



# Plane Talk

Volume 23, Number 2

*The Newsletter of the War Eagles Air Museum*

## Editorial

Since we received no negative comments—or, indeed, any feedback at all—about our idea of featuring non-Museum aircraft from time to time in *Plane Talk*, we assume that you, the readers, find this approach interesting and informative. So in this issue we highlight one of the most unusual American aircraft ever to take wing.

The story of Northrop's XP-56 *Black Bullet* is not one of aerial combat, blazing guns and steely-eyed stick jockeys at the controls of high-performance fighters. It is instead a tale of painstaking engineering, of daring flight-testing and of radically pushing the limits of aeronautical technology in the constant quest for more speed, maneuverability and performance.

Unlike new aircraft being developed and tested today, such as Lockheed Martin's F-35 *Lightning II*, the XP-56 did not fly "in the computer" for months or years before the first prototype left the ground. In World War II days, a "computer" was a woman—*always* a woman—in a roomful of other women, punching the keys of a clanking, clattering mechanical adding machine, laboriously cranking out the results of mathematical formulas fed to her by white-shirted, narrow-necked engineers (always males). Today's aircraft are wrung out so thoroughly in digital form before flying that their first flights often seem anticlimactical. Such was not the case in 1943, when the first flights of the *Black Bullet* were far from routine.

We hope you enjoy this little departure into the realm of aircraft engineering and flight testing in bygone days. ✪



## Featured Aircraft

In early 1939, the United States Army Air Corps was in a difficult position. Fast, high-flying, well-armed, maneuverable aircraft were under test or entering service in several potentially unfriendly countries. The Air Corps knew it had to do something. The need for an advanced pursuit aircraft seemed clear.

Germany's *Bayerischen Flugzeugwerke* Bf 109 was a nimble, high-performance fighter superior to all others then flying. In the first eight months of 1939, nearly 1,100 Bf 109E *Emils* entered service with the resurrected *Luftwaffe*. Un-

*Featured Aircraft (Continued on Page 2)*

▲ Northrop's radical XP-56 *Black Bullet*—here seen at the company's Hawthorne, California, plant in 1943 in a camouflage paint scheme that belies its unofficial nickname—was a highly unusual aircraft; a stubby, all-magnesium "flying wing" with no horizontal tail and big counter-rotating "pusher" propellers. It had very nasty handling characteristics that proved to be its downfall.

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## From the Director

**Y**ou might think War Eagles Air Museum's aircraft, automobiles and artifacts are static. You may believe that, once you've visited the Museum, you've seen everything there is to see, and it's not worth the long drive out to take another look. After all, you may reason, how much new stuff can there possibly be? Well, you'd be surprised.

Consider the items we've added just in the last five years. We have five "new" aircraft on display—a Boeing *Stearman* PT-17 primary trainer, a Cessna T-37B *Tweety Bird* jet trainer, a WACO EGC-8 cabin biplane, a Stinson L-5 (O-62) *Sentinel* World War II liaison/observation aircraft and a Piper PA-18 *Super Cub*.

We have several "new" cars in our automobile annex, including a 1950 Ford F-100 pickup, a 1953 MG-TD, two 1954 MG-TFs, a 1961 MGA, a 1963 Morgan +4, a 1973 Honda *Civic* and a 1984 Jaguar XJ-6 Series III. We've about run out of room for automobiles. In the future, we'll have to retire one from display for each one we add to the collection.

In the last *Plane Talk*, you learned about the nuclear weapons that we are refurbishing for display. We also recently acquired an exquisite collection of vintage gasoline pumps from the 1920s to the 1960s that will look great next to our automobiles from the same period.

Regardless of when you last visited us, you should stop in again soon. I'm sure you'll find something new to see.

