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WAR DEPARTMENT
AIR CORPS, MATERIEL DIVISION

MEMORANDUM REPORT ON **LES-86**
Pursuit 1-Engine (P-36A), A.C. No. 38-180

Date June 19, 1941

SUBJECT: Propeller Tests

SECTION Flying Branch

Contract No.

Expenditure Order No. **557-1-24**

SERIAL No. **PHQ-M-19-1258-A**

Purchase Order No.

A. Purpose

1. Check on propeller tests using a modified torque meter nose section to prevent oil congealing in the lines at high altitudes. Airplane equipped with R-1830-17 engine and 3-bladed constant speed propeller, blade design No. 101330. Flown with full gas and oil load. Wheels up, wing flaps neutral, cowl flaps closed, carburetor cold, mixture automatic, radio antenna in place. Synchronized gun openings covered.

B. Test results

1. High speed tests:

Altitude Ft.	R.P.M.	True Speed MPH	Torque Meter B.H.P.	Throttle
5000	2550	280	1045	Part
10,000	2550	292	995	Wide
15,000	2550	292	845	Wide
20,000	2550	286	700	Wide
25,000	2550	276	555	Wide

2. Level flights at 5000 ft. density altitude:

True Speed MPH	R.P.M.	Man. Press. "Hg.	Carb. Air Temp. °C.	B.H.P. FROM Power Curves	B.H.P. from Torque Meter
275	2550	39	+17	1021	975
269	2550	37	+17	962	922
264.5	2550	35	+17	898	866
259	2550	33	+17	835	797
252	2550	31	+17	771	744
275	2600	39	+21	-	987
274	2700	38	+22	-	968
273	2800	38	+22	-	968

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3. Level flights at 10,000 ft. density altitude:

True Speed MPH	R.P.M.	Man. Press. "Hg.	Carb. Air Temp. °C.	B.H.P. from Power Curves	B.H.P. from Torque Meter
292	2550	35.4	+11	1015	989
284	2550	36	+11	936	926
279	2550	34	+11	881	866
272	2550	32.1	+11	824	805
266.5	2550	29.9	+11	751	752
283	2600	34.5	+12	-	884
283.5	2700	34.5	+12	-	902
283	2800	34.5	+12	-	917

4. Level flights at 15,000 ft. density altitude:

295.5	2550	32	+5	833	866
287.5	2550	29.9	+2	767	806
277	2550	27.9	+2	709	744
267	2550	26	+3	648	679
258	2550	24	+5	589	613
283	2600	28.9	+3	-	775
281	2700	28.9	+3	-	788
281	2800	28.9	+3	-	793

5. Level flights at 20,000 ft. density altitude:

291	2550	26.3	-9	672	722
278.5	2550	24	-9	604	656
264.5	2550	22	-9	552	584
251.5	2550	20.1	-9	494	519
237.5	2550	18.2	-9	-	448
275.5	2600	23.5	-9	-	640
274	2700	23.5	-9	-	648
271.5	2800	23.5	-9	-	657

6. Level flights at 25,000 ft. density altitude:

281.5	2550	21.6	-15	550	584
269	2550	19.6	-15	-	519
255	2550	17.7	-15	-	456
235	2550	15.8	-15	-	387
214.5	2550	13.9	-15	-	313
263	2600	19.2	-16	-	504
263	2700	19.2	-15	-	507
263	2800	19.2	-15	-	508