



Winter 2025

P-51B SHILLELAGH WINTER UPDATE



AIRCORPS AVIATION

Dakota Territory Air Museum's P-51 B Mustang

by Chuck Cravens



North American Aviation P-51B-1-NA Mustang 43-12093 (102-24541), the first production P-51B.
(NASA Langley Research Center Vintage Photographs Collection)



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Shillelagh's fuselage and tail section have been test-fitted together.

Restoration Progress

Since the last update, several changes have occurred to the Shillelagh project. The most significant change is that project ownership has been transferred from the Wings of the North Museum in Eden Prairie, Minnesota, to the Dakota Territory Air Museum in Minot, North Dakota.

During the change in ownership, Shillelagh's restoration was relatively dormant for a year, but work has begun again.

New Old Stock (NOS)

One of the remarkable features of the Shillelagh restoration is the number of new, original, never-installed parts and assemblies used in the aircraft. Parts like this are called new-old-stock or "NOS" for short. While these components weren't from the original 102-106602 airframe that Captains O'Hara and Dahlberg flew over France, they are original North American Aviation-produced parts.

Examples of some of the New Surplus and original major assemblies used in Shillelagh:

Windshield	One Elevator	Top Cowling, Lower cowlings
Throttle Quadrant	Radiator Cover Skins	Cowl Bows & Formers
Engine Mount	Trim Pedestal	Coolant & Oil Door
Forward Air Intake "smile"	Doghouse	Tailwheel Assembly
Exit Duct and Exit Door	Flaps	Vertical
Scoop	Ailerons	Induction System except for one section
Flap Control Linkage	Landing Gear	
Rudder	Wheels & Brakes	



Fuselage

When work was temporarily halted on Shillelagh, the fuselage structural framework had been finished and painted. Since work resumed, most fuselage skins have been fabricated and riveted to the fuselage frame.



The fuselage components have returned from the paint shop and the windshield has been mounted.



Brad and Aaron work at fitting the first skin panels.



One by one skin sections are cut, drilled, deburred, and fitted into place



Another skin section was clamped in place to trim, fit, and mark for drilling.



The top turtle deck skin has been stretch-formed and the edge slid under the side skins to mark where it needs to be trimmed.



It takes patience and many, many clecoes to skin a Mustang.



The anti-roll-over structure is the darker green inverted "V" shaped part in the cockpit.



Most of the skin on the left side of the fuselage is clecoed in place in this image.



After the riveting of the skins was completed, the fuselage was mounted on a movable fixture.



The tail section mates perfectly with the forward fuselage.



