

# P-51 Escorts

## Legend or Myth?

Dr. David R. Mets\*

As recently as the fall of 2009, a distinguished lecturer at the US Air Force's Air War College repeated a "truth" that has been with us for 60 years. So strongly held, it has seldom, if ever, been questioned. This assertion arises, I suppose, from historians' common tendency to go into the record with the question "Why were they so dumb?" or "Why were they not as smart as the present generation?" The revealed "truth" holds that interwar Airmen were so hypnotized by their own strategic bombing wisdom that they failed to reasonably predict that bombers would require fighter escorts to survive and that such fighters were technologically feasible.

What were the real reasons why such luminaries as Kenneth Walker, Haywood Hansell, Carl Spaatz, and Claire Chennault (yes, Mr. Fighter Pilot himself) *all* concluded that the idea of escort fighters for long-range bombers was impractical—desirable, but impractical? Is it possible that it was not ignorance but logic that made them so conclude?

### National Policy in 1935

Postwar critics sometimes do not consider the context in which the air planners worked. Airmen of the prewar period had been living in a strictly isolationist society since 1920 at the latest. The public and most politicians were firmly persuaded that America would never again commit itself to a European war especially. Thus, US na-

tional security policy was strictly defensive. The B-17 (fig. 1) at first was sold as a weapon for coastal defense—part of the reason for calling it the "Flying Fortress." This stance prevented any public debate on the bombing of advanced industrial societies, and any such idea was bound to receive a cold reception by the Army General Staff.



USAF photo

Figure 1. B-17

### Technology in 1935

In the interwar period, many of the homes in rural areas lacked electricity. Many still had neither telephones nor indoor plumbing. Even radio was a novelty. Anyone working in un-air-conditioned Montgomery, Alabama, would have required a miracle of foresight to predict the advent of radar in five years and to understand its implications.

---

\*The author is professor emeritus at Air University's School of Advanced Air and Space Studies and recently retired as a military defense analyst at the Air Force Research Institute, Maxwell AFB, Alabama. His most recent work is *Airpower and Technology: Smart and Unmanned Weapons* (Praeger, 2009). He wishes to make the following acknowledgment: "I received important help in the preparation of this article from Dr. Richard Muller of the School of Advanced Air and Space Studies; any remaining faults with the article are entirely my own responsibility."

# Report Documentation Page

Form Approved  
OMB No. 0704-0188

Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

|   |                                    |                                     |                            |   |                                 |
|---|------------------------------------|-------------------------------------|----------------------------|---|---------------------------------|
| 1. REPORT DATE<br><b>2010</b>   |                                    | 2. REPORT TYPE                      |                            | 3. DATES COVERED<br><b>00-00-2010 to 00-00-2010</b> |                                 |
| 4. TITLE AND SUBTITLE<br><b>P-51 Escorts: Legend or Myth?</b>   |                                    |                                     |                            | 5a. CONTRACT NUMBER                                 |                                 |
|   |                                    |                                     |                            | 5b. GRANT NUMBER                                    |                                 |
|   |                                    |                                     |                            | 5c. PROGRAM ELEMENT NUMBER                          |                                 |
| 6. AUTHOR(S)  |                                    |                                     |                            | 5d. PROJECT NUMBER                                  |                                 |
|   |                                    |                                     |                            | 5e. TASK NUMBER                                     |                                 |
|   |                                    |                                     |                            | 5f. WORK UNIT NUMBER                                |                                 |
| 7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)<br><b>Air University's School of Advanced Air and Space Studies, Maxwell AFB, AL</b> |                                    |                                     |                            | 8. PERFORMING ORGANIZATION REPORT NUMBER            |                                 |
| 9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)   |                                    |                                     |                            | 10. SPONSOR/MONITOR'S ACRONYM(S)                    |                                 |
|   |                                    |                                     |                            | 11. SPONSOR/MONITOR'S REPORT NUMBER(S)              |                                 |
| 12. DISTRIBUTION/AVAILABILITY STATEMENT<br><b>Approved for public release; distribution unlimited</b>                                   |                                    |                                     |                            |   |                                 |
| 13. SUPPLEMENTARY NOTES   |                                    |                                     |                            |   |                                 |
| 14. ABSTRACT  |                                    |                                     |                            |   |                                 |
| 15. SUBJECT TERMS   |                                    |                                     |                            |   |                                 |
| 16. SECURITY CLASSIFICATION OF:   |                                    |                                     | 17. LIMITATION OF ABSTRACT | 18. NUMBER OF PAGES                                 | 19a. NAME OF RESPONSIBLE PERSON |
| a. REPORT<br><b>unclassified</b>  | b. ABSTRACT<br><b>unclassified</b> | c. THIS PAGE<br><b>unclassified</b> |                            |   |                                 |



