

Factual Report – Attachment 8
N1249K Airplane Flight Manual Excerpts¹

OPERATIONAL FACTORS

ANC21FA069

¹ The following excerpts are from the DHC-2 Beaver Flight Manual (dated March 31, 1956) recovered at the accident site.

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ake-off and climb to 5,000 ft. altitude, and reserve fuel for 45 minutes flying time at cruising power.

4.7.4 WEIGHT AND BALANCE REPORT

This report defines the equipment that was in the aircraft "as weighed" and "as delivered" and gives weights, arms and movements as well as the Tare and Basic Moment. It may be found in the envelope on the inside of the rear cover of this Flight Manual.

If the equipment is changed, the Basic Weight changes too. Changes should be recorded in the "Basic Weight Change Record", which must be kept up-to-date at all times.

The "Equipment Check List" should be ticked off.

If the configuration of the aircraft is altered at any time, e.g. changing from floats to skis, such alterations must be duly recorded in the "Basic Weight Change Record".

The obligation that all changes must be recorded, applies also to modifications of all sorts, e.g. repair of damages suffered in the field, in which case all parts removed from, or added to, the aircraft must be separ-

ately weighed and their Moment Arms measured so that the "Weight and Balance Report" may be properly brought up to date.

The Balance Diagram (Figure 4-2), may be used to determine the Arms of any equipment not yet listed.

4.7.5 PREPARATION FOR FLIGHT

The A.U.W. and Total Moment (i.e. C.G. position) should be checked for conditions at the beginning and at the end of the flight by using the current Basic Weight found in the "Basic Weight Change Record" and the Operational Load Diagram.

The A.U.W. maximum must not exceed 5,100 lbs. for the landplane and skiplane; 5,090 for the seaplane.

The sum total of all moment values must conform to the safe moment limits given for different All-Up Weights in the Safe Moment Table.

For establishing conditions at the beginning of the flight, use A.U.W.

To arrive at conditions prevailing at the end of flight, subtract from A.U.W. and total moment, the moments and weights of fuel and oil consumed during flight if such changes in weights and moments may cause the C.G. position to fall beyond the permitted limits.

4.7.6 CENTRE OF GRAVITY

The C.G. datum lies 17.45 inches behind the wing leading edge. See Balance Diagram Figure 4-2.

	Landplane & Skiplane	Seaplane
Extreme forward C.G. position at 3,800 lb.	Station + 6.6	Station + 6.6
Extreme forward C.G. position at 5,090 lb.		Station - 1.25
Extreme forward C.G. position at 5,100 lb.	Station - 1.25	
Extreme Aft C.G. position at 5,090 lb.		Station - 6.1
Extreme Aft C.G. position at 5,100 lb.	Station - 7.7 (Refer to Note facing Appendix VII)	

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4.7.6 CENTRE OF GRAVITY (Cont'd)

Landplane & Seaplane
& Skiplane

Extreme Aft C.G. position at 5,100 lb.

Station - 8.8
(Refer to Note facing
Appendix VII)

For safe Moment Limits refer to table on page VII in Appendix

4.7.7 CARGO LOAD CONSIDERATIONS

Refer to:

- (a) Balance Diagram.
- (b) Operational Loads Diagram.
- (c) Freight Moments Table.
- (d) Safe Moment Limits Table.

4.8 MINIMUM FLIGHT CREW

One Pilot.

4.9 MISCELLANEOUS

Smoking is authorized for cockpit and cabin.