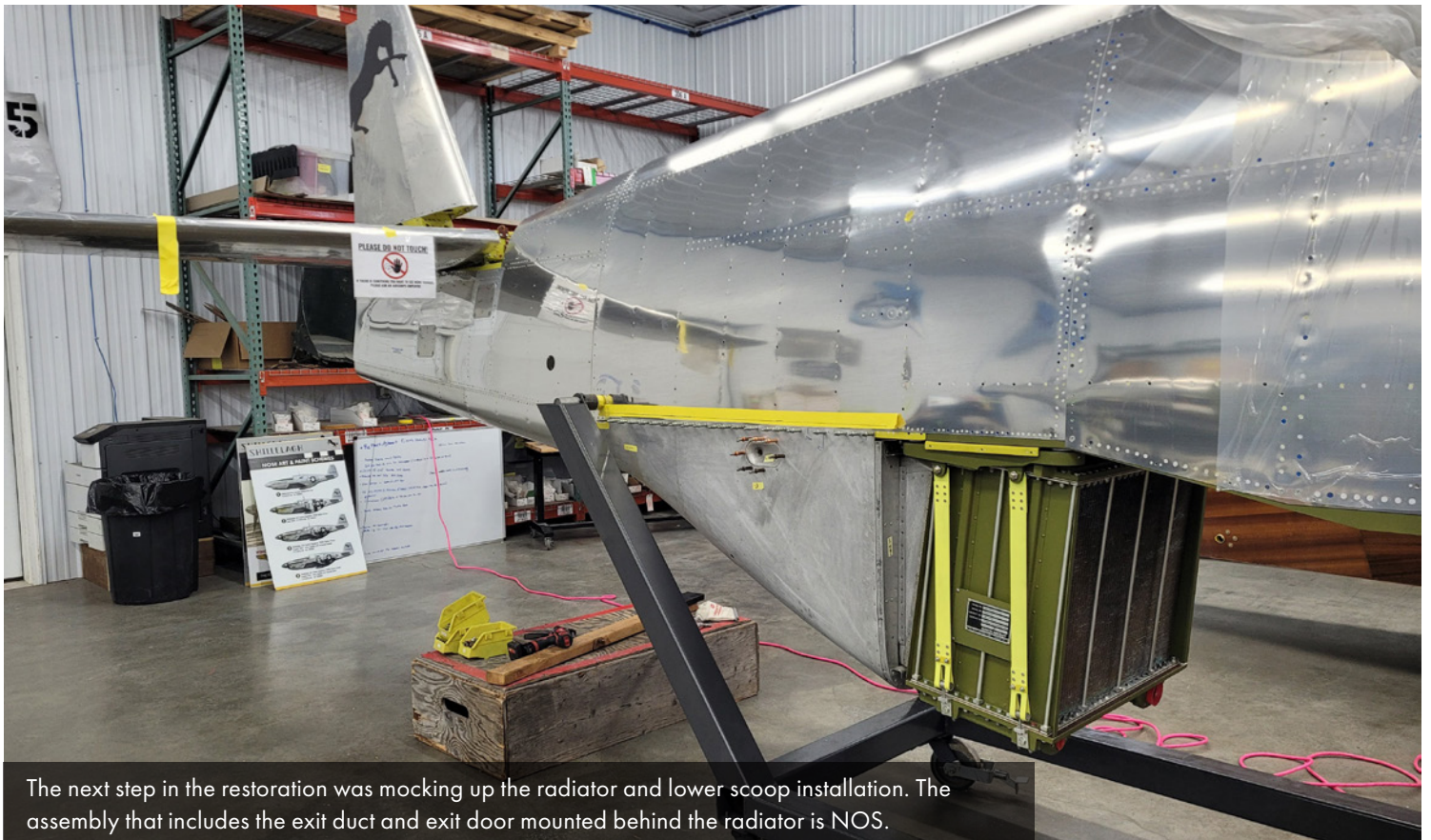
The engine mount is one of the NOS assemblies used for the Shillelagh restoration. Despite being built in the 1940s, it has never been installed in a Mustang and has its original hardware.



8 of the 10 cylindrical Lord mounts that will hold the Packard Merlin V-1650 in place are visible in this photo (6 forward and 2 aft). The Lord mounts are not NOS.



Four large bolts hold the NOS engine mount in place. The aluminum air intake, or "smile" casting, on the front of the mount is also NOS.



The next step in the restoration was mocking up the radiator and lower scoop installation. The assembly that includes the exit duct and exit door mounted behind the radiator is NOS.



