

	AS355			Registration: DQ-	
Date:		Crew:		Engineer	
Performance	Climb #1	Climb #2			
	Engine # 1	Engine # 2			
Average Weight			Airfield:		
Average Temp.			°C	AUM Kg/Lbs*:	
Average Altitude			ft	Take off cg:	
Speed			KIAS	Performance:	
Achieved Rate			fpm		
Scheduled Rate			fpm		
Margin			fpm	SATISFACTORY* UNSATISFACTORY* NOT APPLICABLE* <i>* (delete as applicable)</i>	
Permitted Margin -70	-20	-20	fpm		

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.

ENGINEER'S DECLARATION

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

Name:	Signed:	Date:	Licence No:

Box X: The climb rate was below scheduled but was accepted for the following reason: **Note:** Aircraft with climb shortfalls more than 70 fpm must not be accepted.

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Airworthiness Check Flight Test Report (continued)			DQ-
No.	Defect	-/R/FT	Action?

Conclusions and comment			

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.:	
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.

Conclusions/ Annotate accordingly if an MOR or similar report is to be raised.

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.

GENERAL NOTES AND GUIDANCE.

1. CAAF Check Flight Schedules (CFS)

This schedule is applicable to Aerospatiale AS355 F, F1 and F2 helicopters. It assumes that the everyday operation of the helicopter serves as a continuous check on the correct functioning of all normal services.

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. CAAF policy is that pilots who conduct Check Flight Schedules flight tests 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 a flight test within the last 4 years. The Authority does not accept responsibility for the use of a CAAF CFS on a test flight not directly under their control.

WARNING

1. Although it may be legal to carry passengers on a check flight test with a Certification of Airworthiness in force, it is strongly recommended, for Airworthiness Check Flight Schedules Flight Tests and other tests which entail a greater risk than normal flight, that:
 - a) If passengers are being carried for weight and balance purposes, it is preferable to use ballast; and
 - b) Before accepting any passengers on a check flight test the Pilot-in-Command must inform them that the risk is greater than on an ordinary flight; and
 - c) Adequately insured; "Aircraft Insurance" to ensure that the check flight is covered under their Insurance, including the carriage of passengers, and that any passengers are briefed on emergency procedures and use of safety equipment.
2. Under no circumstances are the limitations contained in the CAAF approved Flight Manual to be exceeded.
3. If a clipboard or kneeboard is used to record the results there is a possibility of fouling the controls especially the duals, if fitted. To reduce this possibility, the pilot must have briefed the Engineer observer on the need to ensure that the clipboard is well clear of the controls especially during manoeuvres requiring large control deflections such as low speed envelope and autorotation. The pilot should monitor the position of the clipboard during the flight to ensure that it is not in a potentially hazardous position. Whenever possible, flexible, rather than rigid, clipboards should be used. Dual controls should be removed if flying with an inexperienced Engineer observer.

2. After the Flight Test

All defects should be recorded on the Check Flight Certificate even if the necessary rectification action may seem trivial. These lists enable the CAAF to identify problems with other rotorcraft of a particular type and so initiate the necessary corrective actions.

The Check Flight results should be compared with the Flight Manual or others designated on the C of A, and special note should be made of any features that would make the rotorcraft dangerous or unsafe. Generally speaking these include, but are not limited to: Inadequate climb performance;

- a. Engine power assurance below scheduled minimum;
- b. Engine power limiter set too high or too low;
- c. Autorotation RPM too low;
- d. Unreliability of seat locking;
- e. Any other functional items that bring with them special risks for a particular helicopter, having due regard to the work for which the helicopter is certificated.

Where the observed performance of helicopter is outside the specified limits, the Operator should ensure that such inspections or repair work as are considered necessary to restore it to an acceptable level are carried out. A further Check Flight should be carried out as necessary.

3. Interpretation of Results

The data against which the results must be assessed shall be that contained in the Manual designated on the C of A of the helicopter.