Skip Trammell ☛

### Plane Talk

Published quarterly by:

**War Eagles Air Museum**  
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### Featured Aircraft (Continued from page 1)

like contemporary U.S. aircraft, the 109E incorporated lessons learned from actual combat two years earlier in the Spanish Civil War. In Japan, Mitsubishi Heavy Industries' A6M *Zero-Sen*, a formidable aircraft by any measure, flew for the first time on April 1, 1939. Meanwhile, U.S. pursuit squadron pilots flew a mixture of aircraft types—Seversky P-35s, Curtiss P-36 *Hawks*, open-cockpit Boeing P-26A *Peashooters* and even totally obsolete Boeing P-12 biplanes—all of which were badly outclassed by their newer German and Japanese counterparts. Thus, during the last golden years of peace, America had to face up to the unpleasant fact that it had nothing in the air to match the forces of its enemies.

The Air Corps initiated a \$6,000,000 program in July 1939 for advanced pursuit aircraft that could enter production in the next couple of years. Part of the money was allocated to incentivize aircraft manufacturers. This was a radical approach at the time. Normally, manufacturers designed new aircraft at their own expense, then turned the prototypes over to the Air Corps for evaluation and, hopefully, production. In this program, the Air Corps was deeply involved right from the start. The Service wanted five new aircraft models to test, with speed and altitude requirements that would give them "superior performance to foreign aircraft." Time was of the essence.

In September 1939, this program resulted in Air Corps contracts with Curtiss-Wright and Republic for two aircraft that could be made available quickly by modifying existing "conventional" designs—the XP-46 and XP-47. The Curtiss XP-46 was a high-performance derivative of the P-40 *Warhawk*. Republic's XP-47, which later gained fame as the *Thunderbolt*, was a modification of the company's unbuilt AP-10 fighter design. These aircraft were a start, but they were not enough. So, on February 20, 1940, Air Corps Chief Major General Henry H. "Hap" Arnold sent Request for Data R-40C to selected airframe companies. This new solicitation spawned three of the most unusual aircraft ever to fly.

The seven companies that responded (Bell, two divisions of Curtiss-Wright, McDonnell, Northrop, Republic and Vultee) proposed 25 distinct designs. An Air Corps Engineering Evaluation Committee ranked the designs on May 15, 1940, and a selection board validated the Committee's findings on May 20. There were three winners: Vultee's Model 70, Curtiss-Wright's Model P-249-C and Northrop's Model N-2B. Although all three were "departures from conventional designs," they could be production-ready within a couple of years, an important criterion. All three eventually flew, but none went into production. The Model 70 became the twin-boom XP-54 *Swoose Goose*, the Model P-249-C flew as the tail-first XP-55 *Ascender* (it's a *double-entendre* name—think about it), and the Model N-2B became the sinister XP-56 *Black Bullet*.

The Air Corps fixed-price contract with Northrop, signed on June 22, 1940, purchased one XP-56 at a not-to-exceed (NTE) price of \$361,500, and had an option for two at NTE \$220,000 each. Right off the bat, a problem came up. Northrop's design specified the still-in-development 2,200-horsepower, 24-cylinder, liquid-cooled Pratt & Whitney X-1800



▲ The U.S. Army Air Corps' R-40C solicitation for advanced pursuit aircraft led to two other very unusual designs in addition to the Northrop XP-56 *Black Bullet*. At the top is the Vultee XP-54 *Swoose Goose*; at the bottom is the Curtiss XP-55 *Ascender*.

engine. R-40C's high speed requirements practically mandated that engine—Curtiss and Vultee had chosen it as well. But development difficulties had plagued the complicated, temperamental X-1800 for a long time, and P&W was reluctant to continue the program. Northrop concluded that a supercharged P&W R-2800 18-cylinder, air-cooled radial could be shoe-horned in, albeit it with an increase in fuselage diameter and higher drag.

On September 9, 1940, while the Air Corps stubbornly tried to salvage the X-1800, Northrop started testing a 1/5-scale model of the XP-56 in the low-speed wind tunnel at the California Institute of Technology's Guggenheim Aeronautical Laboratory. The tests ended prematurely when the model came loose in the tunnel and suffered severe damage.