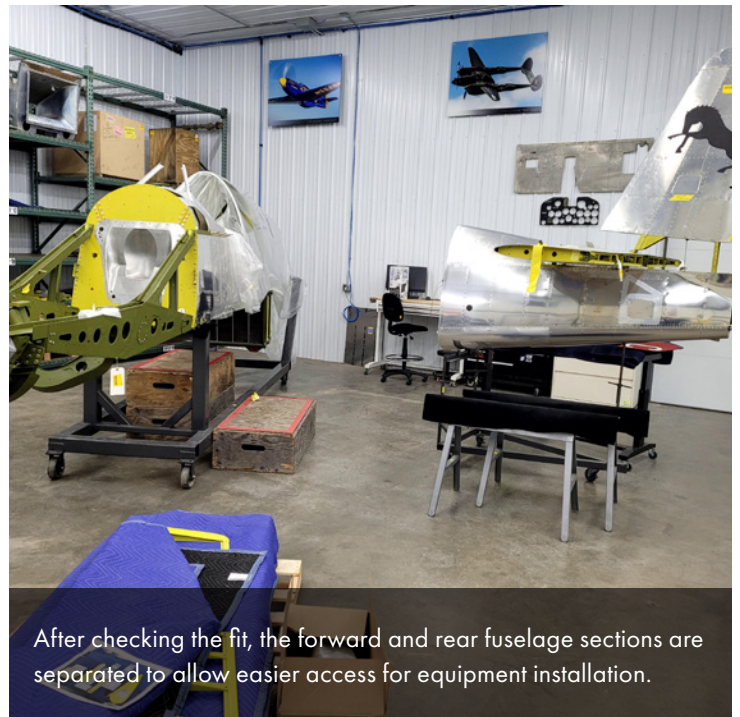
Tail Section and Empennage

The horizontal and vertical stabilizers have been completed and joined to the tail section of the fuselage.

The rear section of Shillelagh's fuselage has been complete for quite a while, but now the time has come to mount the horizontal and vertical stabilizers.



The vertical fin sports a temporary vinyl version of the horse marking. This marking is correct for the Shillelagh color scheme and will be painted on in the final stages of the restoration.



After checking the fit, the forward and rear fuselage sections are separated to allow easier access for equipment installation.



Cockpit Equipment



The throttle quadrant carries the signature of legendary P-51 triple ace Brig. Gen. Clarence "Bud" Anderson. It is meant to honor his service and his support for EAA Warbirds over many years.



Aaron holds the signed throttle quadrant before installing it.



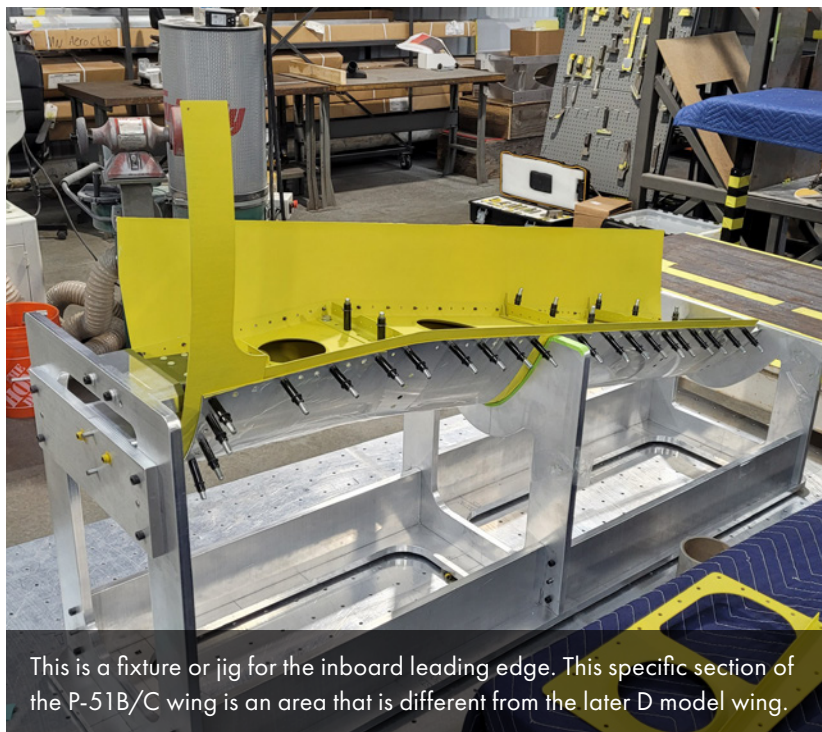
This throttle quadrant assembly is NOS except for the wiring.