4. Performance Climb

The achieved rate of climb is determined from the Check Flight results. A graph of the height climb must be plotted and the best line drawn through the points. This line is then used to calculate the average rate of climb. For some rotorcraft in certain conditions the height versus speed time graph should be a curve, i.e. rate of climb reduces with height. In these cases a tangent to the curve could be drawn at the mid-climb point and used to calculate the rate of climb. The achieved rate must be compared with the scheduled rate of climb extracted from the designated Manual, appropriate to the actual aircraft weight, the mean performance climb check altitude and the average outside air temperature at that altitude. The achieved and scheduled rate of climb must be recorded on the Check Flight Report.

5. Common causes of inadequate climb performance

Where the achieved climb performance is not at an acceptable level, the following checklist, which is not necessarily definitive, may be considered when seeking a remedy:

a. General

- Pilot out of practice;
- Weather: turbulence, waves, and temperature inversion.

b. Instruments

- Incorrect reading of IAS (it is easy to confuse, or to substitute, CAS for IAS, or knots for mph);
- Faulty ASI (e.g. leaks, blockages including water, instrument unserviceable);
- Faulty altimeter (including static system);
- Faulty Outside Air Temperature Indicator;
- Faulty torque meter (including calibration errors);
- Faulty gas generator tachometer or turbine inlet temperature gauge;
- Faulty rotor rpm gauge;
- Faulty fuel gauge.

c. Weight

- Unrecorded growth of empty weight;
- Miscalculation of check weight.

d. Engine

(1). Turbine engines:

A turbine engine that is not producing its rated power will have a poor power assurance value. This is only relevant to the performance climb if the climb was carried out on an engine limit as opposed to a transmission limit, e.g. turbine temperature limit compared with a torque limit. The causes of torque indicating system inaccuracies must be considered. An over-reading torque meter will result in the power assurance being better than expected but climb performance will be poorer than expected if the climb is performed on the torque limit. An under-reading torque meter will have the opposite effects but bear in mind that in this case, the torque limit for the climb will have been exceeded and maintenance action may be required; it is therefore very important that the issue be accurately reported.

6. Autorotation check

The primary purpose of the autorotation check is to ensure that the collective rigging is correct; i.e. the scheduled rotor rpm is achieved with the collective fully down and the needles split. The stabilised rotor rpm at a given altitude, weight and OAT must be compared with the scheduled data in the Flight Manual.

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

The crew are expected generally to monitor the behavior of all equipment and report any unserviceable items. In addition to completing all the tests in this schedule any characteristics which are considered to be unsafe or undesirable must be recorded.

Should there be any query about the Flight Test and or its results, the Authority's Airworthiness Section, or the Flight Operations Inspector – Rotary Wing, must be consulted.

AIRWORTHINESS CHECK FLIGHT SCHEDULE

1. PRE-FLIGHT INFORMATION

Aircraft Variant			Engine		
Registration		Engine No.			
Airframe No.		Hours total			
Airframe Hrs		TSO			
Landing Gear					
Operator/Maint. Organisations					
Airfield					
Pilot(s)					
Observer					

2. LOADING

Note: The helicopter shall be loaded to maximum all up weight if possible. Any ballast must be securely installed.

In addition, it will be necessary to perform one flight at approx. 2000kg to permit the measurement of rotor rpm in autorotation (see Appendix 3).

Take-off Weight		Kg
Fuel		Kg
CoG Position		

3. GENERAL FLIGHT INFORMATION

Airfield Press. Alt.		ft.	QFE QNH /		
Wind			OAT		°C
Weather					

Engine Start		Land	
Take-Off		Shut down	

4. PRE – START CHECKS

		Sat	Unsat	Remarks
4.1	Carry out the normal external inspection			
	Check for correct functioning of external lighting			
4.2	Doors & windows. Condition & operation			
	Seats & harnesses			
	Placards : Legibility & accuracy			
4.3	Instrument marking: Confirm legibility, general condition & accuracy of colour bands and marking·			
	ASI			
	Torque meter			
	Rotor/N ₂ tachometer			
	EGT (T ₄)			
	Engine Tachometer (N _g)			
	EOP			
	EOT			
	Voltmeter			
	Ammeter			
	Fuel Pressure			
4.4	Freedom & range of travel of:			
	Collective control			
	Yaw control			
	Fuel Flow control levers including idle gates			