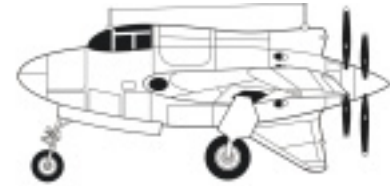
The Air Corps finally had to face the fact that the future of the X-1800 was in doubt. Cancellation of the big powerplant would affect not only the XP-56, but the XP-54 and XP-55 as well. Current plans called for delivery of the first R-2800 alternate engine in February 1942—about six months after the XP-56 was due to be completed. The Air Corps wanted P&W to speed up the R-2800 by six months if it agreed to let the contractor drop the X-1800. It was a nice try, but reality soon intruded. Even P&W's original 18-month development estimate for the R-2800 was far less than the time actually required.

On October 3, 1940, Northrop and P&W engineers met at Wright Field, in Dayton, Ohio, to discuss installation of the R-2800 in the XP-56. P&W agreed to

deliver the whole power plant package, including an engine cooling fan, an extended drive shaft and a gearbox for the two counter-rotating propellers. With the engine "buried" in the fuselage, the design of passages and baffles for cooling air was already seen as a major problem. P&W said it would push the project "as much as possible" to speed up delivery of the first engine.

The Air Corps resisted the R-2800 option because it wanted liquid-cooled engines in its latest aircraft. In a November 7 letter to Assistant Secretary of War Robert Patterson, P&W contended that air-cooled engines had many advantages over liquid-cooled, including lower manufacturing costs, better reliability and easier installation and maintenance. The letter also noted that the U.S. Navy used air-cooled engines—perhaps not the wisest comment, given the strong rivalries that always simmered between the two Services. The Air Corps believed P&W was simply trying to justify dropping the X-1800, and noted that the trend of foreign development, based on actual combat experience, had led both England and Germany to focus on liquid-cooled engines. As it turned out, the XP-56 was the only one of the three R-40C winners to use an air-cooled engine—the XP-54 eventually flew with a liquid-cooled Lycoming XH-2470-1, and the XP-55 took to the air with a 12-cylinder liquid-cooled Allison V-1710-95.

Northrop had built the XP-56 mock-up while the engine controversy raged. In July 1941, an Air Corps team inspected it and recommended many changes, most of them minor. For example, Northrop was to rearrange some switches and add an external power receptacle. The team's major concern was that the aircraft would



"flop forward" onto its nose wheel when landing because its center of gravity (c.g.) was too far ahead of its main gear. Moving the gear forward a few inches would—so the team thought—reduce this undesirable tendency. Ironically, the relationship of the main gear and the c.g. was one of the causes of the crash of the first XP-56 over two years later, and the second prototype had to carry ballast to move the c.g. forward. The problem was just the opposite of what the Air Corps team of "experts" had first thought.

By late 1941, assembly of the prototype XP-56 was proceeding well, the engine situation was settled and tests with a flying-wing N-1M gave confidence that the XP-56 would be stable about all three axes of rotation (pitch, yaw and roll).

John K. "Jack" Northrop had been trying for years to interest the Air Corps in his "flying wing" aircraft designs. The XP-56, with its bulbous fuselage (which Northrop called the "nacelle"), was not a pure flying wing, but it had some of the same design features—a pusher engine,

*Featured Aircraft (Continued on page 4)*

<b>Northrop XP-56 Black Bullet General Characteristics</b>	
Powerplant	P&W 2,000 horsepower R-2800-29 18-cylinder air-cooled radial
Maximum Speed	465 miles per hour
Service Ceiling	33,000 feet
Length	27 feet 6 inches
Wingspan	42 feet 7 inches
Range	660 miles
Weight (empty)	8,700 pounds
Weight (maximum)	12,150 pounds

*Featured Aircraft (Continued from page 3)*

drooped wing tips and trailing-edge elevons. Northrop's tireless selling efforts finally bore fruit. In November 1941, the Air Corps issued Northrop a contract to build a prototype very-long-range flying wing bomber called the XB-35.