USAF photo

**Figure 2. B-10**



USAF photo

**Figure 3. P-26**

In 1932, when strategic bombing theory was in its genesis, the first all-metal monoplane fighters and bombers came on the line. The B-10 (fig. 2) had no external wing bracing, an enclosed cockpit, and retractable landing gear. Its wing was stressed to somewhere around 3 Gs. That bomber's contemporary fighter, the P-26 (fig. 3), had external wire bracing for its wings, an open cockpit, and fixed landing gear. Its wings were stressed for something like 6 Gs. To anticipate that the United States could develop a cantilever wing that strong, yet thick enough to accept retractable landing gear and machine guns in three years or so would have been extraordinary. As it was, the P-26 could hardly fly faster than the B-10, and the aircraft took a long time to get to bomber altitude because of its slow rate of climb.<sup>2</sup>

## Drop-Tank Idea in 1935

In 1925 Billy Mitchell wrote about drop tanks used in World War I.<sup>3</sup> P-12s flying from Selfridge Field, Michigan, to Washington in the interwar period frequently used external tanks to extend their range. The idea was not unique.<sup>4</sup>

## Escort Fighter Requirements

Generic requirements for escort fighters included long range, maneuverability equal to that of the enemy's interceptors, armament about equal to the adversary's, and at least equal speed.<sup>5</sup> We needed a sufficient number of them to distract the interceptors long enough for the bombers to escape. Because escort pilots had to master cruise-control techniques, superior navigation skills over unfamiliar territory, and basic fighter maneuvers, they required more training than their interceptor counterparts. At the end of the battle, if an interceptor pilot ran out of gas, he might be able to dead-stick his craft to a safe landing, or at least parachute to his home. But escort pilots had to have enough fuel to reach friendly territory plus a reserve in case they encountered fog over East Anglia. The extra fuel requirements alone seemed to guarantee that the escort would be heavier and less agile than the interceptor. Finally, escort pilots needed at least the same training as interceptor pilots in instrument landing.

## Requirements for Doctrinal and Technology Planners

No nation or military service has infinite resources. Yet, especially on the defensive, a vast number of possible dangers exist. Thus, planners must almost inevitably select a limited number of scenarios for which they can prepare, compelling them to plan for the most probable occurrences rather than all possibilities. That is why 9/11, Pearl Harbor, Barbarossa, and Inchon succeeded—in the short run. The aggressor can plan for

one improbable approach. But counting on a short war can prove foolhardy.

## Ambassador's Reports during the Battle of Britain

We all know how the Battle of Britain turned out. At the time, American Airmen did not. Joseph Kennedy, our ambassador to Great Britain, reported that the British were likely to go down. Spaatz, Gen Henry "Hap" Arnold's observer in England at the time, predicted that Britain would stand.<sup>6</sup> Moreover, in 1940 Arnold's agents told him that the German twin-engine Me 110, designed as an escort fighter, was a failure in the battle, even requiring escorts of its own to survive.<sup>7</sup> Whom could we believe? That fall, Winston Churchill called the outcome the "Narrow Margin." Keeping in mind that Germany was still allied with the USSR, would a second Battle of Britain in 1941 have the same outcome? If Stalin did not predict the Nazi onslaught in Barbarossa, why should American Airmen do so? In *Mein Kampf*, Hitler himself had criticized the kaiser for having permitted a two-front struggle in World War I.<sup>8</sup>

## Motives for B-36 Development Plans

After France fell in May 1940, and during the Battle of Britain, the US Army Air Forces (USAAF) began plans for the B-36 program.<sup>9</sup> Why would American Airmen push for a 10,000-mile bomber if they could reasonably predict the availability of numerous B-17 bases in East Anglia within range of Berlin? Many Fortresses could be built for the price of one B-36. Was it conceivable that the bombers headed for Berlin would have to depart from North America? Would drop tanks for fighters *then* do the job?

## “Lessons” of the Battle of Britain?

Long after the war, Hansell remarked that it was fortunate that theorists at the Air Corps Tactical School (ACTS) had not forecast the coming of radar because it would have caused them to abandon the strategic bombing idea, with unfortunate results.<sup>10</sup> As improbable as it seemed to most people, radar did come, and Spaatz and others learned about it during the summer of 1940. By then, the Air Corps had a huge investment in strategic bombing theory and the development of four-engine bombers. The implications of radar for air defense were only dimly perceived, and it was possible to write off Germany's failure to bad tactics, poor aiming, insufficient bomb loads, light defensive armament, and undersized bombers. In any event, escort fighters clearly seemed inadequate for the Luftwaffe.