		Sat	Unsat	Remarks
4.5	Apply the rotor brake			
	Confirm fuel flow levers cannot be moved from the shut off position			
	Release the rotor brake and move both fuel flow control levers to the flight gate			
	Confirm rotor brake cannot be applied			
	Move both fuel flow control levers to the shut off position			
4.6	If a standby horizon is installed, switch ON			
	Confirm Horizon powered and erecting			
4.7	Select main battery ON Note:			
	Battery Voltage			
	Test warning lamps			
	Correct warning lamps for Int. or Ext. start as appropriate			
4.8	Complete pre-start checks as per FM			

5. STARTING

5.1	During engine start, note and record :			
		Engine 1	Engine 2	
	Residual T4			°C
	Max T4			°C
	N _G at start of Rotor rotation			%
5.2	With both engines running, Fuel Flow Levers fully forward, confirm horn is selected on.			
	Gradually reduce NR and confirm horn sounds at 360 rpm.			rpm
	Return both fuel flow levers to the flight position.			

5.3	With Fuel Flow levers fully forward and collective down, check			
			Sat	Unsat
		Correct disc response to small cyclic inputs		
		All indications in normal range		
		All warning lights extinguished		
		Correct functioning of engine trimmer		
5.4	Switch OFF booster pumps.			
	Confirm engines continue to run satisfactorily			
	Switch booster pumps ON .			
5.5	Check heating valve thus.			
	Bring Engine 2 Fuel Flow control lever to the idle position. Note positive freewheel split.			
	Open heater valve and note positive T ₄ rise on Engine 1			
	Close heater valve and note positive T ₄ drop			
	Open the Anti-ice valve and note positive T ₄ rise			
	Close the Anti-ice valve and note positive T ₄ drop.			
			Sat	Unsat
	Engine 1	Freewheel		
		Heater		
		Anti-ice		
	Engine 2	Freewheel		
		Heater		
		Anti-ice		
5.6	Hydraulic tests. Confirm collective down and locked .			

WARNING

With hydraulics deselected, pedal inputs may cause the collective to move and release the collective lock. Monitor the collective throughout this test and ensure that collective does not unlock and move.

Isolate yaw hydraulics by means of collective lever switch. Confirm:

Pedal loads increased, but acceptable (F/F1)

No immediate increase in pedal loads (F2)

Sat		Unsat		N/A	
Sat		Unsat		N/A	

Note

If immediate pedal load increase is experienced on the F2, the serviceability of the accumulator must be checked.

On F2 aircraft, discharge the accumulator by means of the ACCU pushbutton.

