



The 1935 crash of Boeing's sleek, four-engine bomber set back airpower for years.

# When the Fortress Wa

By Phillip S. Meilinger

**T**HE B-10 was a beautiful airplane. It was the Army Air Corps' first all-metal monoplane bomber to be produced in quantity, and it had enclosed cockpits, a manually operated gun turret in the nose, retractable landing gear, and an internal bomb bay. When it entered the Air Corps inventory in 1934, it was faster than most pursuit airplanes and could carry a ton of bombs over 1,200 miles.

Even then, though, the Corps was looking beyond the B-10.

Realizing that America's insular and isolationist stance would have to change, Air Corps officers began contemplating truly long-range aircraft. Maj. Gen. Benjamin D. Foulois was the Air Corps Chief at the time, and he realized that selling such aircraft to the War Department was a tough proposition.

In his memoirs, Foulois noted that his planners complained that all of their proposals for long-range bombers were being kicked back by the ground-dominated War Department staff. Foulois remembered telling them: "Stress defense, not offense, and stress

re-enforcement of the Hawaiian islands; maybe that will work."

Foulois continued, "As I saw it, if we could get bombers that could carry bigger bomb loads and fly greater distances this way, what difference did it make what words we used?"

It was a clever idea, but events would prove that the ground officers weren't so gullible.

In the summer of 1934, the Air Corps circulated a proposal for a new long-range bomber to replace the B-10. Prospective builders were instructed to have "multi-engined" aircraft ready for a flying competition in October 1935. The candidate

*Faster, higher-flying, and sleeker than its rivals, the four-engine Boeing 299—forerunner of the B-17—was the shape of things to come.*



# ent Down



aircraft were to be capable of flying at least 1,020 miles and preferably 2,200. It had to be able to carry a 2,000-pound bomb load. Also, it had to be able to reach a speed of at least 200 mph, though 250 mph was considered desirable.

## Boeing Goes for Broke

Boeing was then producing one of the first of the modern airliners, the Model 247. This was a sleek and fast aircraft, but Boeing designers decided to propose something radically different.

They realized that any design with two engines would offer only

marginally better performance over the B-10 it was supposed to replace. Some successful civilian designs at the time (the Fokker and Ford trimotors) incorporated three engines—with one in the nose of the aircraft as well as one under each wing. However, the need for defensive armament and a bombardier in the nose of the aircraft made this option infeasible. Boeing designers therefore wondered if the multi-engined reference in the Air Corps specification could mean *four* engines. Discreetly, they asked Air Corps officials for an interpretation and were told that a four-en-

gine bomber was indeed acceptable if it met all performance criteria.

Given the competitive nature of the aircraft industry, Boeing engineers worked on what they termed “Model 299” in total secrecy. By late July 1935, the new aircraft was ready for its maiden flight. All went smoothly. When the test pilot, Leslie R. Tower, was asked how the big airplane handled, he replied dryly: “Just like a little ship, only a little bigger.”

The Model 299 was made of an aluminum alloy. Like other designs of the time, it had enclosed cock-

pits, cowled engines, and retractable landing gear. It also had wing flaps for better performance at slow airspeeds, electric trim tabs on its control surfaces for improved handling characteristics, a hydraulically operated constant-speed propeller, and “blister” positions on the fuselage for defensive machine-gun posts.

When Seattle newspaperman Richard L. Williams caught sight of the Model 299, he promptly dubbed it “flying fortress.” The name stuck.

After a short period of testing at the factory in Seattle, the 299 was readied for delivery to Wright Field, Ohio, for the competition. On Aug. 20, 1935, the 299, powered by four 750 horsepower Pratt & Whitney



***In 1935, just as it was about to win a big Army contract, the Model 299 crashed. The design was faultless—lack of a checklist doomed the airplane and some of the crew—but Boeing lost the contract, and the B-17 faced a five-year setback.***

“Hornet” engines, made the nonstop flight from Seattle to Dayton—2,100 miles—in nine hours and three minutes. That worked out to an average airspeed of 232 mph, remarkable for the time. Upon landing in Dayton, the pilot, Tower, was surprised to find no Air Corps officials greeting them. The reason: No one expected them to arrive for at least another hour.

This performance, coupled with the 299’s size, weight, armament, design, and four-engine safety, created a sensation, and Air Corps officials looked on the aircraft with awe.

