSAT	

Reengage autopilot as required.

		MGB Oil	
		Temp	**Press**
11.6	Following the hover tests, record the following:		

12. SINGLE ENGINE EN-ROUTE CLIMB PEROFRMANCE/AUTOROTATION

12.1 No. 1 Engine

Trim the aircraft in level flight at 70 kt. Select Eng 2 Training idle Selector aft.
Confirm: Diff Ng light illuminated
Training symbol on FLI and instrument panel
OEI H indicated on FLI

Warning 1: **Do not deselect training mode without first reducing power below ΔNg < -5%**

Increase collective to achieve 30 sec power indicated on FLI and ΔNg Indicator and rotor droop to 94% approx

Warning 2: **Allowing rotor to droop below 91% will result in actual OEI power regime being entered, with subsequent maintenance penalties**

Test conditions		
	FLI	Training 30 sec
	ΔNg	4.5% (training)
	Bleeds	Off (unless specifically required)
	Landing Gear	Retracted
	IAS	Vy

When a stable condition has been established on a steady heading with zero sideslip, **record the following:**

										Engine Oil		
Time	**Alt**	**OAT**	**IAS**	**FLI**	**Tq**	**ΔNg**	**Ng**	**T4**	**Nf/Nr**	**Temp**	**Press**	**Fuel**
0												
0.30												
1.00												
1.30												
2.00												
2.30												
3.00												
3.30												
4.00												

On completion of the climb, lower the collective to allow rotor rpm to recover until it is just drooping. Press OEI LO button. Be prepared to intervene to prevent rotor rpm from drooping below 91%. Raise the collective as necessary to set a rotor rpm of approx 95%. Confirm engine limits at Training 2 min power. **Record:**

Eng	P.Alt	OAT	Tq 1	FLI	Ng	ΔNg	T4
1							

Reduce power below ΔNg = -5%.
Move Eng 2 Training Idle Selector forward.
After climb, obtain an accurate OAT by flying at approx mid-climb Altitude at climb speed/level flight for 1 min to OAT to stabilise.

Alt		ft
OAT		°C

NOTE The climb performance must be analysed and compared with the schedule performance. See Section 19.2 of this document.

12.2 Autorotation

12.2.1 Perform a gentle entry to a steady autorotative descent at 70kt with the collective lever fully down if possible. Record when stabilised, u/c retracted:-

P.Alt	OAT	IAS	Nr	FLI	Fuel	AUW

Note: Do not exceed power-off rotor rpm limitations (109.5% continuous, 117% Transient)

12.2.2	Carry out 30° banked turns left & right in autorotation	SAT/UNSAT	

12.2.3 Carry out a rapid recovery from autorotation (Nr/Nf needles just joined to 60% Torque in not less than 3 sec).

Note: Engine response & absence of surge

Transient rotor droop %

NOTE: Autorevs must be checked against the schedule – See Section 19.3 of this document.

12.3 No. 2 Engine

Trim the aircraft in level flight at 70 kt. Select Eng 1 Training Idle Selector aft.

Confirm: Diff Ng light illuminated
Training symbol on FLI and instrument panel
OEI H indicated on FLI

Warning 1: **Do not deselect training mode without first reducing power below ΔNG < -5%**

Increase collective to achieve 30 sec power indicated on FLI and ΔNG Indicator and rotor droop to 94% approx.

Warning 2: **Allowing rotor to droop below 91% will result in actual OEI power regime being entered, with subsequent maintenance penalities.**

Test conditions	
FLI	Training 30 sec
ΔNg	+4.5% (training)
Bleeds	Off (unless specifically required)
Landing Gear	Retracted
IAS	Vy

When a stable condition has been established on a steady heading with zero sideslip, **record the following:**

										Engine Oil		
Time	**Alt**	**OAT**	**IAS**	**FLI**	**Tq**	**ΔNg**	**Ng**	**T4**	**Nf/Nr**	**Temp**	**Press**	**Fuel**
0												
0.30												
1.00												
1.30												
2.00												
2.30												
3.00												
3.30												
4.00												

On completion of the climb, lower the collective to allow rotor rpm to recover until it is just drooping. Press OEI LO button. Be prepared to intervene to prevent rotor rpm from drooping below 91%. Raise the collective as necessary to set a rotor rpm of approx 95%. Confirm engine limits at Training 2 min power. **Record:**

Eng	P. Alt	OAT	Tq2	FLI	Ng	ΔNg	T4
2							

Reduce power below ΔNg = -5%

Move Eng 1 Training Idle Selector forward.