Confirm pedal loads increased, but acceptable

Sat		Unsat		N/A	
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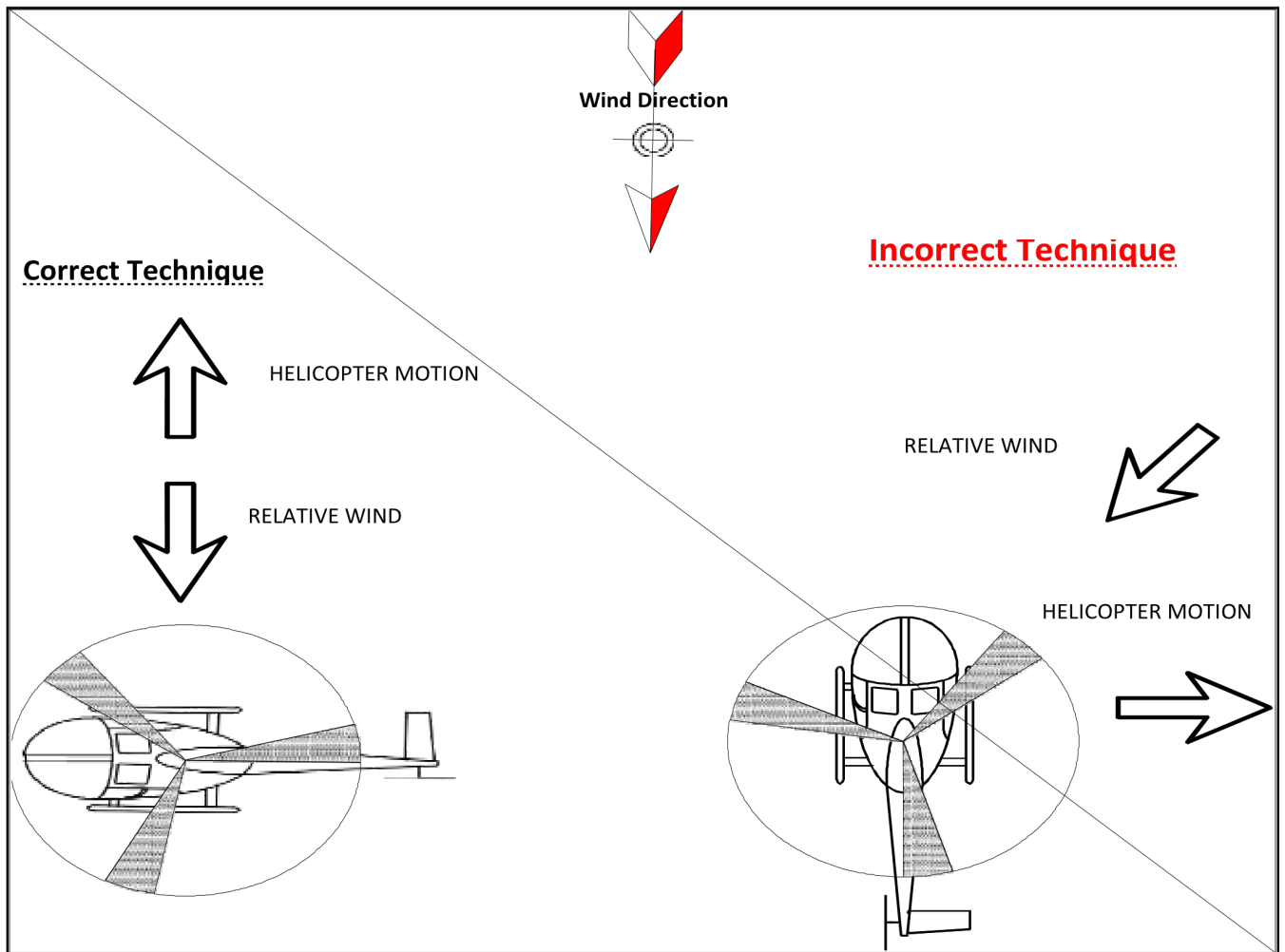
Restore HYD pressure and accumulator.

5.7	Autopilot:	Sat	Unsat	N/A
	Perform a full pre-flight check of the following where relevant			
	Autopilot			
	Auto trim			
	Monitor			
5.8	Check for correct functioning :			
	Intercom			
	Radio			
	Cockpit lighting			
5.9	Complete pre take-off checks as per FM			

6. LOW SPEED ENVELOPE

Take off time:

6.1	Lift to a low hover, with autopilot engaged where appropriate and assess the vibration level, control response and position (adequate control margin) during the following manoeuvres.			
		Axial turns	Sat	Unsat
		Right		
		Left		
	Sideways flight left & right up to an estimated 17 kt (20 mph)			
	Rearwards flight up to an estimated 17 kt (20 mph)			
6.2	Carry out gentle hover manoeuvres with SAS / AFCS disengaged.			
6.3	Following the hover tests record the following	MGB Oil		
		Temperature	Pressure	



7. SINGLE ENGINE EN-ROUTE CLIMBS

7.1

No.1 Engine

With the altimeter set to 1013mb (29.91in hg), bring the fuel flow control lever of Engine 2 back to the ground idle gate to achieve **N_r split of at least 10 rpm.**

Note

It may be necessary to trim the **N_r** of Engine 1 to maximum to assure an **N_r** split.