Gen. Henry H. “Hap” Arnold would

later comment that this was “airpower that you could put your hand on.”

There were other competitors at Wright Field that day. The Martin design was little more than an upgraded B-10. Douglas had modified its highly successful commercial airliner, the DC-2, and converted it into a bomber, the DB-1.

The Martin and Douglas entries were good designs, but Boeing’s 299 Flying Fortress was in a class by itself. It could carry some five tons of bombs depending on the fuel load, far more than its two-engine competitors, and the 299 carried its load higher, faster, and nearly twice as far. It appeared

that the flying competition was over before it had even begun.

### **The Crash**

On Oct. 30, 1935, the Fortress prototype taxied out for takeoff at Wright Field. A crowd gathered to watch. At the controls was the Air Corps’ chief test pilot, Maj. Ployer P. Hill. His copilot was 1st Lt. Donald L. Putt. Also aboard were John B. Cutting, an engineer, Mark H. Koogler, a mechanic—both were in the rear—and Tower, who was standing in the spacious cockpit behind the two pilots.

The aircraft roared down the runway and took off. It then climbed very steeply—too steeply. It rose to an altitude of about 300 feet, where it stalled, rolled to the side, crashed back onto the airfield, and exploded.

Putt and Tower stumbled out of the wreckage dazed and bleeding. The two mechanics, Cutting and Koogler, went out the back, largely unscathed.

Hill was unconscious and trapped in the cockpit. First Lt. Robert K. Giovannoli, who had seen the crash, grabbed one of his civilian co-workers, and the two rushed out to the flaming wreckage. Giovannoli climbed through the copilot’s window and found Hill unconscious in his seat; when trying to move him, he discovered that Hill’s foot was caught in the rudder pedals. At the same time, another civilian, Jake Harman, had come in through the crew entrance door with a coat over his head to protect himself from the fire. Brav-

ing the increasing flames, he and Giovannoli cut Hill's shoe off with a pocketknife to free his foot, and then lifted him out of the seat and passed him through the cockpit window. Both rescuers then got out themselves, though they were seriously burned.

Unfortunately, their bravery was for naught: Hill never regained consciousness and died the next day.

Tower, who had been standing behind the pilots as an observer, blamed himself for the accident. Though he did not seem to be seriously injured, he died not long afterward.

Investigators determined that the Fortress had crashed because the elevator and rudder controls were locked—the pilot could not lower the nose, so the aircraft quickly stalled. Ironically, the elevator locks had only been recently installed as a safety feature, to protect the control surfaces from moving about on the ground and being damaged during high winds.

The locking mechanism was controlled from inside the cockpit, but no one remembered to disengage it before takeoff. Tower apparently noticed that the control lock was still engaged as the aircraft moved up to stall, but was unable to get to it in time to prevent a crash. More familiar with the 299 than anyone else, this oversight on his part is why he blamed himself for the disaster.

## Second Best

The crash was doubly devastating for the Army Air Corps. Because the Boeing prototype had crashed, the Corps declared the winner to be the Douglas DB-1—later designated the B-18 Bolo.

Air Corps leaders tried to place an order for 65 of the revolutionary Fortresses, but they met only refusal from the War Department General Staff, which controlled the Air Corps purse strings. The General Staff advanced the view that, because the Boeing airplane had crashed, it must have been too complex for anyone to handle safely. Moreover, it would cost nearly \$200,000 per copy, whereas the smaller B-18 would cost less than \$100,000. Acting on the misguided principle that quantity was more important than quality, the Army promptly ordered 133 of the new Bolos.



**After the 299 crashed, the Army deal went to Douglas for its B-18, derived from the company's successful DC-2 airliner. Air Corps leaders knew the B-17 design was better, though, and they managed to keep it alive.**

Boeing was in dire straits, and it seemed perilously close to folding. Fortunately, a legal loophole allowed the Air Corps to buy a small number of test aircraft—13 to be precise—which was enough to equip one squadron.

These airplanes, soon designated YB-17s, were to prove of enormous importance.

In February 1937, Maj. Barney M. Giles took a crew up to Seattle to bring back the first YB-17. It was powered by four new engines (Wright radials had replaced the Pratt & Whitney power plants) and carried a crew of nine instead of the prototype's eight. It had an automatic pilot, cruised at a top speed of more than 250 mph, could ascend beyond 30,000 feet, and fly for some 2,500 miles.

