South Pacific  
July 7, 1944

Headquarters  
V. Fighter Command

Dear Paul:

I have spent most of the last month with Army fighter squadrons - P-38's and P-47's. I will try to re-cover the incident I wrote to you about in my last letter. This time from the Army standpoint rather than the Marine.

I. Armament:

a. Cannon on machine guns.

As with the Marines, interest in the 20 mm cannon is increasing, but majority opinion has still favored the 50 caliber. One experienced officer, a colonel, said: "I would rather have one 20 mm than one 50 cal., but I would rather have three 50 cal. than two 20 mm's."

b. Number of guns.

The Army favors more guns than Army or Marines. "A minimum of eight 50 cal. for a fighter," is the usual answer. The P-47 has made a very favorable impression in this respect.

c. Ammunition quantities.

General feeling seems to be that 300 to 350 rounds would be sufficient. (Similar to Marine attitude.)

d. Location:

Cannon guns are preferred to wing guns, but not at the cost of synchronization. I have found one objection to guns behind the pilot with line of fire close to cabin at eye level.
II. Convertibility and Control:

2. Lower initial rate of roll with twin engine arrangement:

Army attitude is similar to Airplane. High rate of roll is desired, but the pilot is willing to accept a slightly lower rate in view of the advantages of a single engine plane. The P-38 squadrons are thoroughly sold on their planes and believe it is by far the best fighter for the South Pacific. Flying hundreds of miles into Japanese territory over thick jungles is enough to convert anyone to twin engines. For times and places where combat losses are heavy in proportion to losses from enemy territory, the advantages of multi-engine planes probably offset its higher cost. However, for combat itself, and for the fighter range, especially when forced landings can be made, normal mixing from enemy planes and with good practice of rescue, single engine fighters are generally preferred. Higher officers emphasize the fact that the usefulness of the present twin engine fighters would be greatly reduced or neutralized if the jobs come out with a high performance interceptor; in which case, the P-47
might become superior to the P38 for this area.

III Performance

a. Radius of action:

This is limited more by lack of cockpit comfort and pilot fatigue, than by fuel. The P38's are going out regularly on missions lasting from 6 to 7 hours. However, the cockpit is almost as uncomfortable as the F4U-1, and stiffness and pressures remains for two days after such a flight. It would be easier to fly several hours a week with better cockpit design. Many pounds of weight would be well expended in increasing pilot comfort in the long range fighter.

The combat radius derived by most officers here is similar to that requested by the Marines. It is generally considered that a practical 750 mile radius will be sufficient for future Pacific operations. Again, a percentage must be added to a theoretical radius to make it practical. Experience shows that missions entailing a low reserve of fuel cause a serious increase in operational losses. Estimates of the fuel which should be added to theoretical figures vary from 10% to 20%.

Desired altitude for maximum combat efficiency is 25,000 ft. in the opinion of most pilots I have talked to here.

Desired combat time varies from 15 to 30 minutes, with the average at 20 minutes.

A fuel reserve of 30 minutes in peacetime is considered sufficient, provided a practical and not a theoretical fuel consumption is allowed for return from combat.
General

2. Cockpit.

Instrumentation is extremely important. It is worth a major project.

In regard to ingress and egress, every opinion varies from that of the Germans, probably because of experience with the P-38's. The practice is for the pilot to start the engine, and, with some exceptions, the mechanic does not climb on the plane after the engines are started. There are instances, however, where communication between pilot and mechanic is necessary.

Egress for an emergency bail-out is considered of great importance. However, vision is considered extremely important too, and it is realized that a compromise must be made.

b. Ground landing.

General feeling is that landing speeds of 150 miles an hour or more a little more are practical for a twin engine, tail wheel, fighter. However, there is considerable feeling that an "advanced low height" of the P-40 - P-51 style will also be necessary, to go in immediately after an enemy strike is over and before improvements can be made. This feeling may be due to the fact that trouble has been experienced with nose wheels collapsing on an enemy strike, while the P-40's, with their conventional gear, have stood up well under rugged operating conditions.

For destruction from established strikes, the twin engine is much preferred to the conventional. It requires less skill to take off and land, is less affected by a blowing fire, and can be topped faster and landed closer to the planes in front because of the excellent forward vision. Also, cross-wind landings are less hazardous.

Pilots have rather like the idea of dual wheel installations provided the weight cost is not excessive.
The down flaps are seldom used, but considered desirable in areas where high wind velocities are met on the ground.

Quickly replaceable wing tips are desired provided weight increase is slight.

C. Strength requirements:

Among pilots, say that the strength of modern fighters could be considerably reduced in order to gain added performance. Some suggest even down to 7g, with the average at about 8g.

a. Hydronic vs. electrical systems:

Opinion tends toward electric, with considerable argument each way.

I recently had the opportunity of flying the P-61. In spite of its outward appearance, it is the least flying twin-engine plane I have ever been in, and has sold itself immediately to all the pilots who have flown it — as a night fighter, of course. Stall, trim, and single- and twin-engine flight characteristics are remarkable. The weak point is, as is so often the case, fuel range.

With best wishes,

Charles A. Lindbergh