Carry out a climb for 4 min at single engine maximum continuous power.

The climb should be carried out in stable, non-turbulent conditions away from cloud. **Associated conditions** Do not exceed any of the following:

IAS	55kt / 63MPH
N _G	105%
T ₄	810°C
T _q	100%
Bleeds	OFF (unless specifically required)

ENGINE 1

When a stable condition has been established on a steady heading, sideslip string centered and in as calm conditions as possible, record the following.

Fuel at Start of climb:

									Engine
Time	Alt	OAT	IAS	T _q	N _G	T ₄	N _f / N _r	Temp	Press
0									

0.30									
1.00									
2.00									
2.30									
3.00									
3.30									
4.00									

Fuel at End of Climb:

Return Engine 2 to FLIGHT. Rematch engines as required.

After the climb, obtain an accurate OAT by flying at approx. mid-climb altitude at climb Speed for 1 minute to allow OAT to stabilize.

The climb performance must be analysed and compared with the schedule performance.
See Section 13 of this document.

Altitude		ft
OAT		°C

ENGINE 2

With the altimeter set to 1013mb (29.91 in hg). Bring the fuel flow control lever of Engine 1 back to the ground idle gate to achieve **N_r** split of at least 10 rpm.

Note

It may be necessary to trim the **N_r** of Engine 2 to maximum to assure an **N_r** split.

Carry out a climb for 4 min at single engine maximum continuous power.

The climb should be carried out in stable, non-turbulent conditions away from cloud.

Associated conditions:

Do not exceed any of the following:

IAS	55kt / 63MPH
N _G	105%
T ₄	810°C
T _q	100%
Bleeds	OFF (unless specifically required)

ENGINE 2

When a stable condition has been established on a steady heading, sideslip string centered and in as calm conditions as possible, record the following.

Fuel at Start of Climb:

								Engine	
Time	Alt	OAT	IAS	T _q	N _G	T ₄	N _r / N _r	Temp	Press
0									
0.30									
1.00									
2.00									
2.30									

3.00									
3.30									
4.00									

Fuel at End of Climb: Return Engine 2 to FLIGHT. Rematch engines as required.

After the climb, obtain an accurate OAT by flying at approx. mid-climb altitude at climb Speed for 1 minute to allow OAT to stabilize.

Note

The climb performance must be analysed and compared with the schedule performance. See Section 13 of this document.

Altitude		ft
OAT		°C

8. CRUISE CHECKS

Note

If the aircraft is equipped with the SFIM autopilot. Refer to Appendix 2 for test procedures.

8.1	In Flight Engine Condition Check
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Trim the aircraft in a cruise at max. continuous power.

Confirm heater, demister and engine anti-ice are deselected.

Maintaining constant collective, increase the power on each engine in turn by means of the engine trimmer until either the trimmer reaches the end of its travel, or the first OEI limitation is achieved.

Do not exceed:

T _q	100 %
T ₄	810°C
N _G	105%

Allow to stabilize and record data below:

Engine	P. Altitude	OAT	T _q	T ₄	N _G	Nr
1						
2						

Reselect heater, demister and engine anti-ice as required.

Rematch engines as required.

Note

The engine condition data must be analysed and compared with the schedule. See Section 13 of this document.

8.2	Cruise
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At max. continuous power, check and record the following items:

8.2.1	Stabilized level flight.
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	Note	P. Altitude	OAT		IAS	
		Vibration level	Sat		Unsat	
		Control response	Sat		Unsat	

8.2.2	Steep turns left & right (approx. 45°)
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Note

Vibration level	Sat		Unsat	
Control response	Sat		Unsat	

8.3	Standby Static
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Close all windows and vents, and select bleeds OFF. Trim in level flight at MCP and record:

	Normal	Standby
P1 Alt		
P1 ASI		

Compare the altitude and IAS errors with the placard and record in Section 13.