After the climb, obtain an accurate OAT by flying at approx mid-climb altitude at climb speed/level flight for 1 min to OAT to stabilise.

Alt		ft
OAT		°C

NOTE The climb performance must be analysed and compared with the schedule performance. See section 19.2 of this document.

13. HANDLING CHECKS

13.1 Cruise/Engine Power Check

In level flight at approx 2000 ft, PA approx, increase power to maximum continuous. Allow to stabilise for 3 min, take a HUMS record and note:

Eng	P. Alt	OAT	IAS	Tq	Ng	ΔNg	T4	FLI	Nr
1									
2									
Vibration Level	Satisfactory/Unsatisfactory								

NOTE: The Engine Power Assurance results must be analysed and compared with the schedule. See Section 19.1 of this document.

13.2 Carry out 30° banked turns port and starboard. Note satisfactory control response and handling characteristics.

Port	SAT/UNSAT	
Starboard	SAT/UNSAT	

13.3 Increase speed to Vne at max continuous power (in dive if necessary).

P. Alt	OAT	Fuel	AUW	Vne	FLI	Vibration Level	Achieved IAS
						SAT/UNSAT	

13.4 Carry out gentle banked turns to port and starboard at Vne. Note satisfactory control response and handling characteristics.

Port	SAT/UNSAT	
Starboard	SAT/UNSAT	

13.5 Reduce airspeed to Vy(70kt). Increase collective pitch to achieve take off power without exceeding and limit.

SAT/UNSAT	

Note satisfactory control response and vibration level.

14. AUTOPILOT CHECKS

14.1 Datum Holding, AFCS 1 & 2 engaged
Establish straight and level flight at 130kt. Check Autopilot performance as follows:

a)	Without retrimming, displace the cyclic to alter pitch angle by 5º nose-up. Release cyclic and check pitch altitude returns to datum ±1º with minimal overshoot.	SAT/UNSAT	
b)	Repeat (a) for 5º nose-down.	SAT/UNSAT	
c)	Repeat (a) for 10º left roll.	SAT/UNSAT	
d)	Repeat (a) for 10º right roll.	SAT/UNSAT	
e)	Note yaw channel performance during c) and d)	SAT/UNSAT	

14.2 Datum Holding AFCS 1 only engaged
Disengage AFCS 2 and repeat 14.1 a) to e).

a)	Pitch 5º nose-up	SAT/UNSAT	
b)	Pitch 5º nose-down.	SAT/UNSAT	
c)	Roll 10º left.	SAT/UNSAT	
d)	Roll 10º right.	SAT/UNSAT	
e)	Yaw channel performance.	SAT/UNSAT	

14.3 Datum Holding AFCS 2 only engaged.
Re-engage AFCS 2 and disengage AFCS 1.
Repeat 14.1 a) to e).

a)	Pitch 5º nose-up	
b)	Pitch 5º nose-down.	
c)	Roll 10º left.	
d)	Roll 10º right.	
e)	Yaw channel performance.	

14.4 Autopilot Disengaged.

a) Disengage the Autopilot using the cyclic button.	
Note smooth disengagement and normal aircraft response during gentle manoeuvres.	
b) Switch OFF AP hydraulics. Check normal aircraft response during gentle manoeuvres.	
c) Switch ON AP hydraulics and re-engage AP. Note smooth re-engagement	

14.5 Heading Hold Mode

a) At 130 kt approx, straight and level, HDG disengaged, make power changes of approx ± 10% Tq

Note satisfactorily heading stability

b) At 130 kt approx, straight and level, set heading index to aircraft heading. Engage HDG mode, move index 90° right and confirm aircraft turns to stbd at max. 20°±2° roll attitude onto selected heading ± 1°.
Repeat for 90° left.

Right	
Left	

14.6 Co-ordinated Turns

At 130 kt approx straight and level, remove feet from pedals and carry out 30° banked turns to port and starboard. Confirm turns balanced within 1 ball width.

Right	
Left	

14.7 Altitude Hold Mode

At 130 kt approx straight and level, engage ALT mode.

Confirm altitude held ± 50ft	
Slowly reduce power by approx 10% Tq.	
Confirm altitude held ±50 ft	
Slowly increase power by approx 10% Tq.	
Confirm altitude held ±50 ft	

Use cyclic inputs to override Alt hold and note	-	ft
Excess deviation thresholds	+	ft

Disengage Alt Hold

14.8 Airspeed Mode

At 130 kt approx straight and level, engage A/S mode.

