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CLASSIFICATION CANCELLED
OR CHANGED TO Unclassified
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ARMY AIR FORCES
MATERIEL [redacted] COMMAND

MEMORANDUM REPORT ON
P-38J Airplane, AAF No. 43-13563

RSP/mac/47

Date 27 October 1943

SUBJECT: Flight Tests

SECTION Flight

SERIAL No. Eng-47-1656-A

Classification changed to UNCLASSIFIED by authority of CG, AAF DATE 20 MAY 1947

Contract No.
Expenditure Order No. 430-148
Purchase Order No.

A. Purpose

1. To report results of flight tests on P-38J airplane, AAF No. 43-13563, and P-38J-10 airplane, AAF No. 43-67570.

B. Factual Data and Results

1. P-38J airplane, AAF No. 43-13563 was delivered to Wright Field in July of this year for performance tests to be run at war emergency power at 60" Hg. manifold pressure and 3000 RPM and loaded with full combat equipment. With the airplane loaded to this condition the gross weight at take off was 16,163 pounds with the c.g. at 25.7% m.a.c. gear down and 27.96% m.a.c. gear up as reported by the Weight Unit of the Aircraft Laboratory.

2. Considerable delay was encountered during the tests since it was necessary to change the left engine and also revise the exhaust systems to prevent burning the cowling. Previous to changing the left engine the level flight data which appears in paragraph 8 of this report was obtained.

3. When it was determined that the critical altitude for war emergency power was 20,300 feet it was deemed advisable to investigate the induction systems for leaks. Both intercoolers were removed and checked by the Power Plant Laboratory who reported that both intercoolers were leaking badly. New intercoolers were obtained, checked, found to be within specifications and installed. The entire induction systems were then checked and found to be leaking at all joints.

4. An attempt was made to correct this condition by filing the joints smooth to provide a better fit and sealing them with a glazing compound in addition to the external rubber seals used by the manufacturer. A check of critical altitude with the refitted systems gave an observed critical altitude of 21,800 feet for the left engine and 24,000 feet for the right. It was decided that since this airplane was a very early model and the induction systems had been refitted here, a more representative test of the airplanes being delivered to the service would be obtained if a later production model were tested.

5. P-38J airplane, AAF No. 43-67570, was delivered to Wright Field on 24 October 1943. A preliminary check of the induction systems of this airplane disclosed that both systems had severe leaks at the joints.

6. Prior to instrumentation a preliminary check of the critical altitude was made. The results of this check gave an observed critical altitude of 19,000 feet for the left engine and 20,500 feet for the right engine. Severe detonation was also encountered at war emergency power.

7. The Lockheed Company's representatives stated the critical altitude, in level flight at a manifold pressure of 59.5" Hg. and 26,400 turbo RPM, is 27,500 feet for the P-38 J tested at the factory.

8. Level flight results of P-38J, AAF No. 43-13563, were obtained with wheels up, wing flaps neutral, intercooler flaps flush, coolant flaps automatic and carburetor auto-rich.

Altitude Feet	b.h.p.	Man. Pr. "Hg.	Carb. Air °C	Engine RPM	Turbo RPM	Exhaust Back pr. "Hg.	True Speed MPH
10,000	1520	60	32	3000	15,300	39.2	375
15,000	1510	60	35	3000	21,900	40.5	391.5
20,300*	1500	60	42.5	3000	26,400	45	408
25,000	1300	50.2	33.5	3000	26,400	37.5	403.5
30,000	1090	41	26	3000	26,400	30.7	391
35,000	880	32.6	18	3000	26,400	24.2	362

*Critical altitude for 60" Hg. manifold pressure and 26,400 turbo RPM.

C. Conclusion

1. Results of flight test on two P-38J airplanes at Wright Field indicate that these airplanes are unsatisfactory for tactical use above 20,000 ft. Considerable induction system leakage was encountered in both airplanes resulting in a loss of critical altitude of approximately 7500 ft. Additional trouble was encountered while testing the first of these airplanes at war emergency power in that one engine had to be changed and several revisions were required in the exhaust system before tests could be continued. It is believed that the P-38J airplanesat Wright Field are representative production airplanes and it is recommended that immediate action be taken to correct the leakage in the induction system, either through redesign or better production control of the manifold leading from the turbo to the engine.

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Flight Test Branch
27 October 1943
Memorandum Report No. Eng-47-1656-A

P.F.B.
Prepared by RICHARD S. PALMER, 2nd Lt., A.C.

Approved by S. A. GILKEY, Colonel, A. C.
Chief, Flight Section

Approved by F. O. CARROLL, Brig. Gen., U.S.A.
Chief, Engineering Division

Distribution:

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