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WAR DEPARTMENT
AIR CORPS, MATERIEL DIVISION

MEMORANDUM REPORT ON
Pursuit (Various Types)

LHS-BC
Date October 13, 1941

SUBJECT: Combat

SECTION Flying Branch

SERIAL No. FHQ-M-19-1307-A
2H

452.1- Pursuit airplanes

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A. Purpose

1. Report on combat trials of various pursuit airplanes.

B. Summary of Test Results

1. Pursuit vs. bombers (B-25, B-26, A-20A):

a. Attacks were made on the bombers operating at approximately critical engine altitude (10,000 to 15,000 ft.).

b. The P-39C airplane is the best for attack, followed in order of relative effectiveness by the P-39D, Spitfire, P-40E and Hurricane. After the altitude advantage of the pursuits was lost (except in case of P-39C) the attack developed into a long stern chase, requiring time and operation far from base. In the case of the Hurricane it is impossible to catch the bombers in level flight.

2. Pursuit vs. B-17C airplane:

a. At 25,000 ft. the best airplane for attack was the P-38D followed by the Spitfire and P-39. The P-40E because of its low rate of climb and speed, and the Hurricane because of its slow speed, are handicapped due to time necessary to get into position for another attack. At higher altitudes the P-38D is the only really effective pursuit airplane against the B-17C bomber.

3. Pursuit vs. Pursuit:

a. The Hurricane has the shortest radius of turn of any of the pursuit airplanes tested and therefore has the advantage over the others if the combat is permitted to develop into tight turns. The Spitfire has the next shortest radius of turn, being superior to the P-39D, P-40E and P-38D.

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b. P-40E vs. Hurricane:

The Hurricane can easily turn inside the P-40E and was able to continue turning after the P-40E had stalled. With the P-40E on the tail of the Hurricane it was possible for the Hurricane to tighten the circle and within 720° be in shooting position again. The P-40E squashes on turns, whereas the Hurricanedoes not. The P-40E can outdive the Hurricane and is faster in level flight up to approximately 20,000 ft. The Hurricane can outclimb the P-40E at any altitude for short periods of time, but sustained high power climb cannot be made in warm weather due to excessive coolant temperatures. Due to the higher critical altitude of the engine in the Hurricane, it gets better as the altitude increases compared to the P-40E.

c. P-39C vs. Hurricane:

(1) The P-39C has a faster rate of climb than the Hurricane up to 15,000 ft., it is very much superior in high speed and diving speed; above 20,000 ft. the Hurricane has a better rate of climb.

(2) The Hurricane has a better turning radius and there is a warning buffet before a stall is reached, whereas in the P-39C very little warning is given before the airplane makes a complete half snap roll, which gives the other airplane the advantage while recovering. However, due to the better performance of the P-39C, it is possible to make repeated attacks on the Hurricane and not permit the combat to develop into a tight turn.

d. P-40E vs. Spitfire:

The Spitfire is a much better combat airplane than the P-40E. It has a shorter radius of turn, better rate of climb and higher speed at altitude.

e. P-39D vs. Spitfire:

The Spitfire has a shorter radius of turn than the P-39D and has better rate of climb above 15,000 ft. The P-39D is faster, but not sufficiently faster to make it a decisive factor, has better diving speed and higher rate of climb below 15,000 ft. The Spitfire is more maneuverable. The airplanes are fairly evenly matched below 15,000 ft. with the Spitfire having the advantage due to higher critical engine altitude above 15,000 feet. Stall characteristics of the P-39C in tight turns have previously been mentioned. There is a tail buffeting in the Spitfire in tight turns starting at approximately 150 mph, which gives ample warning of stall approach.

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f. P-38D vs. Spitfire:

The Spitfire is much better for dog-fighting than the P-38D. It is more maneuverable and can easily turn inside the P-38D. The P-38D can out-climb the Spitfire at any altitude and is faster, its margin of performance increases with altitude over the Spitfire.

g. Hurricane vs. A-24:

The Hurricane was the best airplane for attack against the A-24 because of its maneuverability, also its low speed compared to the other pursuit airplanes was an advantage, since the A-24 when dive-bombing has a slow diving speed. Although the Hurricane was the best pursuit airplane for attacking the A-24, it was difficult to get good shots because of the sharp turning of the A-24, its slow diving speed and the higher speed of the Hurricane. In turning, the Hurricane has a slight advantage over the A-24.

4. General Comments

a. The Spitfire and Hurricane are easier for inexperienced pilots to fly than the American pursuit airplanes. The automatic boost control is a big help in that respect.

b. Once the attacking pursuit airplane is on the target, field of vision on all of the pursuit airplanes is satisfactory. For locating or approach on the target, the P-40E airplane is the best, P-38, P-39 and Hurricane fair, and Spitfire poor. The Spitfire is also bad for landing in this respect. Another disadvantage was that the British engines after having been flown for a short time at high power, throw so much oil that the windshield is covered and visibility poor; distortion when looking through windshield side panels is also bad.

c. Most of the pilots like the British jointed control stick grip better than the Air Corps stick for combat, and like the toe brakes in preference to the British stick control brakes.

d. Landing gear and flap controls of the Hurricane and Spitfire were preferred to those of the P-39 and P-40, but cockpit arrangement of controls and instruments was not considered to be as good.

e. The British safety belt restricts movement of the pilot and is therefore tiresome to wear, but provides better protection in case of a crash landing. Use of soft webbing in the harness similar to that of the P-40E would make it more satisfactory.

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f. Armament of the airplanes has not been taken into consideration on any of the comments in this report.

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LOUIS H. SIBILSKY

GEORGE J. EPPRIGHT, Maj., A.C.,
Acting Flying Branch

for Wm. E. Lamar, Lt. A.C.
F. O. CARROLL, Lt.Col., A.C.
Chief, Exp. Engr. Section

Chief, Exp. Engr. Section
(Attn: Flight Research Projects)
Chief, Prod. Engr. Section
(Attn: Project Officer)

Chief, Aircraft Laboratory
(Attn: Aerodynamics Unit)
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