Ensure static selector is returned to NORMAL

8.4	Maximum speed test
8.4.1	Increase speed progressively to V _{NE} using max. continuous power.

Note

P.Alt		Ft	AUW		Kg
OAT		°C	VNE (Placard)		kt
Fuel		Kg	Achieved IAS		kt

8.4.2	Carry out gentle turns (approx. 10° AoB) left & right
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Note

Vibration level	Sat		Unsat	
Control response	Sat		Unsat	

8.5	Hydraulic System
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Reduce airspeed to 70 kt and deselect Yaw servo hydraulics by means of the collective switch.

Reselect hydraulics

Note

Pedal loads acceptable.	Sat		Unsat	
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9. AUTOROTATION

WARNING

It will be necessary to reduce aircraft weight to less than 2000kg (44091b) for the check of rotor rpm in autorotation. This test will normally be performed as a separate flight. The aircraft weight **MUST** be less than 2000Kg.

9.1	Perform a gentle entry to a steady autorotative descent at 65 kt. Do not exceed power-off rotor rpm limitation (425rpm).				
9.2	Carry out 30° banked turns left & right in autorotation	Sat		Unsat	
9.3	Carry out a rapid recovery from autorotation (NR/ N _f needles just joined to 60% Torque in not less than 3 sec).				
Note		Engine response & absence of surge	Sat		Unsat
		Transient rotor droop	rpm		

9.4	At an acceptable altitude, lower the collective lever to enter autorotation at 65Kts =. Allow to stabilize with the collective fully lowered and record the following:				
P. Alt - Ft	OAT - °C	IAS - Kts	NR - RPM	Fuel - Kgs	AUW - Kg
Note: Autorevs must be checked against the schedule and the results recorded in section 13.					

10. LANDING

Confirm no tendency to lateral padding or ground resonance during a smooth touchdown with a slow gentle collective lowering.

Sat		Unsat	
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Note

Should any divergent oscillations be noted, lift off immediately, reposition the aircraft and carry out a normal landing.

Landing time	
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11. ELECTRICAL SYSTEM CHECKS

With aircraft on ground, collective down and locked. and both engines running in FLIGHT					
11.1	VFR Electric System				
a)	Deselect EXT PWR/BATT and Direct Batt Confirm V MAIN LH & RH = 28v approx.	Sat		Unsat	
b)	Deselect Gen LH & RH	Sat		Unsat	
Note GEN LH caution illuminates, then all cautions extinguish.		Sat			
c)	Reselect EXT PWR/BATT and Direct Batt Reselect Gen LH and reset Caution extinguished	Sat			
	Press Bus SHED. Confirm Shed Bus isolated (eg Booster Pumps off)	Sat			
d)	Press BUS TRANS. BUS TRANS lamp illuminated	Sat			

	Bus SHED reenergized	Sat	
e)	Reselect Gen RH and reset Caution extinguished Deselect BUS SHED Deselect BUS TRANS	Sat	
	Confirm all caution lights extinguished	Sat	
f)	Press EMERGENCY CUT OUT		
	Confirm NR and T4 indications remain operative Deselect EMERGENCY CUT OUT Confirm all systems functional	Sat	

12. SHUT DOWN

Shut down the engines and confirm satisfactory rotor brake performance

Sat		Unsat	
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13. Post Flight Action

- 13.1 Performance Climb (see para 7)
Plot the data on the analysis sheet provided and determined the achieved rate of climb. The scheduled performance must be obtained from the Flight Manual and compared with the achieved performance and results recorded on the front sheet.

- 13.2 Engine Condition in Flight Check (para 8.1)
Use the power check chart in the Flight Manual to analyse the engine condition

ENG 1	SAT		UNSAT	
ENG 2	SAT		UNSAT	

- 13.3 Standby Static Source (see para 8.3)
If the aircraft is equipped with a standby static source, record the information below:

	NORM	STBY	Correction (see placard)
ALT			- 120 Feet
IAS			- 15 Knots

- 13.4 Autorotation (see para 9.4)
Use the chart in Section 8 of the Flight Manual to determine the minimum scheduled autorevs.

Achieved Autosrevs		%	Tolerance = 0 / + 10 Rpm
Scheduled Autorevs		%	