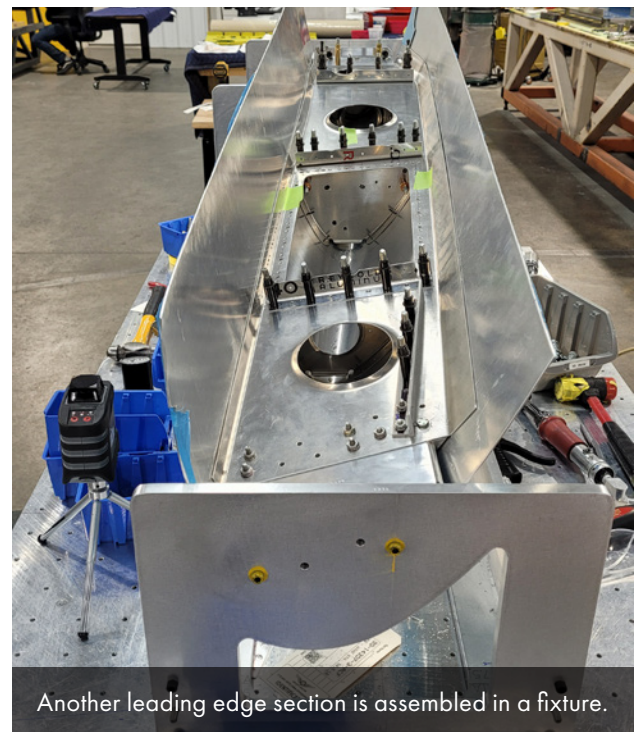
The rudder pedal support tube awaits installation in the cockpit.

Wings

Fixtures were created or assembled, and spars and ribs were fabricated or restored, and then painted. Now is the time to bring them all together and assemble Shillelagh's wings. The wings are taking shape!



This is a fixture or jig for the inboard leading edge. This specific section of the P-51B/C wing is an area that is different from the later D model wing.



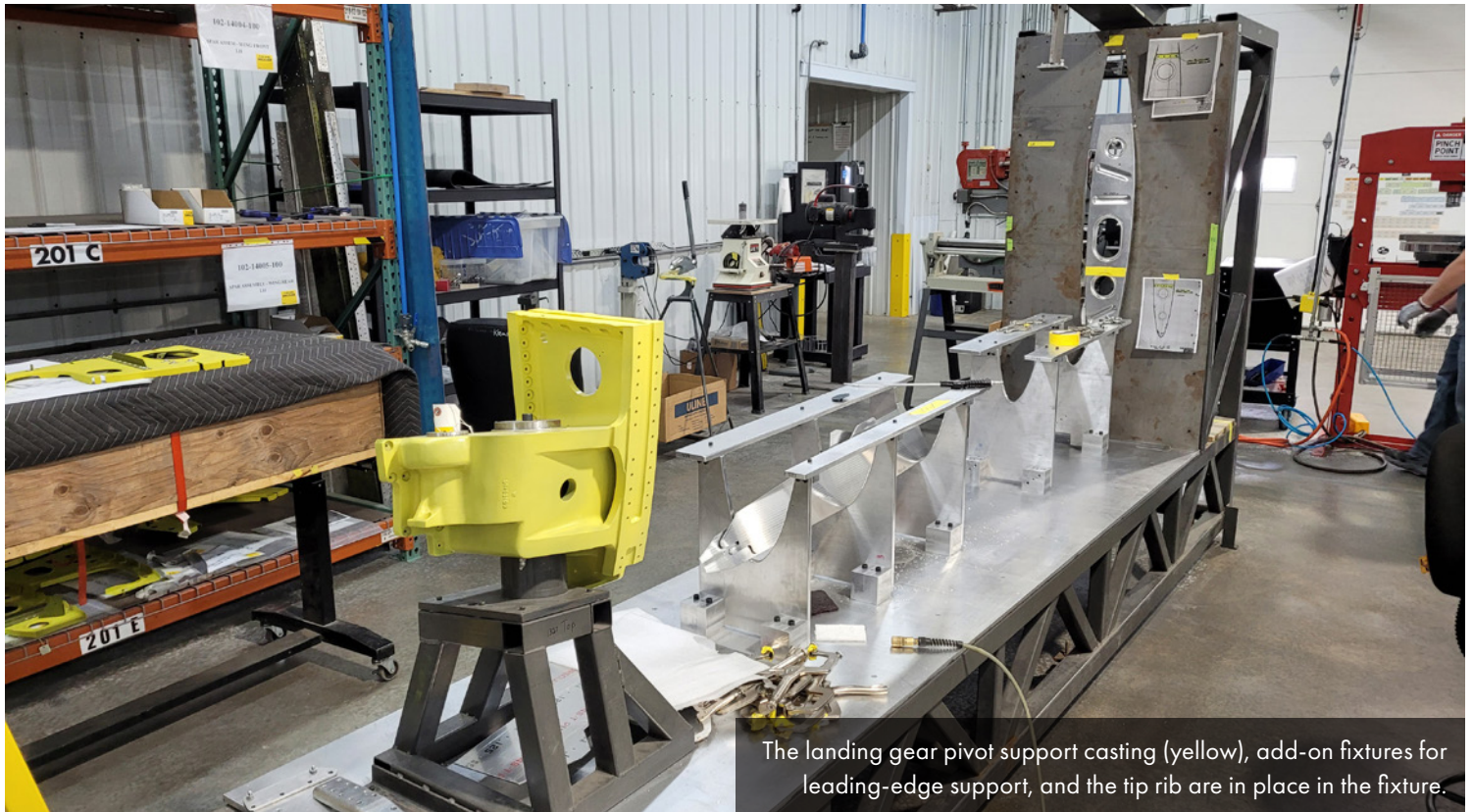
Another leading edge section is assembled in a fixture.



