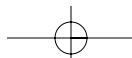




North American Aviation P-51D Mustang





Lone ranger

Soloing a Mustang
for the first time

BY BARRY SCHIFF

PHOTOGRAPHY BY MIKE FIZER

There is nothing that can be written about the North American P-51D Mustang that hasn't already been said. It is the ultimate single-engine, propeller-driven airplane, a sculpture of aerodynamic eroticism that stirs a pilot's heart. The distinctive snarl of its liquid-cooled, V-12 engine turns heads wherever and whenever it is heard.

Can there be a pilot who has not yearned to fly one?



"No question about it," says author Barry Schiff (above). "Happiness is flying a Mustang."

Dream flight

The clearance crackled through my headphones, “Mustang One-Five-One-Delta-Papa, cleared for takeoff.”

This was the moment of which dreams are realized and memories are made.

I pushed forward on the control stick to unlock the Mustang’s full-swiveling tailwheel for the turn onto Camarillo (California) Airport’s Runway 26. Pulling the stick back limits tailwheel swivel to 6 degrees left or right, enough to make wide-radius taxiing turns.

I held in position to collect my thoughts, to ensure that I was ready for what lay ahead. The idling Rolls-Royce Merlin engine made that distinctive popping sound. I nudged the throttle to 1,500 rpm for a final check of the gauges.

At the age of 69 I was about to solo a Mustang for the first time and felt as much anxiety as when I had made my first solo flight 53 years ago. I dried my hands on my pant legs.

I couldn’t help thinking about the Mustang’s reputation for being difficult to control during the takeoff roll. An unsettling rumor says that more P-51s were lost during training than in combat, although Bob Hoover doesn’t agree with that. It was comforting, though, to know that the typical World War II pilot stepping into the single-place fighter

for the first time had only 200 hours of flight time. I had a wee bit more.

The long nose seemed to slope up and away for as far as the eye could see but thankfully it is slender. Although I could not see directly ahead, I could see a considerable length of the runway edges. More of the runway is visible than when flying airplanes equipped with wide radial engines that block more of the view. The 11-foot propeller made humongous, blurred slices across the sky.

I rechecked rudder trim: 6 degrees right. The canopy was locked, engine-coolant temperature was in the green, boost pump was on, and the mighty Merlin was feeding from the left tank.

Toe brakes firmly applied, I advanced the throttle to 2,300 rpm and 30 inches of manifold pressure. The Mustang trembled slightly as if champing at the bit, impatient to be cut loose.

Brakes released, we began to accelerate, and I kept my feet dancing to arrest directional transgressions. As air flow increased across the rudder, I advanced the throttle to 3,000 rpm and 40 inches. (The geared propeller turns at only 1,437 rpm.) I held the stick fully aft to keep the tailwheel on the ground and assist with tracking. I had been taught that the best way to maintain directional control is to increase power in steps as control effectiveness increases.

At 50 knots I slowly but forcefully pushed the stick forward. The end of the runway came into view, and I increased power to 55 inches (120 gallons per hour of fuel flow). I began to appreciate why the British (for whom the P-51 was developed) called this airplane a Mustang, a wild stallion of the American prairie. The unbridled acceleration, energy, and noise level are startling and impressive.

Although 61 inches of manifold pressure are available for takeoff, I was not ready for the combination of twisting and turning forces that accompany 1,490 horsepower slinging that huge propeller. (Torque alone is impressive and causes the left tire to wear much faster than the right.) A takeoff using maximum power could wait until I had more experience.

Besides, a lightly loaded Mustang inspired by 55 inches of manifold pressure performs better than a wartime edition loaded with armament and drop tanks using 61 inches. During emergencies, combat pilots could pull 67 inches (1,720 horsepower), and modified Mustangs racing at Reno develop as much as 155 inches.

I raised the nose at 100 knots and the Mustang was airborne immediately unlike any other piston-powered single I had ever flown. With landing gear retracted, the climb at takeoff power is exhilarating, almost 4,000 fpm.

Cottonmouth’s modernized instrument panel bears little similarity to the military panel of the 1940s.





