CHECK FLIGHT CERTIFICATE

BELL 47 HELICOPTER – SOLOY Conversion **CFS196, Issue 1**

Date:	Crew:	Observer:	Registration:

Performance Climb #1

Average Weight			
Average Altitude			ft
Average Temp.			°C
Speed			KIAS
Achieved Rate			fpm
Scheduled Rate			fpm
Margin			fpm
Permitted Margin	-70		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.

Registration:	
Flight Date:	

1. INTRODUCTION

It is assumed that the routine operation of the helicopter serves as a continuous check on the functioning of all normal services. The functioning tests must include a check on those items and systems which are not regularly used.

The flight test must be carried out by an experienced pilot acceptable to the Airworthiness Division of the CAA.

Should there be any query about the Flight Test or its results, the local CAA Surveyor or the Helicopter Flight Test Section at Airworthiness Division, CAA, must be consulted.

Where a limitation is required to be entered, it must, if appropriate, be the limitation prescribed in the Flight Manual.

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.

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 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. Consideration should be given to removing the dual controls if flying with an inexperienced observer.

2. LOADING

Load the helicopter to the Maximum Weight, unless altitude and temperature conditions demand otherwise. All additional external fitments (floats, litters, etc), which may affect performance must be removed for this flight test, unless appropriate performance data is available.

Take-off Weight (Actual):	
CG Position (Actual):	
Fuel Contents:	

3. PRE-FLIGHT INFORMATION

Engine Type/No.	
Engine hours since new or overhaul:	
Operator:	
Place of Test:	
Pilot:	
OAT:	
Wind Speed:	
Duration of Test Flight:	

4. PRE-FLIGHT INSPECTION

Carry out the normal pre-flight inspection:

		Remarks:
Doors & Transparencies: Conditions & Operation	SAT/UNSAT	
Seats & Harnesses:	SAT/UNSAT	
Cyclic Control: Freedom, Range of Travel, Function	SAT/UNSAT	
Collective Control: Freedom, Range of Travel, Function	SAT/UNSAT	
Throttle Control: Freedom, Range of Travel, Function	SAT/UNSAT	
Yaw Controls:	SAT/UNSAT	
Placarding: Legibility & Accuracy	SAT/UNSAT	
Instrument Marking: Legibility & Accuracy	SAT/UNSAT	

5. PRE-FLIGHT INFORMATION

Carry out normal pre-flight inspection but, in addition, check the freedom of the Main Rotor by turning it opposite to its normal rotation:	

Prior to engine start-up, check and record the following items:

The correct functioning of the Flight Idle Stop (Twist Grip Detent):	
Throttle movement over full range:	
Freedom of all Flight Controls, proper functioning of Friction Dampers and Tail Rotor pedal adjustment:	

With battery switch on, check:

The engine failure AUDIO/VISUAL warning systems:	
All cockpit instruments and warning lights:	

During engine start-up, check and record:

Maximum turbine Outlet Temperature (TOT):	
Gas Producer speed at commencement of Main Rotor rotation (25% maximum):	
Adequate acceleration of N_1 between 45% and 59%:	
Flight Idle Stop N_1 (65% - 68%):	

With Collective Pitch fully Down and Throttle fully OPEN, check and record:

Power Turbine (N_2) governing range between 95%-100%:	
TOT rise when selecting FULL ON Anti-ice:	
Freedom of Flight controls with Hydraulic Boost ON and OFF:	
With Hydraulic Boost selected OFF, trip circuit breaker and check for satisfactory reversion to Servo Power, then reinstate for normal operation.	

Generator load with all services OFF (0.7 max):	
Engine oil temperature:	
Transmission oil temperature:	
Engine oil pressure:	
Transmission oil pressure:	

N_1 RPM:		N_2 RPM:	

Rotor RPM:		TOT:	
Outside air temperature:			
Fuel Pressure – Boost Pump ON:			
With Fuel Boost Pump OFF, check for NIL fuel pressure and no change in N_1 RPM. Reinstate for normal operation:			

6. HANDLING NEAR THE GROUND

Assess rate, response and effectiveness of Flying Controls during:

Sideways Flight:	
Rearwards Flight:	
Turns on the Spot:	
Quick Stops. (During this manoeuvre check in particular for any N_2 overspeed; should this occur, control gently by manual throttle operation.	

7. MAXIMUM POWER CHECK (600 Series Transmission Installed)

At low altitude climb at 45 mph with maximum take-off power stabilised, **record the following:**

Torque: (max 63 psi)		N_1 RPM:	
N_2 RPM:		TOT: (Max 793ºC)	
Altitude:		OAT:	

Repeat check to Flight Manual requirements. Climb at zero airspeed and generator off. **Record the following:**

Torque:		N_1 RPM:	
N_2 RPM:		TOT:	
Altitude:		OAT:	

8. HANDLING

Controls in the cruise. At normal cruising speed and power, **check and record the following:**

Airspeed:		Altitude:		OAT:	
Torque:		TOT:		N_1 RPM:	
N_2 RPM:		Rotor RPM:			

Rate response and position of Flying Controls with Boost ON and OFF:	
ROTOR RPM governing over ±5% change of torque:	
Absence of Tail Rotor Pedal creep. **NB:** Feet must not be moved more than 1" away from pedals.	
With the collective pitch friction slackened off, check that the control is satisfactorily balanced.	

Maximum Speed Test: Increase speed progressively up to 105 mph placarded VNE and check the following:

Rate, response and position of Flying Controls over small angles:	
Collective response over small movements:	
Vibration Level:	
Directional control characteristics:	

Autorotation: Carry out steady autorotative descent between 47-55 mph with Collective FULLY DOWN, then check and record the following:

Maximum Rotor RPM (Limits 90.6%-104%):	
Aircraft Weight:	
Satisfactory needle split:	
Flight Idle RPM (65%-68%):	
Satisfactory power engagement:	
Audio-visual warning system:	

9. FUNCTIONING

Check satisfactory functioning of:

Electrics:		Hydraulics:	
Radio:		Cockpit Lighting:	
Navigation Lights:			

Legibility and correctness of all internal/external placarding: ____

10. PERFORMANCE – EN ROUTE CLIMB

Climb at 45 mph. Record time of commencement: ____

Maximum continuous power for C20 Engine: 50.5 psi Torque or 738ºC TOT.

Engine Anti-Icing OFF (Unless operational reasons demand otherwise).

Set Altimeter at 1013 Mb.

Climb from 750' for 3 minutes.

Weight of aircraft at mid-point of climb: ____ lbs

Time Min/Secs	Altitude Feet	OAT ºC	N_1 RPM	N_2 RPM	Torque %	TOT ºC	Oil Press. Psi	Oil Temp ºC
0.00								
1.00								
2.00								
3.00								