### P-51 Design: Science or Dumb Luck?

The glib lecturer of the twenty-first century speaks of the Mustang design solution as though it were obviously inevitable and should have come much sooner. But that is open to question because some fortuitous elements occurred in its development. At first, neither the Air Corps nor USAAF had a hand in the program. Before Pearl Harbor, North American Aviation had rapidly put together the early design in response to a British requirement, originally considering the aircraft a ground-attack bird—the A-36.<sup>11</sup> Powered by Allison engines, the first models had neither the fuel economy nor power sufficient for the Berlin escort mission. The National Advisory Committee for Aeronautics had conducted experiments in wind tunnels with various designs during the 1930s, but the laminar flow wing was not fully tested until 1938. The British ordered the Mustang with a laminar flow wing but hedged with a contract requirement that if it did not test out, then the company had to rapidly convert to a more conventional de-

sign. It did test out but very late in the game. Still, the originals were not sufficient. It fell to Maj Thomas Hitchcock, the US air attaché in England, to fly one with the Allison engine. He speculated that retrofitting the aircraft with a Rolls-Royce Merlin would significantly improve its performance. That idea proved successful and completed the package—but the major was not a part of the official development structure.<sup>12</sup>

### The Trouble with German Fighter Development during Wartime?

The P-35 and P-36 flown by the Air Corps in the mid-1930s had internally braced wings, closed cockpits, and retractable landing gear. The Luftwaffe and Italian air force still used biplanes. However, Germany passed the United States with the Messerschmitt Bf 109 in 1937.<sup>13</sup> But after the war started, German fighter development was somewhat arrested. First, reasoning that development of new designs reduced production, Hitler mandated that no new aircraft be undertaken without the assurance that they could come on the line within two years, thinking that the war would be over by then. According to some of the surviving Luftwaffe veterans, though, when the tide turned, Hitler was taken with the idea that Germany should focus on bombers in order to punish the oncoming Allies. Supposedly, he intervened at a critical moment in the development of the Me 262 jet to try to transform it from an interceptor to a fighter-bomber.<sup>14</sup> When a few got on the line toward the end of the war, they outclassed the P-51, but it was too late. The numbers of the Allied forces were simply overwhelming. Thus, the success of the Mustang escort depended in part on bad technological decisions made in Germany—something that the Allies hardly could have counted upon.

### Ultra

The P-51 got on the line in numbers in January 1944. By then, P-47s, bomber gun-

ners, and Russians had killed a good many of the Luftwaffe's original fighter pilots. Fuel shortages limited the number of training hours the Germans could give to the replacements. The average experience level among interceptor pilots was declining rapidly. Knowing this from reading German mail through Ultra intelligence, USAAF commanders deliberately started launching bomber raids, notwithstanding their awareness that the targets were socked in. This action flushed the fledgling interceptor pilots, many of whom died without ever coming in contact with the Americans. Insufficiently trained, they had to make low-ceiling instrument approaches and land tail-dragger fighters on icy runways. Some days more of them were killed by accidents than by P-51s. Could anybody at the ACTS in 1935 have possibly imagined that outcome?

### P-51 with 1935 Bomber versus P-51 with 1944 Bomber?

Recollect that both aerodynamic and engine technologies were on the steep parts of their development curves in the 1930s and 1940s. Prewar planners were necessarily dealing with abstract scenarios. Teaming up the P-51 with bombers of earlier generations on a route of limited distance worked. Those planners *had* based part of their thinking on the performance of the contemporary B-10s and P-26s of the 1932 era. But when the Mustangs escorted bombers of their own generation—B-29s (fig. 4)—they did not succeed. Drop tanks no longer sufficed. Six thousand Marines



USAF photo

**Figure 4. B-29**

died to seize an escort base at Iwo Jima, halfway to the target.<sup>15</sup>

### Parasite Fighters and the B-36

The 10,000-mile bomber came on the line shortly after World War II. Where would we get escorts for it? The Navy hammered the B-36 program because the bird allegedly was so slow that the new jets would kill it easily. Yet early jets were notorious fuel burners. How could the 36s be escorted? We tried parasite fighters, but a bomb bay filled with a fighter cannot carry bombs. B-36s could tow F-84s, but that did not help their own range.<sup>16</sup>

