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P-26 Replica



“What I didn’t realize was the level
of involvement of these volunteers.”

A Band of Volunteers Builds a P-26

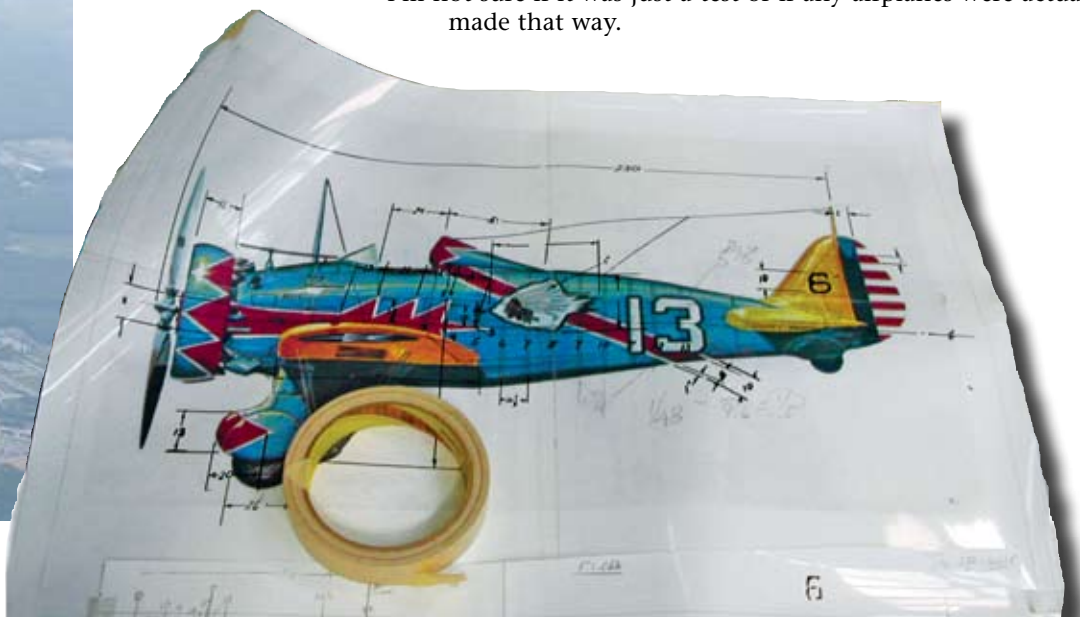
Not a replica, a tribute

DAVE MORSS, EAA 133735 • PHOTOS by JOHN DUNNING

I'm cold. It's 26 degrees, and I'm sitting in an open-cockpit plane trying to get the oil warm enough to taxi and fly. Although the Pratt & Whitney 1340 is ticking over smoothly, the oil pressure is more than 100, and I'm not sure the engine is ever going to heat up. I'm looking at the snow and thinking it would not be a good day to go off the runway. There is nothing on this plane that is fixed easily. If you wanted a more complicated plane, especially for its small size, you'd be hard-pressed to find one. Last summer it seemed like a good idea to fly this airplane, but Boston can be cold.

I'm in a replica of the Boeing P-26, which began as Boeing Model 248 in September 1931. The P-26 is an open-cockpit airplane with fixed landing gear and externally braced wings. It was first flown on March 20, 1932, as an Army Air Corps aircraft, designated the Boeing XP-936. That aircraft was tricky to land. Because of its high center of gravity and short nose, it would ground loop and flip end over end inverted. This injured many pilots. To offer some protection, a reinforced headrest was added. I remember seeing a P-26 in a *Signal* publication, and about a third of the pictures were of landing accidents. (This did little for my confidence, as you can well imagine.) Another photo I found showed the addition of two large hoops, extending forward like a cow catcher, to keep the airplane upright.

I'm not sure if it was just a test or if any airplanes were actually made that way.





Dave Morss exudes the intensity of a test pilot about to make a first flight.



Preparing the P-26 for the 30-minute drive to the Fitchburg Airport for final assembly.



Larry Telford, who did the CAD/CAM work, checks his figures.

The Peashooter, as it became known because of its cowl-mounted gun sight, was faster than previous American combat aircraft. However, it was an interim plane as designs were changing quickly. Although it was a modern monoplane design, fighter aircraft developments soon surpassed the P-26.

This P-26 and Its Builders

Even more amazing than the history of this plane is the principle builder, Nate Mayo (EAA 18941), and his band of volunteers. Over the last 10 years they have built a magnificent replica—just for the love of building. There's only one member of this group under 70 who may someday fly this plane. Because it's a single-place aircraft, the rest will just watch their creation from the ground.