The main spar has been painted and returned to the restoration shop.



The darker green angle sections are where the wing rib stations will attach to the main spar.



The landing gear pivot support casting (yellow), add-on fixtures for leading-edge support, and the tip rib are in place in the fixture.



Randy is installing the rear spar in the fixture.



Rear spars and a rib section begin to make the wing shape evident as Santa looks on in this photo that was taken in December.



A leading edge section (bottom) has been attached to the rib inboard of the landing gear pivot casting.



The natural aluminum plate is the upper front doubler that reinforces the landing gear pivot casting is location.



The part number for the station 61.5 rib assembly is 97-14361. An interesting note is that the "97" part number prefix tells us that this rib assembly was originally designed for the A-36 Mustang (NA-97), and remained exactly the same on all subsequent P-51A, B, and C models.



Our restoration shop often uses methods and techniques that duplicate 1940s factory procedures. However, in this photo, Neil is taking advantage of technology unavailable at the North American factory in 1944. The tripod-mounted laser is useful in aligning the rib and reinforcement plates at wing station 75.



More and more ribs are installed as the wings continue to take shape.



We look forward to keeping readers up to date as the wings progress.



The Significance of the P-51B

The period between April and August 1944 encompasses the lead-up to the D-Day invasion, the invasion itself, and its immediate aftermath. During those five months, David O'Hara's third P-51B (42-106602) Shillelagh, flew 95 missions over enemy territory.

Before the Normandy invasion, Allied strategists agreed that air superiority was essential to its success. Without it, the invasion force could be decimated before gaining a foothold on the French beaches.

Achieving the necessary air superiority over the Luftwaffe required crippling Germany's aircraft and oil industries. Before 1944, the Eighth Air Force had conducted raids to destroy the German aircraft industry but had suffered unsustainable losses to their bomber fleet. The pre-war doctrine that the bombers could protect themselves without fighter escort proved disastrously false. The Schweinfurt-Regensburg raids of 1943 were examples of these losses. In fact, the second Schweinfurt raid on October 14, 1943, became known as "Black Thursday" because of the high losses of B-17s and their crews.

"By the time the Americans returned home, they had lost 60 B-17s, another 17 were no longer airworthy, and an additional 121 received minor damage. That was only the material loss. The number of aircrew killed, wounded, or missing in action was more than 600, totaling almost 20 percent of the men sortied. These grim numbers were double what 8th Air Force planners consider an acceptable loss rate."¹

After the Black Thursday catastrophe, long-range penetration raids into Germany were suspended until a means was found to mitigate losses.