### Theory behind Selection of the B-47 and B-52

Part of the reasoning for converting to jet bombers maintained that they would penetrate enemy air defenses because of their high speed. Their velocity would make deflection shots impractical, and interceptor attacks would almost always become stern chases—during which they would be vulnerable to tail guns. But jet bombers also guzzled fuel. The possibility of air-to-air refueling was well known before World War II, but providing a fleet of tankers sufficient for the attack on Germany would prove too much even for the American economy. In those days, bomber crews had to make 25 (or later, 35) trips to Germany. But now, because of nukes, the new theory assumed that the war would be over in two or three days; thus, overall attrition would be acceptable with unescorted jet penetration.<sup>17</sup> But who in his right mind in 1935 or even 1941 would have predicted the appearance of a city-busting bomb in 1945? In the end, all of the B-52s lost in combat went down to fire from the ground. For a while in the early 1950s, Strategic Air Command did have some fighter escort units, but they had disappeared by the end of the Eisenhower administration.

## Conclusions

In our adolescence, we had a rather strong tendency to conclude that our parents' generation was pretty dull—and, by extension, all earlier generations. But the difficulty in stamping out either smoking or teenaged driving under the influence is proof enough of one generation's similarity to its predecessors. It is all too easy to look out of context at the problems of past generations and conclude that they were much simpler than ours. Only when we become parents ourselves do we realize that the difficulties are more complex than we had imagined. So, too, when we become commanders ourselves, we discover that the difficulties of planning are more complicated than we had thought.

Military planners of a nation with a defensive strategy cannot know the future. They cannot plan for all possibilities. To do so may well guarantee weakness everywhere. The luminaries at the ACTS in 1935 hardly could have guessed that Hitler would soon start a war, the laminar flow wing would succeed, radar would come within five years, the aircraft carrier that was the British Isles would survive, Hitler would attack Russia before Britain was finished, Japan would end US isolationism, the Rolls-Royce Merlin engine would turn an attack plane into an effective dogfighter with superior range, Hitler would retard fighter development, Germany would not go to full mobilization until 1943, the Norden bombsight would not have pinpoint accuracy, Ultra would enable wonderful intelligence, Luft-

waffe training would go to the dogs, the German people could endure the burning of Hamburg and Dresden yet go back to factory work, and on and on. To do so would have required predicting that a whole host of interdependent miracles would occur. Planners can only hope that their guesses are closer to reality than those of their enemies and that their system can adapt to the appearance of sudden miracles more rapidly than can their enemies.<sup>18</sup>

Pierre Beauregard in 1861, Adolf Hitler in 1939, and Isoroku Yamamoto in 1941 all banked on a short war. Their offensive strategy might well have worked if their short-war assumption had held. It enabled them to concentrate their forces against a dispersed enemy who did not know the time and place of the attack and had to plan for several locations. But when their wars did not fit the assumption, their enemies had time to work it out. If Hitler's assumption of two years had proved valid, then the P-51 would have come three years too late.

The P-51 solution owed as much to interdependent, fortuitous events as to the wisdom of the wartime generation. According to H. L. Mencken, "There is always an easy solution to every human problem—neat, plausible, and wrong."<sup>19</sup> Carl von Clausewitz himself tried to teach us that war is the province of uncertainty, fog, and chance. Would it be more becoming of us to recognize that the leaders of the interwar period did about as well as could be expected, given the complexity of the times? ❁

---

### Notes

1. Martha Byrd's *Chennault: Giving Wings to the Tiger* (University, AL: University of Alabama Press, 1987) is the least partisan work on Chennault and his "struggles" at Maxwell Field; see also Wesley Frank Craven and James Lea Cate, eds., *The Army Air Forces in World War II*, vol. 6, *Men and Planes* (1955; new imprint, Washington, DC: Office of Air

Force History, 1983), 217, which shows that the idea persisted up to the coming of the war.

2. John W. R. Taylor, ed. and comp., *Combat Aircraft of the World, 1909 to the Present* (London: Ebury Press and Michael Joseph, 1969), 527, 453; and Haywood S. Hansell Jr., *The Air Plan That Defeated Hitler* (Atlanta: Higgins-McArthur / Longino & Porter, 1972), 18.

3. William Mitchell, *Winged Defense: The Development and Possibilities of Modern Air Power—Economic and Military* (New York: G. P. Putnam's Sons, 1925), 169.

4. Craven and Cate, *Men and Planes*, 218, explains that we further pursued the idea before Pearl Harbor as a means of extending the ferrying range of aircraft to save on seaborne shipping.

