Mat. Div. A.C. ZHQ-Wright Field 7-20-38 M

Performance File B-17B

FOR OFFICIAL USE ONLY
RESTRICTED

WAR DEPARTMENT
AIR CORPS
MATERIEL DIVISION
WRIGHT FIELD, DAYTON, OHIO

ENGINEERING SECTION MEMORANDUM REPORT

ON

Boeing B-17B Airplane, A.C. No. 36-211

LME-EC

P. O. Contract No. W-535 AC-10155

Date August 3, 1939

Expenditure Order 424-4-11

Serial No. A-19-986

1. Object -- Summary of preliminary tests on B-17B airplane made at manufacturer's plant. Airplane equipped with four (4) Wright R-1820-51 engines and turbo superchargers rated 1000 bhp at 2200 rpm for take-off and 850 bhp at 2100 rpm for climb or level flight; hydromatic full feathering propellers, blade design No. 6153A-18. Flown with full military load. De-icer equipment in place.

2. Test results:

a. High speed at 25,000 ft. was 291.5 mph at 2100 rpm at 850 bhp per engine.

b. High speed at 10,000 ft. was 245.5 mph at 2100 rpm at 850 bhp per engine.

c. The guaranteed operating speed of 176.0 mph at 10,000 ft. was obtained at 375 bhp per engine at 1500 rpm. The guaranteed endurance of 12 hrs on 1700 gals. of fuel under these conditions was not checked, since the specific fuel consumption required for 12 hrs flying would be 0.566 lbs/hp/hr and the engine manufacturer's curves show the engine capable of operating on 0.45 lbs/hp/hr.

d. Time required to climb to 10,000 ft. is 7.0 min., using 2100 rpm and 850 bhp per engine.

Approved:

H. O. CARROLL, Major, Air Corps
Chief, Engineering Section.

By [signature]
Major, Air Corps
Chief, Flying Branch

.....As Amended
.....Record Only
.....Recommendations

RESTRICTED

Distribution:
x .....Chief, Engr. Div.
.....Chief, Field Service Section (Search Off.)
.....Chief, Procurement Section
x Chief, Prod. Engr. Sec.
.....Branch
.....Branch
x Chief, Aircraft Branch
.....
.....

FILE .....Central
.....Technical Data
.....Procurement

No. PAGES 3
PAGE 1

Archives of M. Williams

e. One check climb was made to approximately 30,000 ft. where fuel pressure difficulties were encountered and the climb discontinued. From the rate of climb points obtained during this test the service ceiling with satisfactory engine operation was estimated at 36,000 ft.

f. The airplane will fly level and climb with any one engine cut off at 24,000 ft.

g. Take-off tests on gravel runway using 1000 bhp at 2200 rpm per engine:

Trial	Distance required for Take-off Ft.	Total Distance required to clear 50 ft. Obstacle Ft.	Wing Flaps
1	1180	1670	0°
2	1235	1720	15°
3	1120	1920	15°
4	1370	1920	15°

Average of all four trials is 1780 ft.

h. Landing tests on gravel runway made with design useful load less bombs and 1/2 fuel load. Wing flaps full down.

Trial	Length of Landing Roll Ft.	Total Distance required over a 50 ft. Obstacle Ft.
1	2010	2920
2	1260	2500
3	895	2280
4	1290	2680
5	1350	2340
6	1180	2340

Average of best 3 trials is 2320 ft; of all trials is 2510 ft.

i. Determination of airspeed and altimeter errors, wheels up, wing flaps neutral:

WWIIaircraftperformance.org

Indicated Airspeed MPH	Calibrated Airspeed MPH	Airspeed Installation and Indicator Error MPH	Altimeter Error Ft.
220	226.0	-6	-70
200	205.5	-5.5	-50
180	185.0	-5	-25
160	164.5	-4.5	-5
140	144.0	-4	+15
120	123.5	-3.5	+40

j. Data obtained during the cooling tests will be sent to Power Plant Branch.

k. A later report will be submitted by Capt. Furman on the following functional tests:

(1) Feathering of propellers
(2) Functioning of de-icers
(3) Operation of bomb bay doors
(4) Night flight
(5) S.S.A.E. operation
(6) Drift light operation
(7) Radio operation
  (a) Command set
  (b) Liaison set
  (c) Radio compass

WWIIaircraftperformance.org