The XB-35 epitomized Jack Northrop's life-long dedication to the flying wing concept, so it was only natural that he would focus most of his interest and resources on the aircraft that clearly vindicated his heretical aeronautical ideas. It also had a higher priority. Things in Europe were bad. Air Corps officers feared they would have to bomb Germany from bases in the U.S. if England fell. The Air Corps figured that Northrop would not be able to devote its maximum effort to the XB-35 because the XP-56 needed much of the same engineering talent. The concern was not entirely unfounded. Northrop had specifically asked the Service to contract for only one bomber because he did not think he had the facilities to build two prototypes simultaneously. But he soon changed his mind and said he could "swing the second airplane." In January 1942, the Air Corps ordered both a second XB-35 and a second XP-56. The Air Corps' reasoning that "a second airplane provides insurance against the loss of the first" later proved to be very prescient.

For the next year, progress was slow but steady. As expected, P&W had problems with the R-2800, and Northrop had to develop new manufacturing techniques for the XP-56, which had the first all-magnesium-alloy, all-welded airframe in history. Northrop perfected and patented the "Heliarc" welding process specifically for this aircraft. With the obstacles overcome, the first XP-56, serial number 41-786, was completed in March 1943.

The name *Black Bullet* never "officially" applied to the XP-56, and in any case would not have fit the gleaming silver prototype. Squatting on its tricycle landing gear like a grounded metallic bat, the XP-56 looked purposeful and aggressive, an effect heightened by its smooth contours and lack of protrusions.

Engine runs started immediately after rollout. They were plagued by rough-



▲ Northrop test pilot John Myers runs up the first XP-56's complicated pusher engine/counter-rotating prop powerplant. Note the unpainted magnesium finish—the airplane was hardly a "Black Bullet" at rollout.

ness traced to a bad ignition wiring harness. During the first taxi tests at Hawthorne on April 6, the XP-56 showed an alarming tendency to yaw "sharply and dangerously" at higher speeds. Northrop modified the brake system. Ominously, while the contractor was preparing the aircraft for trucking to Muroc Army Air Field (later Edwards Air Force Base), an R-2800 being tested at P&W in Connecticut threw a propeller blade, prompting Northrop to run engine, gearbox and propeller vibration tests before clearing the prototype for flight. The tests turned out to be a good idea. They showed that the gearbox mounts were too weak, allowing the box to move and forcing the heavy extension drive shaft forward into the engine. Northrop installed new mounts and finally shipped the XP-56 to Muroc in early May. It didn't fly until nearly Fall because of continuing engine problems.

On September 6, Northrop's Chief Test Pilot John W. Myers strapped into the cockpit and fired up the big R-2800 that thundered just a few feet behind his back. He signaled the ground crew to pull the chocks. The shining silver aircraft began to roll across the flat, hard surface of Rogers Dry Lake, a rooster-tail of dust billowing in its wake. Seconds later, the XP-56 took to the air for the first time.

The first flight was a conservative straight-and-level hop. Covering about a mile, it lasted only 30 seconds and got to an altitude of five feet. Myers did not

even try to change direction, although he did "very gingerly" move the stick from side to side a little. The only problem was a nose-heaviness that required him to exert about 10 to 15 pounds of back pressure on the stick at all times.

Later that day, Myers took the aircraft aloft again. His (slightly edited) test report describes what happened next:

"...The ship continued to accelerate and at approximately 130 mph was lifted off the ground and climbed until an altitude somewhere between 25-50 feet had been reached. At this altitude the angle of attack was reduced somewhat to prevent the gaining of more altitude. As this was being done, the ship yawed violently to the left, at the same time rolling to the right, and a very pronounced diving moment was observed. Control forces were found to be so extremely high the pilot was required to use both hands on the stick. Even under this condition, he was not strong enough to apply adequate corrective aileron. Forces were so high that the pilot was unable to let go of the stick long enough with his left hand to either throttle back or attempt to change trim. Corrective rudder was applied to reduce the large angle of yaw. At this time forces were felt to lighten somewhat and the pilot let go of the stick long enough to snatch at the throttle with his left hand in an attempt to throttle the engine off.