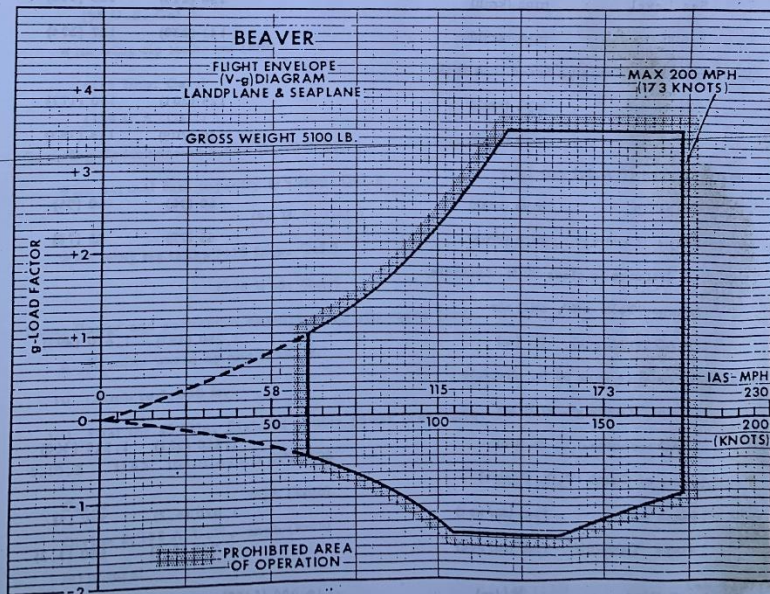


FIG 4-3 OPERATING FLIGHT STRENGTH DIAGRAM

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4.10 PERFORMANCE AT MAXIMUM GROSS WEIGHT STANDARD CONDITIONS

4.10.1 GENERAL

		Landplane (5,100 lb)	Skiplane (5,100 lb)
			Seaplane (5,090 lb)
Max. True Level Speed			
Sea Level	mph (kmh)	156 (251)	144 (232)
5,000 ft.	mph (kmh)	163 (262)	151 (243)
True Cruising Speed (300 BHP)			
Sea Level	mph (kmh)	136 (219)	123 (198)
5,000 ft.	mph (kmh)	143 (230)	127 (204)
Economic True Cruising Speed (240 BHP)			
Sea Level	mph (kmh)	125 (201)	110 (177)
5,000 ft.	mph (kmh)	130 (209)	114 (183)
Stalling Speed (I.A.S.)			
Flaps up	mph (kmh)	60 (96)	60 (96)
Flaps "Landing"	mph (kmh)	45 (72)	45 (72)
Take-off distance to clear 50 ft. obstacle			
(Flaps "Take-off", still air			
ICAO technique)	ft. (m)	1,250 (381)	1,610 (491)
Landing distance over 50 ft. obstacle			
(Flaps "Landing", still air			
ICAO technique)	ft. (m)	1,250 (381)	1,510 (460)
Initial Rate of Climb (T.O. Power)			
Flaps up	fpm (m/sec)	1,020 (5.2)	920 (5)
Flaps "Take-off"	fpm (m/sec)	730 (3.7)	650 (3.3)
Service Ceiling	ft. (m)	18,000 (5490)	15,750 (4800)

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	Landplane (5,100 lb)	Skiplane (5,100 lb) Sea plane (5,090 lb)
Rate of Climb at Max. Cont. Power		
Sea Level fpm (m/sec)	840 (4.3)	740 (3.8)
5,000 ft. fpm (m/sec)	795 (4)	685 (3.5)
10,000 ft. fpm (m/sec)	530 (2.7)	410 (2.1)
Cruising Range at 5,000 ft. (240 BHP)		
With normal fuel capacity mi (km)	455 (732)	405 (652)
(79 Imp. Gal.)		
(95 U.S. Gal.)		
With wing tip tanks mi (km)	740 (1190)	655 (1053)
(115 Imp. Gal.)		
(138 U.S. Gal.)		
Cruising Endurance at 5,000 ft. (240 BHP)		
With normal fuel capacity (79 Imp. Gal.)	3.54 hrs.	3.52 hrs.
(95 U.S. Gal.)		
With wing tip tanks (115 Imp. Gal.)	5.7 hrs.	5.68 hrs.
(138 U.S. Gal.)		
Note: Range and endurance results make allowance for:		
i) 10 min. warm up and take-off		
ii) Climb to 5,000 ft.		
iii) Fuel for 45 min. flight at cruise power (240 BHP)		
4.10.2 MAX. INDICATED SPEEDS		
Flaps mph (kmh)	105 (169)	105 (169)
Diving 5,100 A.U.W. mph (kmh)	180 (290)	180 (290)
Structural		
Cruising 5,100 A.U.W. mph (kmh)	145 (233)	145 (233)

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4.11 FLIGHT CHARACTERISTICS

Section

4.11.1 GENERAL

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Stability is good about all axes. The aircraft is easy to fly and is docile down to the stall. Controls are normally effective throughout the airspeed range. The aircraft can be trimmed to fly hands-off from climb to maximum speeds.

4.11.2 TAKE-OFF

When trimmed appropriate to CG position, stick forces are moderate. Weight and Balance must be carefully checked, especially when CG is at, or near, the forward limit. The aircraft will fly itself off at airspeeds of 50 to 60 mph IAS in a tail low attitude.

4.11.3 SLOW FLYING

It is possible to retain full control of the aircraft at:-

75 mph IAS with flaps at CRUISE

65 mph IAS with flaps at LANDING

4.11.4 SPINS

Intentional spinning of the aircraft is prohibited.

4.11.5 STALL

The stall is gentle at all normal conditions of load and flap and may be anticipated by a slight vibration, which increases as flap is lowered. The aircraft will pitch if no yaw is present. If yaw is permitted, the aircraft has a tendency to roll. Prompt corrective action must be initiated to prevent the roll from developing.

4.12 WING LOAD LIMITATIONS ON LANDING

On aircraft equipped with either wing-tip tanks, or wing-tip tanks and external wing racks, the maximum permissible load combinations on landing for each wing for the various aircraft configurations are as follows:

	WING-TIP TANKS	* WITHOUT MOD 2/1381 INCORPORATED			* WITH MOD. 2/1381 INCORP. (Eng. Bulletin "B" No. 10)		
		EXTERNAL STORES			EXTERNAL STORES		
		0 lb	250 lb	500 lb	0 lb	250 lb	500 lb
WHEEL	0 Fuel	Yes	Yes	Yes	Yes	Yes	Yes
OR	Half Fuel	Yes	Yes	Yes	Yes	Yes	Yes
SKI	Full Fuel	No	No	No	Yes	Yes	Yes
FLOAT	0 Fuel	Yes	Yes	Yes	Yes	Yes	Yes
	Half Fuel	Yes	No	No	Yes	Yes	No
	Full Fuel	No	No	No	Yes	No	No

* Mod 2/1381 (Engineering Bulletin "B" No. 10) revises the rivet pitch on the bottom skin of the wing.