Giles delivered the airplane to the 2nd Bombardment Group, Langley Field, Va.—the same air base from which Billy Mitchell's open cockpit biplane bombers had flown out to sea to sink *Ostfriesland* in 1921. By August 1937, the Air Corps had its baker's dozen of the new bombers. It wasn't much, but it was the beginning.

Over the next few years, Air Corps pilots would log more than 9,200 flying hours on their YB-17s without experiencing even a single major accident.

During that time, the Flying Fortresses seemed to be everywhere. In August 1937, a group of them "bombed" USS *Utah* in exercises

off the West Coast. In the following February, some flew to Buenos Aires, Argentina, to celebrate a Presidential inauguration in that nation. For this long-distance flight over largely uncharted territory, the 2nd Bombardment Group earned the Mackay Trophy.

In August 1938, the YB-17s went back to South America, traveling to Colombia on a goodwill flight and afterward visiting Chile to deliver medical supplies.

## Finding Rex

The sleek bombers showed up at air shows, aerial demonstrations, and military exercises across the country, but of greater significance was the May 1938 flight of Fortresses led by Col. Robert Olds (father of fighter ace retired Brig. Gen. Robin Olds). The aircraft flew more than 600 miles out over the Atlantic, where they carried out a mock "interception" of the Italian luxury liner *Rex*, en route to New York.

The Navy was extremely cross about the *Rex* interception, seeing it as an incursion into their domain. Indeed, the thought was raised in the minds of many that airpower could now become the nation's first line of defense. The officer who served as lead navigator on that flight was Lt. Curtis E. LeMay, later head of Strategic Air Command and Chief of Staff of the Air Force.

Maj. Gen. Frank M. Andrews, commander of General Headquarters Air



**The YB-17 was kept in the public eye by an array of stunts that annoyed the War Department. Here, YB-17s make a mock intercept of the Italian liner Rex 600 miles off the coast of the US in 1938.**

Force at Langley, was largely responsible for employing the new bombers. He asked Army leaders to buy more B-17s; he was adamantly opposed to buying the Bolos.

Andrews' superiors, Army ground officers, were not receptive. Instead, they continued to order more B-18s. (When war did come, the B-18 quickly proved inadequate for combat. The 350 aircraft that had been purchased were relegated to coastal patrols and navigator training.)

The essence of the Army's opposition was captured by the official history of the Army Air Forces: "Concentration on the big bomber, an offensive weapon, was inconsistent with national policy and threatened unnecessary duplication of function with the Navy."

Andrews did not stop his agitation for more bombers. With war hanging over Europe, the Roosevelt Administration began to see the importance of long-range bombers as a deterrent to an attack on the United States. B-17 production began slowly—very slowly.

When World War II broke out in Europe in September 1939, the Army Air Corps had barely two dozen of the new B-17s. In September 1940, the number was up to only 49 bombers. Secretary of War Henry L. Stimson noted in his diary how President Roosevelt reacted when he was told the bad news. "The President's head went back as if someone had hit him in the chest," said Stimson.



**There were only 200 B-17s at the time Japan attacked Pearl Harbor. Eventually, 12,732 Flying Fortresses would be built. Of those, 4,735 perished in combat.**

Clearly, the US needed to step up production, but things still moved at a relatively glacial pace. At the time of Japan's attack on Pearl Harbor on Dec. 7, 1941, the Air Corps had fewer than 200 B-17s in the inventory. Not until early 1944 would the US military have enough Fortresses on hand to have a decisive impact on the bombing campaign against Germany.

History never reveals its alternatives, but it is possible that, had the prototype not crashed, the Army hierarchy would have been forced into buying more B-17s at an earlier date.

The 1935 crash did produce one notable benefit. Airmen realized that aircraft were becoming too complex to fly safely without standardized procedures. Moreover, these procedures were too numerous and complicated to commit entirely to memory. "Checklists" were now developed that spelled out specific tasks that were to be accomplished by each crew member at various times throughout the flight and also while on the ground. Such a checklist, performed while taxiing out for takeoff, would no doubt have revealed that the 299's elevator locks

were still engaged. Today, such detailed checklists are mandatory for all aircraft.

Oct. 30, 1935, was a sunny day that began with high hopes for American airmen. By day's end, those dreams had gone up in smoke. American airpower suffered a mighty blow that day, but in time struggled back on its feet and into the air. ■

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