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MATERIEL CENTER ~~RESEARCH~~ COMMANDMEMORANDUM REPORT ON
C-47A Airplane, AAF No. 42-100436

Date

ETD: ew: 47
17 November 1943

SUBJECT: Pilot's Comments

SECTION Flight

SERIAL No. Eng-47-1665-A

Contract No.
Expenditure Order No. 416-4-179
Purchase Order No.A. Purpose

1. The purpose of this report is to forward Pilot's Comments on the C-47A airplane, AAF No. 42-100436.

B. Factual Data1. Introduction.

Performance tests and pilot's observations were made on this airplane, paralleling those previously obtained on the C-47A, AAF No. 42-92026, in order to investigate claims of unsatisfactory performance of all new C-47A production airplanes as reported by the Air Transport Command.

2. Weight and C.G. Information.

The airplane was flown at a take-off gross weight of 26,000 pounds with the c.g. at 20 percent M.A.C.

3. Flight Characteristics.a. Cockpit Layout.

The cockpit layout is very satisfactory and all instruments can be read with ease. The controls are conveniently located and a comfortable flying position can be obtained by use of the vertical and horizontal adjustment of the seats. The pilot cannot reach the cowl flap control and the entrance to the cockpit is narrow but there are no obstructions. The oxygen system is the demand type with the regulator behind the pilot and co-pilot. This is a bad arrangement because it necessitates too much twisting on the part of the pilot when checking his regulator.

b. Taxiing and Ground Handling.

The taxiing and ground handling characteristics in general are very satisfactory, however, the brakes are sensitive and should be used

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accordingly. The tail wheel lock provides good aid when taxiing straight ahead. In a crosswind turn against a strong wind considerable pressure must be held on the up-wind rudder.

c. Take-off and Initial Climb.

The take-off characteristics are excellent. A very short run is required and the initial climb is good.

d. Climbs.

This airplane has no bad characteristics during climbs. No excessive engine heating or buffeting was observed at rated power with the cowl flaps in the trail position. The airplane has a relatively steep climbing angle with good visibility ahead and to the side. The rearward visibility is not quite so good.

e. Handling and Control at Various Speeds.

The controls are relatively light below 150 MPH indicated airspeed, becoming heavier as the speed is increased. They are effective throughout the entire speed range.

f. Trim and Stability.

The airplane can be easily trimmed for any normal attitude of flight. No specific stability tests were run but the airplanes stability in general was very satisfactory.

g. Stalls and Stall Warning.

Both power on and power off stalls exhibit excellent characteristics. There is good control at all points up to and including the stall. Sufficient warning of the approaching stall is present.

h. Maneuverability and Aerobatics.

The airplane handles well in gentle and steep banks. It can be pulled in fast without "squashing", burbling, or exhibiting a tendency to spin. It has a comparatively short radius of turn for a plane of its size.

i. Control on Reduced Number of Engines.

The airplane has very satisfactory single engine control with either right or left engine feathered. The hydraulic and vacuum systems are operative on either engine.

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j. Trim Changes When Operating Gear, Flaps, etc.

All changes in balance resulting from use of gear or flaps are easily corrected by use of the trim tabs.

k. Noise and Vibration.

There are no unusual or objectionable noise or vibration features in the cockpit, however, there is no sound proofing in the rear of the ship.

l. Comfort.

The ease of vision and accessibility of controls together with the two-way adjustment of the seats make the C-47 a very comfortable airplane.

m. Vision.

The C-47 has excellent vision ahead and to the side, both on the ground and in flight. The upward and rearward visibility is limited.

n. Approach and Landing.

Approach and landings are easily accomplished and the airplane can be easily trimmed for the landing with wheels and flaps down. The gliding angle with $3/4$ flaps and power off is normal.

4. General Functioning.

a. Power Plant and Associated Equipment.

The power plant consists of two R-1830-92 engines equipped with Hamilton Standard Hydromatic constant speed propellers; their operation was entirely satisfactory.

This particular airplane is equipped with a special carburetor air filter. With the filter off, rammed air is taken into the carburetor thru the front of the scoop; with the filter on, the door on the front of the scoop is closed and non-ram air is drawn into the carburetor thru another passageway on the rear of the scoop. Maximum allowable take-off manifold pressure could easily be obtained with the filter either on or off. Turning the special filter on in flight resulted in a drop of as much as 5 inches Hg. manifold pressure due to the loss in ram; however, turning the filter on results in a 7 degree to 10 degree C. rise in carburetor air temperature.

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There is no standard carburetor heat control on this particular airplane, no provision being made to bring hot air into the carburetor. The only way to increase the carburetor air temperature is to turn the special filter on. Temperature control by this means is inadequate. This airplane was equipped with an alcohol de-icing system to prevent carburetor icing. This system was not tried out since no icing conditions were encountered during tests.

There were no unusual oil temperature or oil pressure fluctuations.

b. Hydraulic, Pneumatic, and Electric Systems.

The hydraulic, pneumatic, and electric systems are all satisfactory and can be operated on either of the engines if necessary.

c. Emergency Systems.

The emergency systems for flaps, wheels, and cowl flaps are all satisfactory. Their operation is simple and effective.

5. Performance.

The performance data of this airplane shall be reported separately in the Flight Test performance report number Eng-47-1666-A.

C. Conclusions

1. For its design and operational purposes, the performance of this airplane is very satisfactory.

D. Recommendations

1. It is recommended that the oxygen regulators be moved from their present positions to new positions on the left side of the pilot's seat under the radio jack box and on the right side of the co-pilot's seat.

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