"Unfortunately, the motion was inaccurate and resulted in only reducing power to approximately 25 inches [of manifold pressure]. By this time the ship had attained a speed of 165-170 mph. Again the ship yawed violently to the left, rolled to the right, and the diving moment was encountered. Again rudder was applied and when the ship had reduced its angle of yaw to somewhere near zero, the pilot snatched at the elevator trim-tab with his left hand, changing the trim from 4 degrees nose-heavy to 5 degrees tail-heavy. This change produced no apparent result in trim of the ship or in elevator forces. Again the ship yawed and rolled. Corrective measures were again successfully applied, at which time the engine was throttled [back]. Contact with the ground was made with the nose of the ship at a fairly high angle above the horizon at ap-

proximately 130 mph. The landing was quite hard. On contact, the rubber bumper on the bottom of the lower fin was torn off. The flight covered a distance of approximately two miles...”

This was hardly an auspicious start to the flight test program! Northrop engineers concluded that part of the problem was too little vertical fin area, so they grafted a triangular glove-like extension onto the vestigial dorsal fin. They also realized that the open nose gear doors hung out into the airstream like a pair of vertical canards, adding to the instability. So they took off the nose gear doors.

The XP-56 returned to flight on October 8, with Myers again at the controls. Before taking off on the program's third flight, he made high-speed taxi runs back and forth across the lakebed. On the first run, he kept the aircraft on the ground. On the second run, he lifted off and flew for about two miles. On his third hop, he thought he noticed signs of directional instability. Deciding to check into it a little further, he turned around to return to his starting point and accelerated to nearly takeoff speed. That's when observers saw the aircraft veer sharply to the left. In the cockpit, Myers had his hands full. Trying to correct for what he sensed was the left main tire going flat, he applied maximum right rudder, but it didn't help. At about 130 miles per hour, the XP-56 swung to the left in an ever-tightening arc. It final-

ly went completely out of control, somersaulting backwards 2½ times, digging in the wing tips, the spinner and the nose and bouncing wildly up to 75 feet in the air. It came to rest upside down in a heap of twisted, broken metal.

When the dust settled, Myers found himself on the ground 10 feet in front of the demolished XP-56, still strapped into his seat. During the aircraft's gyrations, the seat supports had failed and he had been catapulted out through the canopy. This was a lucky break, because the cockpit area was totally destroyed when the aircraft slammed into the desert for the last time. Myers suffered only minor injuries—he had been wearing an old polo helmet, complete with tiny “Mercury” wings, dating back to his days as an athlete at Stanford. His oft-quoted remark: “The airplane wanted to fly upside down and backwards, and finally did.”

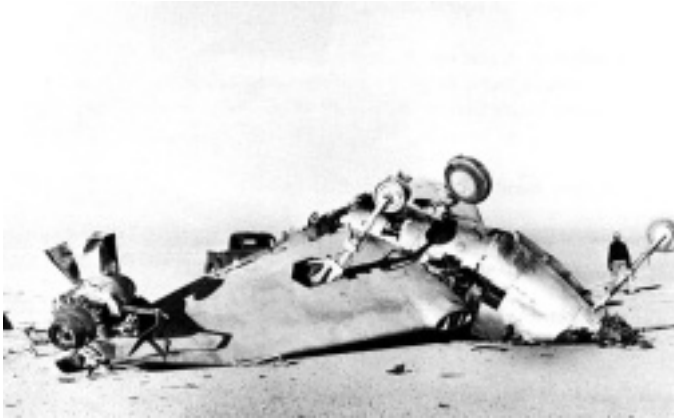
An investigation board blamed the wreck on a blowout of the left main tire. Northrop replaced the cotton fabric tires on the second XP-56 with new ten-ply nylon tires made from virgin rubber. Other changes to that aircraft (serial number 42-38353) included wingtip “aero boost ducts” for more positive elevon movement, a larger dorsal fin and ballasting to move the c.g. forward for improved directional stability and takeoff/landing behavior. These changes delayed completion of the second aircraft from late November 1943 to early January 1944. Test-

ing began with taxi tests at the factory. Northrop's plans to relocate testing to Muroc were delayed by heavy “monsoon” rains that flooded the usually-dry lake beds. By the end of March, Roach Lake dried out enough for flight operations to begin. Northrop sent the aircraft by truck to the lake and, on March 23, 1944, the second prototype XP-56 took to the air for a brief flight with test pilot Harry Crosby at the controls.