I was relieved to discover that it takes less right-rudder pressure during initial climb than a Cessna 210. The immediate goal, though, was to accelerate to the best glide speed of 150 knots, just in case.

If you have to make an off-airport landing, I was admonished, be certain that the gear is up. If the Mustang flips

onto its back when landing on an unimproved surface, the top of the canopy could wind up pressing against the ground. Getting out would be impossible. Also, don't ditch; the P-51 wants to dive for the bottom.

Although the Mustang can be trimmed easily, it is almost a constant process when maneuvering. Rudder

and elevator trim are needed with even the slightest changes in power or airspeed.

In-flight visibility is unlimited in all directions. Maximum speed for opening the canopy is 130 knots. The downsloping cowling initially gives the impression that the nose is too low during cruise. As advertised, control pressures

increase and stiffen with airspeed but are not heavy.

The challenge

Wanting to solo a Mustang and doing it are obviously two different things. I was fortunate to have a friend who owns one. I had known David Price for years but never had the courage to ask if I could fly his pride and joy, *Cottonmouth*.

Price is a 5,500-hour Navy pilot who has owned a wide variety of warbirds. These include a Messerschmitt Me 109, a Mitsubishi Zero, a Hawker Hurricane, and a pair of Spitfires. He has flown 40 types of warbirds and eight Unlimited races at Reno's National Championship Air Races in his highly modified P-51, Dago Red. He owns the Supermarine Jet Center at Santa Monica Municipal Airport and is the founder and president of American Airports, an organization dedicated to the management of airports.

Recognizing that I was not getting any younger, I kiddingly but on the square asked Price when he was going to let me fly his cherished Mustang.



The three trim wheels (left) are clustered together, and the rudder pedals (below) are adjustable fore and aft for tall and short pilots.



Surprisingly and without hesitation, he said, "Whenever you'd like."

"You're kidding, right?"

"No, I'm not. Just get some back-seat time in a T-6 to prepare for the Mustang."

Needing no further encouragement, I joined the Southern California Wing of the Commemorative Air Force. After two hours of touch-and-go landings from both seats of the T-6, CAF instructor Steve Barber, who is also an experi-

enced warbird pilot, felt that I could handle the Mustang. He said the T-6 is actually more difficult to fly than a Mustang. Sure, I thought skeptically.

I called Price and announced my readiness. His insurance company, however, had other ideas. The underwriter said I could fly *Cottonmouth* but only after obtaining an endorsement to solo a Mustang from a P-51 instructor.

SPECSHEET

North American P-51D Mustang
Price (in good condition): \$1.5 million to \$1.8 million

Specifications

PowerplantRolls-Royce Merlin V-1650, 1,490 hp Super charged (2 stage), liquid-cooled V-12
 Time to overhaul (typical)450 hr
 PropellerHamilton Standard four-blade, 134-in dia
 Length32 ft 2 in
 Height (three-point attitude)13 ft 8 in
 Wingspan37 ft 0 in
 Wing area235 sq ft
 Wing loading (at 10,500 lb)44.7 lb/sq ft
 Power loading (at 10,500 lb)6.6 lb/hp
 Seats1
 Cockpit length (panel to seatback).....3 ft 3 in
 Cockpit width2 ft 0 in
 Cockpit height (seat to canopy)3 ft 5 in
 Empty weight, as tested7,208 lb
 Max gross weight (without armament)10,500 lb
 Max gross weight (with armament & drop tanks) ..~13,000 lb
 Useful load, as tested3,292 lb
 Payload w/full fuel, as tested2,212 lb
 Max takeoff weight (armament & drop tanks)~13,000 lb
 Max landing weight (armament & drop tanks)~13,000 lb
 Fuel capacity, std (wing tanks only)184 gal (180 gal usable)
1,104 lb (1,080 lb usable)

Fuel capacity, w/85-gal fuselage tank269 gal (265 gal usable)
1,614 lb (1,590 lb usable)
 Oil capacity12.5 gal
 Baggage capacity (in ammunition and gun lockers)Whatever fits