Clearly, a long-range escort fighter was necessary to achieve the air superiority prerequisite to the invasion of Europe.

Fortunately, in November of 1943, the North American P-51B arrived in the European Theatre. This latest version of the Mustang had both greatly increased range and much better high-altitude performance. These improvements were possible because the earlier Allison engine with a single-stage supercharger had been replaced with the two-



Aerial photo of a B-17 going down on October 14, 1943, Black Thursday. USAAF photo

¹ Dr John M Curatola LtCol USMC (Ret), "Black Thursday" October 14, 1943: The Second Schweinfurt Bombing Raid, National WWII Museum, <https://www.nationalww2museum.org/war/articles/black-thursday-october-14-1943-second-schweinfurt-bombing-raid>



stage, two-speed supercharged Packard (Rolls Royce) V-1650-3. The Packard “Merlin” was rated at about 490 more horsepower than the Allison at 25,000 feet. As importantly, the range was increased from the 750 miles and 1,375 with drop tanks) in the P-51A, to 1,180 miles (1,900 with drop tanks) in the new P-51B.

The Allison-powered Mustangs were great fighters in the role for which they were originally designed, low to medium-altitude operations, and the British continued using them in that role through the end of the war in Europe.

However, the Merlin-engined P-51B offered new capabilities, and the range and high altitude performance needed to escort the B-17s and B-24s all the way to targets deep in Germany at the 25-30,000 ft. altitudes the bombers flew in combat.

The first P-51Bs to reach England were assigned to the 354th Fighter Group under the 9th Air Force. The 9th’s primary mission in Europe was tactical support for ground troops. However, when General H.H. “Hap” Arnold learned of the capabilities of the new long-range Mustangs, he decided that the new P-51B could be the answer to the 8th Air Force bombers’ urgent need for a long-range escort.² Based on this capability, Arnold operationally loaned the 354th Fighter Group to the Eighth Air Force to fly long-range escort missions. Shillelagh’s group, the 354th, became known as the Pioneer Mustang Group.

¹ Richard H. Kohn and Joseph P Harahan, USAF Warrior Studies, Condensed Analysis of the Ninth Air Force in the European Theater of Operations, New Imprint, Office of Air Force History, United States Air Force, Washington D.C., 1984, page 16



P-51Bs escorting B-17s, National Archives photo

Shillelagh wasn’t one of the first P-51Bs assigned to the 354th Fighter Group. It was David O’Hara’s third P-51B, which arrived in England in early April of 1944. Shillelagh (42-106602) flew its first combat mission on 15 April 1944.

The 354th Fighter Group was comprised of 3 squadrons, the 353rd, 355th, and 356th.

David O’Hara’s Shillelagh and Ken Dahlberg were assigned to the 353rd FS. By late May of 1944, the 354th was flying fewer escorts and more tactical missions in preparation for the invasion of “fortress Europe”.

There are statistics and historical reports that show that the P-51B changed the loss rate on long-range bombing missions significantly, but an experience at Oshkosh AirVenture in 2018 best illustrated the significance of the P-51B.



AirCorps Aviation employees Eric Trueblood and Chuck Cravens sit in front of Lopes' Hope to hear Harry Theobold tell about his wartime experiences as a B-24 and B-17 tail gunner, Oshkosh 2018.



A woman wheeled an elderly man in a wheelchair up to P-51C Lope's Hope 3rd and introduced herself as Cynthia Blisard, and her father as WWII veteran Harry Theobold. Harry had come to Oshkosh specifically to see B-17s, B-24s, and P-51s. While he didn't see a B-24, he was more than happy with the Mustang turnout. The bombers were important to Harry because he was a tail gunner, with 15 missions in B-24s, and 19 missions in B-17s. When I asked him about his interest in the Mustang he replied "Once the Mustangs arrived and could escort us all the way to the target, we didn't see German fighters anymore. Those P-51 pilots saved my life."



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