Crosby fought extreme nose-heaviness throughout the flight, reporting, as had Myers in the first prototype, that he had to use both hands on the stick to fly straight and level. He also noted the aircraft was very sensitive to rudder movements. He had started with 100 gallons of fuel and a broken fuel quantity indicator. After circling Roach Lake 1½ times, he thought his fuel might be getting low, so he landed just 7½ minutes after takeoff. Northrop immediately grounded the aircraft to investigate the control problems.

The cause of the nose heaviness was that the c.g. was too far forward. Reballasting to move it back about two inches solved some, but not all, of the problems, as Crosby found out on his second flight on March 31. He took off and climbed to 4,500 feet, where he retracted the landing gear. The aircraft immediately stalled. He had to quickly extend the gear to regain control. He adjusted the trim and tried again. This time he could maintain stable level flight with the gear up. But then a severe vibration began, which dissuaded him from exceeding 250 miles per hour. This was the fastest the XP-56 ever flew—a far cry from its maximum design speed of 465 miles per hour. After making several gentle turns, Crosby lowered half flaps, cut the power back and loafed along for a while at 122 miles per hour, with, as he wrote later, “controls getting

*Featured Aircraft (Continued on page 7)*



▲ *The first XP-56 meets its ignominious end at Muroc Army Air Field on October 8, 1943, just a month after flight testing began. Test pilot John Myers was not seriously injured in the crash, which was caused by a blown-out left main gear tire. You can see the tire is completely missing from the wheel in this photo.*

### ADDITIONAL READING

This story is a greatly condensed version of the following magazine article which, at the time, was the definitive history of the XP-56:

- Sunday, Terry L., “The Black Bullet,” *Wings*, December 1988

For a superb, comprehensive history of all three R-40C aircraft, the following book is *highly* recommended:

- Balzer, Gerald H., *American Secret Pusher Fighters of World War II*, Specialty Press, 2008



**Guy E. Dority**

Sep. 30, 1918–Feb. 7, 2010

**S**undays at War Eagles Air Museum will never be the same. For many years, our good friend Guy Dority, a long-time volunteer, indefatigable aviation enthusiast and decorated World War II combat veteran, came to the Museum nearly every Sunday afternoon to regale visitors young and old with spellbinding stories of his wartime experiences as a combat airman. We never grew tired of hearing him tell harrowing tales of aerial combat and of life during wartime in a quiet, low-key, unassuming manner that almost made it seem that he was describing a leisurely walk around the block.

Guy died peacefully at his home near the Doña Ana County Airport on Sunday, February 7, 2010, at the age of 91.

The story of Guy's military service during World War II is a tale straight out of Charles Dickens or Mark Twain. Born in Maine but raised in Manitoba, Guy enlisted in the U.S. Army Air Corps in August 1941. By mid-1942, he had completed basic and advanced training and was looking forward to an active duty assign-

*The photo of Guy Dority at the head of this column was taken by Chuck Crepas.*

ment as a radio operator/gunner aboard a Boeing B-17 *Flying Fortress*. He got a big disappointment when he learned that he was grounded from flying because of color blindness. Undeterred by this minor setback, which may well have completely discouraged a less-determined man, Guy slyly "pulled some strings" and added his own name to the crew roster of a B-17E of the 359<sup>th</sup> Bomb Squadron, 303<sup>rd</sup> Heavy Bombardment Group, that was soon to leave the U.S. for Europe. He later said it was months before his paychecks and paperwork caught up with him. As it turned out, his aircraft, which its crew had christened "Jarrin' Jenny," was the very first American-manned *Flying Fortress* to arrive in the United Kingdom when it landed smoothly at Prestwick, Scotland, on July 1, 1942, after a harrowing trans-Atlantic flight. Guy's aircraft was the first of the thousands of fighters and bombers of the mighty 8<sup>th</sup> Air Force that soon followed, a portent of the "thousand-plane raids" that would reduce Nazi Germany to rubble and assure Allied victory.