Confirm airspeed is held ±5 kt

Slowly reduce power by approx 10% Tq.

Confirm airspeed is held ±5 kt

Slowly increase power by approx 10% Tq.

Confirm airspeed is held ±5 kt

By means of cyclic displacement (not Beep Trim),

Decrease speed by 10 kt. Release and note previous speed is reacquired and held ± 5kt

Using the cyclic beep trim, reduce IAS demand by 20 kt. Note the new airspeed is acquired smoothly.

Repeat for a 20 kt speed increase (Do not exceed Vne)

Use cyclic inputs to override airspeed hold and note	- kt
Excess deviation thresholds:	+ kt

14.9 "4-Axis" Mode

At 120kt, straight and level, engage airspeed hold. Using ALT A, set a target altitude approx 1000ft higher.
Engage V/S and set a rate of climb of 500 fpm.
When aircraft stabilises in the climb, reduce the target airspeed to 110 kt

Note new airspeed is acquired with ± 5 kt

Increase target airspeed to 120 kt

Note new airspeed is acquired with ± 5 kt

Note aircraft acquires and holds the target altitude within ± 50ft

Repeat for an altitude 1000 ft lower and a rate of descent of 500fpm

14.10 Power Limiting

Caution: Monitor controls throughout the following test to ensure engine and transmission limits are not exceeded.

At 120 kt, straight and level, engage airspeed hold and height hold. Allow aircraft to stabilise, and increase target airspeed to Vno.

As airspeed approaches Vno, select V/S mode and increase demanded rate of climb.

Note power is limited to maximum continuous on the FLI.

14.11 Cruise Height

At 130 kt, straight and level, over water or relatively level terrain, engage A/S and ALT modes. Using ALTA, reduce height until the Rad Alt starts to indicate.

Caution 1: Observe operational minimum height restrictions throughout.

Caution 2: Ensure Rad Alt DH bug is set at least 100 ft below target height to avoid triggering a fly-up command in manoeuvres.

Set target cruise height to 100 ft less than indicated Rad Alt and engage.

Note aircraft descends and maintains Cr Ht ± 20 ft.

Engage HDG mode and initiate heading changes of ±90°

Confirm set Cr Ht is maintained within ± 50 ft Rad Alt.

Increase Set Cr Ht by 100 ft.
Confirm aircraft climbs and stabilises at new height ± 20 ft.

Caution 3: For the following test, the collective is to be closely monitored to prevent any rapid torque rise during the Fly-up.

Reduce airspeed to 100kt, then slowly increase the DH. Confirm the collective is driven up with appropriate audio and IFDS annunciations as DH passes actual height. Do not allow power to rise above Max. Continuous.

Disengage the collective channel, and set the DH as required.

14.12 ILS

Check Go around mode thus:
At approx 2000 – 3000 ft, 100 kt, engage A/S and V/S modes. Select a rate of descent of 200 fpm.
When stabilised in the descent, trim the aircraft into a 20° banked turn.
When stabilised, press GA.

Note aircraft rolls wings level, decelerates to 75 kt

And stabilises in a climb at 500fpm with appropriate IFDS annunciations

If possible, carry out a fully coupled ILS approach

And check for excess deviation when flying off the beam.

14.13 Trim Release

Switch OFF TR. FEEL on the autopilot control panel.
Check for smooth operation of controls.
Switch TR. FEEL ON

14.14 Fly-Through

In a normal cruise, confirm satisfactory fly-through by manoeuvring the aircraft
Without using beep or trim release.
Check for acceptable stick forces.

14.15 Beep Trim

Confirm correct functioning of Pilot's & Co-pilot's Beep Trim. [ ]

15. SYSTEM FUNCTIONING

15.1 Hydraulic System

Confirm satisfactory operation. [ ]

15.2 Electrical System

Confirm normal operation. [ ]

15.3 Fuel System

Confirm satisfactory operation including transfer system. [ ]

15.4 Standby Static System

At 100 kt or 140 kt level flight, ensure P2 Bleeds are OFF, windows and vents closed. Switch between standby & normal static systems and note change in indications:

	Pilot	Co-Pilot	Limits (see placard)
Altimeter			ft
ASI			kt

Ensure both valves are reset to NORMAL.

15.5 Landing Gear

a) At 70 kt check landing gear extension and retraction times.

extension		sec	Hyd Press drop		bar/psi
retraction		sec			

b) With landing gear retracted, reduce airspeed until L/G warning illuminates. Note airspeed (60 ± 5 kt) [ ] kt

c) With undercarriage retracted and L/G warning illuminated (IAS<60 kt), reduce height below 300 ft.

