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WAR DEPARTMENT
AIR CORPS, MATERIEL DIVISION

MEMORANDUM REPORT ON

Pursuit One-Engine Hurricane, No. Z-2974

LHS-86

Date September 5, 1941

SUBJECT: Partial Performance

SECTION... FLYING BRANCH

SERIAL No. PHQ-M-19-1291-A

Contract No.

Expenditure Order No. 726-12

Purchase Order No.

A. Purpose

1. Report on performance test of Hurricane. Airplane equipped with Merlin XX engine and three-bladed constant speed propeller. Gross weight as tested 6848 lbs., c.g. wheels down, 28.6% m.a.c. Gun ports uncovered (8 wing guns). Wheels up, wing flaps neutral, cabin closed. Carburetor air intake screen (snowguard) not in place, radiator flap in wide open position both in level flight and climb except where otherwise stated.

B. Test Results

1. Level flight speeds:

Standard Altitude Ft.	True Speed MPH	R.P.M.	Throttle Setting	Intake Manifold Pressure "Hg.	Carb. Air Temp. °C.	Estimated BHP from Power Curves	Blower Ratio
5000	284	3000	Part	49	+14.5	1175	Low
5000	289	2850	Part	48.8	+14	1180	Low
10,000	305.5	3000	Part	49	+4.5	1235	Low
10,400	311	2850	Wide	48.6	+3.5	1240	Low
12,200	319	3000	Wide	49.2	-0.5	1260	Low
16,800	317	2850	Wide	49	-8	1165	High
18,900	330	3000	Wide	50.2	-12.5	1185	High
20,000	313.5	2850	Wide	43.4	-14.5	1040	High
25,000	310	2850	Wide	36.3	-24.5	870	High
25,000	320	3000	Wide	39.2	-24.5	940	High

2. Range tests. Low blower ratio used:

- a. Range at 5000 ft. at 268.5 mph at 2650 rpm is 364 miles on 112 gals of fuel. Endurance 1.36 hrs., fuel consumption 495 lbs/hr (82.5 gals/hr at 6.0 lbs/gal). Test conditions, mixture control in rich position, intake manifold pressure 44" Hg., carburetor air temperature +23° C., chart B.H.P. 1025, pressure altitude 3750 ft.

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Classification Canceled

Auth: Dir., AMC

By

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- b. Range at 5000 ft. at 212.5 mph at 2250 rpm is 516 miles on 112 gals. of fuel. Endurance 2.42 hrs., fuel consumption 277 lbs/hr (46.2 gals/hr at 6.0 lbs/gal). Test conditions, mixture control in lean position, intake manifold pressure 30" Hg., carburetor air temperature +22° C., pressure altitude 3850 ft.
- c. Range at 5000 ft. at 185 mph at 1900 rpm is 597 miles on 112 gals. of fuel. Endurance 3.23 hrs., fuel consumption 208 lbs/hr (34.7 gals/hr at 6.0 lbs/gal). Test conditions, mixture control in lean position, intake manifold pressure 26.1" Hg., carburetor air temperature +18.5° C., pressure altitude 4020 ft.
- d. Range at 15,000 ft. at 288.5 mph at 2650 rpm is 421 miles on 112 gals. of fuel. Endurance 1.46 hrs., fuel consumption 458.5 lbs/hr (76.4 gals/hr at 6.0 lbs/gal). Test conditions, mixture control in rich position, intake manifold pressure 39.9" Hg., carburetor air temperature +10° C., pressure altitude 13,540 ft., throttle wide open.
- e. Range at 15,000 ft. at 255 mph at 2250 rpm is 563 miles on 112 gals. of fuel. Endurance 2.21 hrs., fuel consumption 304 lbs/hr. (50.65 gals/hr at 6.0 lbs/gal). Test conditions, mixture control in lean position, intake manifold pressure 33" Hg., carburetor air temperature +8° C., pressure altitude 13,540 ft., throttle wide open.
- f. Range at 15,000 ft. at 196.5 mph at 1700 rpm is 680 miles on 112 gals. of fuel. Endurance 3.47 hrs., fuel consumption 194 lbs/hr (32.3 gals/hr at 6.0 lbs/gal). Test conditions, mixture control in lean position, intake manifold pressure 26" Hg., carburetor air temperature +10° C., pressure altitude 12,985 ft., throttle wide open.

3. Variation of speed with radiator flap setting, plus angles indicate opening of flap, minus angles closing of flap from neutral position. Test results at 5000 ft. density altitude at 3000 rpm at 48.8" Hg., manifold pressure, carburetor air temperature +28° C., chart B.H.P. 1130.

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CENTRAL FILES

MDAC-190-WF-3-15-41-500M

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Flying Branch
MEMORANDUM REPORT NO. PHQ-M-19-1291-A
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MEMORANDUM REPORT ON

SUBJECT:	Radiator	True Speed
	Flap Setting	MPH
SECTION	-4.7° (Fully closed)	283.5
	0 (Neutral)	283
SERIAL No.	+4.7°	282.5
	+9.1°	281.5
	+12.9° (Wide open)	281

A. Purpose: Airplane does not meet Air Corps cooling requirements for hot weather operation, even with flap wide open under the above conditions.

C. Remarks

1. Horse power figures estimated from Merlin XX Map, Ref. 96246/40 furnished by British Air Commission.
2. Complete cooling tests have not been conducted on this airplane; however, from data obtained, engine cooling is inferior to similar Air Corps type airplanes.

Standard Time	Altitude	Speed	Manifold Air Pressure	Temp.	Power Curves	Ratio
Ft.	MPH	MPH	MPH	°C.		
5000	283	283	28.5	-14.5	1175	Low
5000	283	283	28.5	-14.5	1175	Low
10,000	283	283	28.5	-14.5	1175	Low
10,000	283	283	28.5	-14.5	1175	Low
12,000	283	283	28.5	-14.5	1175	Low
16,000	283	283	28.5	-14.5	1175	High
18,000	283	283	28.5	-14.5	1175	High
20,000	283	283	28.5	-14.5	1175	High
25,000	283	283	28.5	-14.5	1175	High
25,000	283	283	28.5	-14.5	1175	High

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