Performance

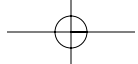
Takeoff distance, ground roll (9,000 lb)1,000 ft
 Takeoff distance over 50-ft obstacle (9,000 lb)1,750 ft
 Rate of climb, sea level (with wing racks, 10,200 lb) ..1,500 fpm
 Rate of climb, sea level (military power)3,200 fpm
 Limit load factors+8 to -4 Gs
 Max level speed, 5,000 ft395 mph
 Max level speed, 25,000 ft437 mph
 Cruise speed (fuel consumption)
 @ 2,700 rpm, 46 inches361 mph
 10,000 ft(98 gph)
 @ 2,200 rpm, 40 inches303 mph
 5,000 ft(66 gph)
 @ 1,800 rpm, 36 inches255 mph
 sea level(50 gph)
 Range (with drop tanks)1,650 sm
 Service ceiling35,000 ft
 Service ceiling (military power)41,900 ft

Max glide ratio (propeller in high pitch)15.3:1
 Landing distance over 50-ft obstacle (9,000 lb)1,850 ft
 Landing distance, ground roll (9,000 lb)1,000 ft

Limiting and Recommended Airspeeds

V_X (best angle of climb)100 mph
 V_Y (best rate of climb)170 mph
 Best glide speed175 mph
 V_A (design maneuvering)264 mph
 V_{FE} (max flap extended)165 mph
 V_{LE} (max gear extended)170 mph
 V_{LO} (max gear operating)
 Extend170 mph
 Retract170 mph
 V_{NE} (never exceed)505 mph
 M_{MO}Mach 0.77
 V_R (rotation)95-100 mph
 V_{S1} (stall, clean, 9,000 lb)101 mph
 V_{SO} (stall, in landing configuration, 9,000 lb)94 mph

All specifications are based on the United States Air Force F-51D Flight Handbook. All performance figures are based on standard day, standard atmosphere, sea level conditions unless otherwise noted.



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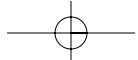
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Stallion 51 in Kissimmee, Florida, is the only place in the world to obtain formal, FAA-approved Mustang training. The school has two magnificent TF-51s, *Crazy Horse* and *Crazy Horse 2*. These are P-51Ds that have been highly modified with a second, fully equipped cockpit.

Although many P-51s have a jump seat replacing the 85-gallon fuel tank installed behind the pilot in wartime editions, these seats have no access to controls or instruments.

Stallion 51's curriculum is not a quick-and-dirty checkout; it is a full-blown program that is as professional and comprehensive as the transition courses I had taken at Trans World Airlines. Instructors there take their responsibilities seriously.

My instructor was Lee Lauderback, whom I am tempted to call Mr. Mustang. He has more than 7,000 hours in P-51s and might know more about flying the airplane than any man alive. His modesty, however, defers that honor to Hoover.

Lauderback began his aviation career as a youngster soloing at 16 and worked his way up the ladder to eventually become Arnold Palmer's chief pilot. In 1987 he and a partner, Doug Schultz, purchased a P-51 under the terms of a contract they had with the Navy's test pilot school. The pair eventually recognized that there was no formal way for pilots to learn to fly a Mustang. This led to the organization of Stallion 51. Lauderback's younger twin

had no idea that there was so much to learn about the airplane. My classroom notes include these interesting items:

- The liquid-cooling system is an engineering marvel. Air enters the inlet on the belly, travels through radiators, and exhausts in a way that produces as much thrust as there is cooling drag, a phenomenon known as the *Meredith Effect*.

- The coolant-temperature gauge is arguably the Mustang's most important instrument. An overheating engine requires immediate action such as fully opening the cooling door, reducing power, and possibly making an emergency landing. (The cooling system is reportedly very reliable and normally operates automatically.)

- The laminar-flow wing delays until Mach 0.77 the development of supersonic shock waves and the drag rise associated with them.

- Be careful about inadvertently moving the landing-gear handle on the ground. There are no switches or downlocks to prevent retraction. In flight, the wheels free-fall into position in case of hydraulic failure.