5. That would be true for fighter-on-fighter combat, which involved violent maneuvering requiring a high rate of fire in order to maximize the probability of hitting the target. However, for fighter-on-bomber combat, toward the end of the war, the Germans felt compelled to increase calibers on some of their interceptors so that once a round hit, it had to be robust enough to damage the more heavily constructed bombers. Further, the higher calibers enabled fighters to stand outside the range of the bombers' guns and take more careful aim. Thus, they increased the probability of kill once a round hit, but the slower rate of fire and lesser ammunition supply reduced the probability of hitting. US escorts' targets were seldom bombers; in any event, they were equipped with a superior gun and especially with great ammunition. Moreover, the lower calibers had a flatter trajectory than the large guns, which also helped in the air-to-air battle. See AVM John R. Walker, RAF, *Air Superiority Operations* (London: Brassey's, 1989) for a clear explanation of aerial battle. I am also indebted to Dr. Richard Muller for that clarification.

6. Carl A. Spaatz, "Leaves from My Battle of Britain Diary," *Airpower Historian* 4, no. 2 (April 1957): 66–75; and Carl Spaatz to Henry Arnold, letter, 31 July 1940, Spaatz Collection, Manuscripts Division, Library of Congress, Box 7.

7. Derek Wood with Derek Dempster, *The Narrow Margin: The Battle of Britain and the Rise of Air Power, 1930–1940* (1961; new imprint, Washington, DC: Smithsonian Institution Press, 1990), 29.

8. Writing in jail in the early 1920s, Hitler makes no secret of his ambition to expand eastward, hoping for the cooperation of England, which would have the whole world outside the continent to itself. Although he puts principal blame for Germany's defeat in World War I on a betrayal within that country, especially on the Jews, he also is critical of the foreign policy that forgot the paramount principle that one should not take on more than one enemy at a time. Adolf Hitler, *Mein Kampf*, trans. Ralph Manheim (Boston: Houghton Mifflin, 1943), 256, 892, 894, 898, 925, 950, 965.

9. Taylor, *Combat Aircraft*, 455, 464; and Craven and Cate, *Men and Planes*, 244.

10. Maj Gen Haywood Hansell, interview by the author, Hilton Head, SC, 14 December 1982.

11. Craven and Cate, *Men and Planes*, 219.

12. *Ibid.*; and R. Cargill Hall, ed., *Case Studies in Strategic Bombardment* (Washington, DC: Air Force History and Museums Program, 1998), 210–11.

13. Taylor, *Combat Aircraft*, 182.

14. After the war was over and both Hitler and Goering were gone, the survivors may have tended to blame all they could on them. However, unreliable engines and a cautious Luftwaffe leadership evidently caused the late appearance of the jet. See "Messerschmitt Me 262A Schwalbe," National Museum of the Air Force, <http://www.nationalmuseum.af.mil/factsheets/factsheet.asp?id=509> (accessed 7 October 2009).

15. Elmer B. Potter, ed., *Sea Power: A Naval History*, 2nd ed. (Annapolis, MD: Naval Institute Press, 1981), 348–49.

16. A less-far-out idea regarding parasite fighters involved carrying a jet F-84 relatively close to the target, launching it for a high-speed reconnaissance run, and then recovering it in a safe area for the return trip home. See Marcelle Size Knaack, *Post-World War II Bombers* (Washington, DC: Office of Air Force History, 1988), 38–39.

17. We began development of postwar refueling to extend the ranges of B-29s and B-50s. Even with the availability of overseas bases, the reciprocating-engine bombers did not have the range required to deliver nuclear weapons to targets in the USSR. At first, we used converted bombers (KB-29s and KB-50s). In the probe-and-drogue method—the early system—the fuel flow through the hoses was too slow for large-capacity bombers, so we developed the boom system for them because it permitted faster transfers. When it became clear that the B-36 was too slow for effective penetration, tankers became imperative for refueling the jet bombers, whose consumption was higher but whose speed facilitated safe passage through defenses. Clearly, the use of reciprocating-engine tankers was inefficient because they could not reach jet altitude. Yet jet tankers were so much more expensive that we used the KC-97 into the 1960s, sometimes with auxiliary jets under its wings. Knaack, *Post-World War II Bombers*, 118n, 130–31n, 168n, 175.

18. This idea has many fathers, one of the main ones Michael Howard. See his "Military Science in an Age of Peace," Chesney Memorial Gold Medal lecture, 3 October 1973, reprinted in *Journal of the Royal United Services Institute* 119 (March 1974): 3–11.

19. H. L. Mencken, *A Mencken Chrestomathy* (New York: A. A. Knopf, 1949), 443.

Copyright of Air & Space Power Journal is the property of Superintendent of Documents and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.