Note altitude at which 3 sec aural tone or AVAD	ft

"UNDERCARRIAGE" is activated.

15.6 Emergency Undercarriage Lowering

At 70 kt, undercarriage retracted, select Emergency L/G extension.

Record extension time [ ] (< 2 min)

Confirm PUMP indicator light illuminated [ ]

Reset Emergency lever to normal and note [ ]

Undercarriage retracts with correct indications

15.7 Emergency Intercomm

Confirm satisfactory operation of each station [ ]

Box emergency intercom facility

16. LANDING

Landing Time: [ ]

Confirm no tendency to resonance during a normal landing. [ ]

17. POST LANDING CHECKS

17.1 Note IFDS fuel indication [ ] kg

Note actual fuel contents [ ] kg

Confirm IFDS is within 5% of actual contents [ ]

17.2 Electrical Load Shedding:

With fuel flow levers fully fwd:

a) Switch OFF both Alternators and each 28V TRU in turn.
Confirm no loss of consumers.

Alt 1		**TRU 1**	
Alt 2		**TRU 2**	

b) Switch OFF both Alternators.

Confirm Bus Tie open [ ]

Confirm Auxiliary Bus (PP3) is shed (e.g. NMD2, PFD1) [ ]

Confirm PP2 consumers remain supplied:

PP21 e.g. OAT Indication	
PP22 e.g. Fuel transfer	
PP23 e.g. Storm Light	
PP24 e.g. Ice Detector	
PP25 e.g. Rad Alt	
PP26 e.g. AFCS 1, AFCS 2, NMD 1, PFD 2	
PP27 e.g. VHF Comms 2	
PP28 e.g. Triple Tacho	

Switch EMERG SUPPLY on

Confirm PP21, 22, 23, 24 & 25 are shed	
Confirm AFCS 1 is shed, but other PP26 items are retained	
Confirm NMD 2 is recorered	
After 2 min approx, confirm green FLOW light illuminates	
Confirm voltage 28V approx	
Confirm LH hydraulic indicator steady in green arc.	
Reselect both alternators. Confirm CWP captions clear	
Deselect EMERG SUPPLY	

17.3 Check functioning of all external lighting:

Anti-collision	
Strobes	
Position	
Dinghy	
Floods	
Landing	

18. SHUT DOWN

18.1 Rapidly move each fuel flow lever in turn to the fast reduction detent. Flame out should not occur. Note the stabilised idle parameters:

	Ng	T4
Eng 1		
Eng 2		

18.2 Shut down each engine in the normal manner.

		Max	Min	
Note rotor audio warning thresholds:	Nr			rpm

Note Shut Down Time	

18.3 Apply rotor brake at 45%. Confirm rotor stops within 15 sec. | sec |

18.4 Examine the alignment of the Fuel Flow Control Levers and Fuel Shut Off Levers. If any of the levers are misaligned and interference seems possible, perform the following:

With Fuel Booster Pumps switched off, move both Fuel Flow Control Levers to the Fast Reduction position.

Move each Fuel Shut Off Lever to aft and check for smooth movement and absence of binding or interference with the Fuel Flow Control Lever.	
Repeat with the Fuel Flow Control levers in the Flight position.	

18.5 Check functioning of internal lighting if ambient light conditions permit:

Panel lighting (if possible)	
Storm light	
Wander light	
Cockpit floodlight	
Map lights	
Cabin emergency lighting	

19. POST-FLIGHT ACTION

19.1 Power Assurance (see 13.1)

Determine the power margin and thermal condition from the relevant charts in the flight manual and compare with HUMS analysis.

	HUMS	FM	Thermal Cond
Eng 1			
Eng 2			

19.2 Performance Climb (see para 12.1 & 12.3)

Plot the data and determine the achieved rate of climb. The scheduled performance must be obtained from the flight manual and compared with the achieved performance.

	Eng 1	Eng 2	
Mean Alt			ft
OAT			ºC
AUW			Kg/lb
Achieved RoC			fpm
Schedule RoC			fpm
Delta ROC			fpm

19.3 Autorotation (see para 12.2)

Use the chart in the flight manual to determine the scheduled minimum autorevs.