Flight lessons ran the gamut of Mustang maneuvering and nibbled at the edges of the performance envelope. Emphasis was placed on emergencies, stall characteristics in all configurations, and a variety of takeoffs and landings. More than an instructor, Lauderback is an effective, enthusiastic teacher who enjoys passing along his love and lore of Mustangs. He is thoroughly dedicated to the safe operation of these thoroughbred aircraft.

Although the full-blown course is expensive, those wanting to sample a Mustang can obtain dual instruction during one or more orientation flights. You will leave with precious memories, a video of your experience, and some appreciation of what it takes to fly the airplane.



The P-51 was armed (top) with six .50-caliber machine guns and 1,880 rounds.



brothers, Peter and Richard, were Air Force mechanics and are responsible for preening, priming, and maintaining the two Mustangs as well as other warbirds that Stallion 51 maintains.

On my first and subsequent days at Stallion 51, Lauderback provided numerous hours of one-on-one ground school for each hour spent in the air. I

Final approach

The Mustang is so aerodynamically clean that it glides more efficiently than most general aviation airplanes, but only when the propeller is set to high pitch. Blade pitch affects glide ratio so much that it can be modulated during descent to vary glide performance as necessary during an engine-out ap-

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100 Mustangs headed to Columbus

The Gathering of Mustangs & Legends takes place from September 27 through 30 in Columbus, Ohio, at Rickenbacker International Airport and is billed as "The Final Roundup" of the Mustangs still flying and the fighter pilots who made them famous. At this writing 106 owners of North American P-51 Mustangs have committed to bringing their aircraft, and 29 legendary pilots plan to attend. There are 164 still flying out of 15,868 built around the world. Hotel rooms in Columbus are getting scarce and ticket sales have reached \$225,000, mostly for the box seats with the better views. A formation of 51 Mustangs will fly Sunday September 30 while a smaller flight will form the numerals 51 on Saturday. The U.S. Air Force Thunderbirds perform September 29 and 30 in addition to other top airshow acts. For details and online ticket sales, visit the Web site (www.gml2007.com). —Alton K. Marsh



Cottonmouth bears the roundel of the Royal Australian Air Force and the initials of its owner David G. Price.

proach. (The P-51 loses about 2,000 feet per 360-degree turn.)

You probably have seen fighter aircraft make high-speed overhead approaches. This enables pilots to make a dead-stick landing on the runway irrespective of where an engine failure might occur during such an approach. This is not true about a conventional traffic pattern, especially when extended downwind legs are required.

I reminded myself on final approach not to overreact to a botched or bounced landing by jamming in full throttle. It is possible at low airspeed for the Merlin to torque the Mustang

into an uncontrollable half-roll into the ground. A go-around can be made safely with only 46 inches of manageable manifold pressure.

The entire runway is visible over the nose when on final. The goal is to be in landing configuration with the flaps at 50 degrees and indicating 100 to 110 knots when a quarter-mile from the runway. You then very slowly reduce power and airspeed for the wheel landing. If you begin to hear the crackling pops of the idling, backfiring Merlin at the same time that you touch on the stiff mains, you will know that you have done it properly. Maintain direc-

tional control by working the rudders and positively lowering the tail to get the tailwheel on the ground.

(When making a short-field landing, move the mixture control to idle-cutoff after touchdown. This eliminates the thrust produced by an idling Merlin. Propeller inertia and windmilling prevent the monstrous "fly-wheel" from stopping quickly. As the Mustang slows and you begin to see individual blades, return the mixture to auto rich. The engine restarts nicely and in time to taxi.)

It is axiomatic that an airplane that looks good flies well. That certainly is true of the Mustang. It is not a difficult airplane to fly, easier in some ways than a T-6, but it demands respect and adherence to procedure.

More than anything, the Mustang is addictive and intoxicating. The more you fly it, the more you want to fly it.

Soloing a P-51 was the culmination of a lifelong desire and truly was one of the most profound and memorable experiences of my flying career. **AOPA**

Visit the author's Web site (www.barryschiff.com).

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Lone ranger

First solo in a Mustang



Watch as Barry Schiff enjoys one of the flights of his lifetime in this online video

(www.aopa.org/pilot/mustang).