On one of his combat missions over Europe, Guy was wounded by a piece of shrapnel from a German 20mm cannon shell that exploded in his radio compartment. In June 1943, after 50 missions, he rotated back to the States, but then he went to North Africa for a second tour of duty in February 1945. There he flew 245 supply sorties to central Europe before returning to the U.S. in September 1945.

Guy flew 470 wartime missions, totaling 1,422 hours of flight time, and he kept meticulous records of all of them. In addition to B-17s, he flew in B-24 *Liberators*, B-25 *Mitchells*, C-46 *Commandos*, C-47 *Skytrains* and C-54 *Skymasters*. He and his crewmates rode damaged aircraft down to safe landings three times. He earned a Purple Heart, an Air Medal with Silver Oak Leaf Cluster and four Bronze Oak Leaf Clusters, and a Presidential Citation with Oak Leaf Cluster. In 2006, he was recommended for a Distinguished Flying Cross. If approved, it will unfortunately have to be awarded posthumously.

Guy was playing golf one day when he saw an AT-6 flying overhead. He followed the aircraft to the site of the yet-unbuilt Museum, met John MacGuire and



▲ In this undated wartime photo, Staff Sergeant Guy Dority takes a break while serving with the U. S. Army Air Corps in England during World War II.

signed on as one of the first volunteers. For many years, he spent his Sunday afternoons at the Museum, sharing his experiences and passion for aviation with visitors from around the world.

*Plane Talk* columnist Robert Haynes probably saw as much of Guy "in action" as anyone. "Guy was one of the greatest assets to the Museum," Robert said. "He had a great personality and great experiences, along with an impeccable appearance and a true sense of style. He was a wonderful storyteller, and had the ability to mesmerize any audience. I thoroughly enjoyed watching him interact with Museum visitors and staff, and I'll miss him greatly. Sundays will simply never be the same without him."

We often got e-mail queries out of the blue from Museum visitors who had spoken with Guy months or years earlier. "How's that ol' Guy doing?" they wanted to know. He had an incredible knack for making good friends in an instant, and he was the best spokesman for the Museum and for aviation that anyone could ever have asked for. His passing leaves a void that will never be filled. ✪

## Membership Application War Eagles Air Museum

War Eagles Air Museum memberships are available in six categories. All memberships include the following privileges:

- ➔ Free admission to the Museum and all exhibits.
- ➔ Free admission to all special events.
- ➔ 10% general admission discounts for all guests of a current Member.
- ➔ 10% discount on all Member purchases in the Gift Shop.

To become a Member of the War Eagles Air Museum, please fill in the information requested below and note the category of membership you desire. Mail this form, along with a check payable to “War Eagles Air Museum” for the annual fee shown, to:

War Eagles Air Museum  
8012 Airport Road  
Santa Teresa, NM 88008

Membership Categories	
<input type="checkbox"/> Individual	\$15
<input type="checkbox"/> Family	\$25
<input type="checkbox"/> Participating	\$50
<input type="checkbox"/> Supporting	\$100
<input type="checkbox"/> Benefactor	\$1,000
<input type="checkbox"/> Life	\$5,000

NAME (Please print) \_\_\_\_\_

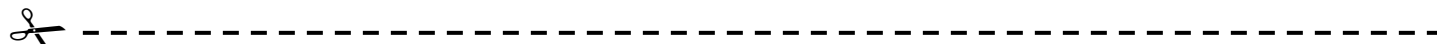
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TELEPHONE (Optional) \_\_\_\_\_

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Will be kept private and used only for War Eagles Air Museum mailings.



**Featured Aircraft (Continued from page 5)**

sloppy and forces becoming lighter.” He could not use flaps on landing because wind tunnel tests had indicated that extending flaps with the gear down would cause an uncontrollable pitch-down. After 35 minutes, he greased the XP-56 in for a smooth landing. The control forces reversed just before touchdown—he had to push forward on the stick to coax the *Black Bullet* down the last few feet.