Mean Alt		ft
OAT		ºC
AUW		Kg/lb
Achieved autorevs		%
Scheduled min autorevs		rpm

19.4 Snap Wiring

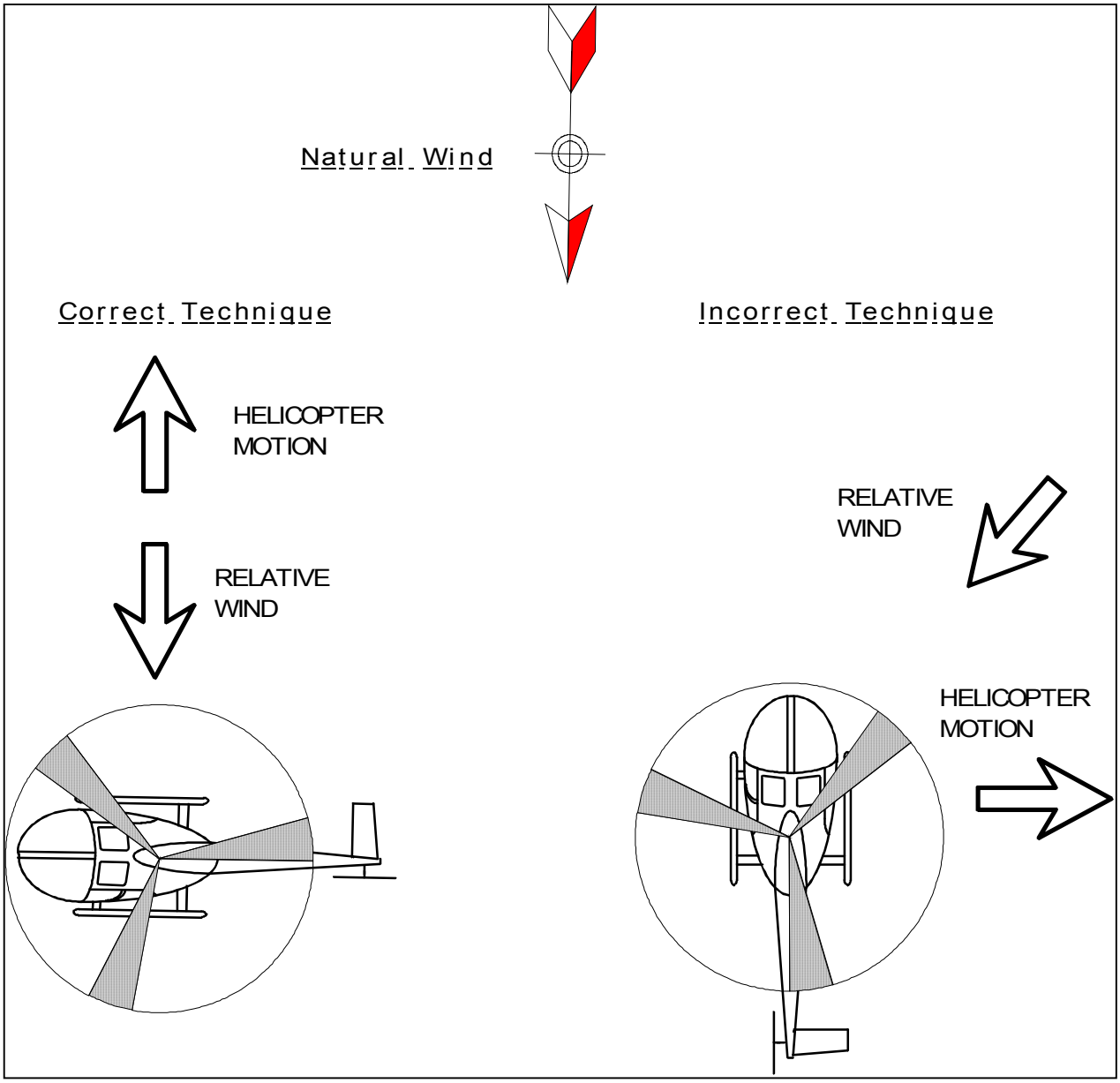
The Snap Wiring of the following controls should be renewed:

Fuel Shut Off Levers (if necessary)

Emergency Static Pressure Valves

APPENDIX 1

SIDEWARDS & REARWARDS FLIGHT

For the sidewards flight tests the helicopter should be rotated so that the natural wind is on the side of the aircraft. The aircraft should then be gently accelerated into the wind and stabilised. The mean natural wind should be added to the estimated ground speed to give the required relative air speed.

For rearwards flight the helicopter should be aligned tail into wind and gently accelerated rearwards to achieve the required relative airspeed.