Crosby made four more short, relatively uneventful flights at Roach Lake. On May 12, for his 7<sup>th</sup> flight, he ferried the *Black Bullet* to now-dry Harper Lake, which had much better facilities. During that entire flight, Crosby had wing heaviness that he could not trim out. Grounded again, the XP-56 continued to frustrate Northrop’s engineers. They never fully pinned down the cause of the problem. They reluctantly okayed a return to flight status. Crosby made two more flights, on the last of which he returned the aircraft to Northrop’s Hawthorne factory. Final-



▲ *Photos of the Black Bullet in flight are exceptionally rare. This one of Harry Crosby in the second aircraft is a frame of 16mm movie footage taken from a chase plane.*

ly, on August 11, 1944, Crosby took off to fly to Muroc. It was the *Black Bullet*’s tenth and, as it turned out, last flight.

Crosby’s troubles began even before he took off, with extreme tail-heaviness. During his 43-minute flight, he could not get full power from the engine, and fuel consumption was off-scale high. At Muroc, technicians found the carburetor mixture was set excessively rich, and also that the pitch-change linkage between the two propellers had failed again, for the

third time. Northrop grounded the *Black Bullet* again to await a fix, but it was too late—its fate was already sealed. A few months earlier, the Air Corps had concluded that the performance of the XP-56 was no better than that of comparable aircraft of conventional design, especially the Republic P-47 *Thunderbolt*.

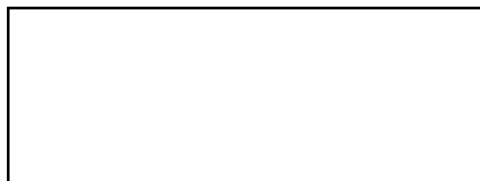
But even though no production contract was in the offing, the Service still saw some value in the XP-56. It proposed an expanded flight test program to figure out why the aircraft was not faster—whether the problem was excessive drag, propeller inefficiency, incorrect calculations or whatever. Determining the reasons for its poor performance could point to ways to improve future aircraft designs. At a meeting on June 26 and 27, 1944, a plan was developed to first test the aircraft in the 40-by-80-foot full-scale wind tunnel at the National Advisory Committee for Aeronautics (NACA) Ames Research Center at Moffett Field, near San Fran-

*Featured Aircraft (Continued on page 8)*



## War Eagles Air Museum

Doña Ana County Airport at Santa Teresa  
8012 Airport Road  
Santa Teresa, New Mexico 88008  
(575) 589-2000



▲ *Northrop's innovative XP-56 was hard to fly and suffered from poor performance, but the Air Corps cancelled the program just as it was on the verge of showing its true potential. This short-sighted approach continues to plague weapon system procurements today.*

### Featured Aircraft (Continued from page 7)

cisco. Northrop would then instrument the airplane to collect data during a follow-on 17-flight test program. Harry Crosby was to be paid \$10,000 for making the flights. But this was not to happen

either. On August 26, Northrop requested approval to truck the aircraft to Ames to await tunnel time. The Air Corps instead ordered Northrop to put it into open storage at Muroc, where it remained for over two years, gathering a thick coating of gritty dust out on the desert, as the proposed wind tunnel test program lost out repeatedly to higher-priority projects. The axe finally fell on January 31, 1946. The Air Corps

advised Northrop that the XP-56 was out of the NACA wind tunnel program, and directed the contractor to return it to Hawthorne and store it there for future display in the Air Force Museum. It was later transferred to the Smithsonian Institution's National Air and Space Museum

in Washington, D.C. In 1985, the Smithsonian returned the peripatetic pusher plane to the Northrop Corporation for restoration. Its fate after that time is unclear, although recent reports place it back in the Smithsonian collection, still unrestored. Apparently its all-magnesium construction is a real bane to restoration. Hopefully, the sole surviving *Black Bullet* will someday be on public display as an example of an innovative but temperamental aircraft design that never met its potential—just an interesting footnote in the annals of aviation history. ☹

### Plane Talk on the Web

Complete *Plane Talk* archives, from the current issue all the way back to the first issue in our files, Summer 1992, are available for download on our website. Thanks to long-time volunteer Chuck Crepas for scanning the old issues.