Nate leads the pack, with the look of a pixie and endless stories to tell, and he's had an incredible journey. As with most of the great pilots I know, Nate started as a model airplane enthusiast in his youth. He soloed the real thing at 16 while working at the local airport. Later, he joined the Navy and got his wings in 1955 flying Grumman S-2 Trackers from land and carriers.

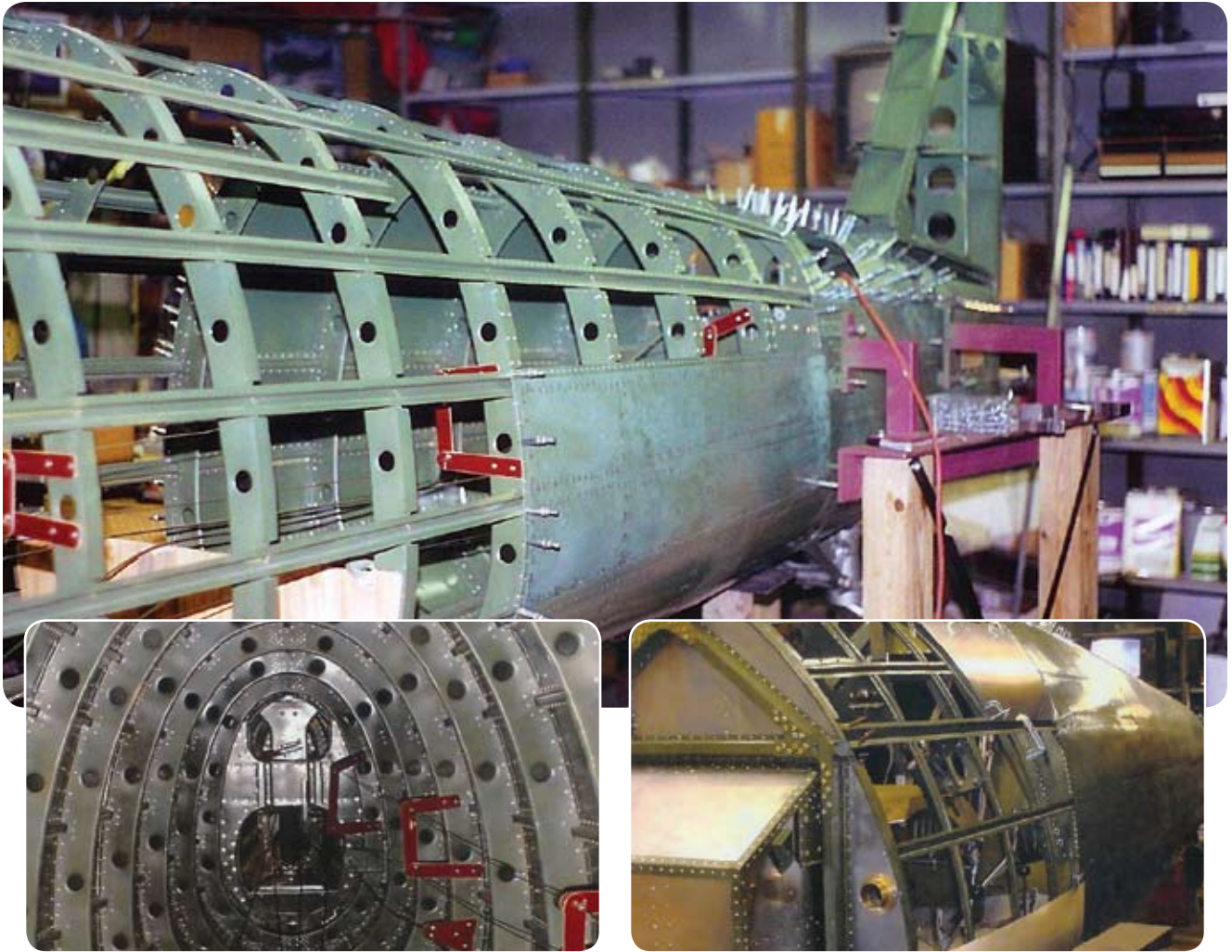
After leaving the Navy, Nate started and ran a machine-tool business for seven years and then worked as an engineer. During this time he also restored nine aircraft. In 1986, Nate started working for the Collings Foundation restoring warbirds and supervising volunteers. In 1998, he retired and started the reproduction of the P-26 at his home shop in Bolton, Massachusetts.

The term replica doesn't really fit this particular P-26, as many replicas just bear a resemblance to the original design. This aircraft is called a tribute to the P-26. "We tried to be faithful not only to the overall appearance of the P-26, but also to most of the fabrication methods at the time of its manufacture," Nate said. "In many cases, we had three jobs to do for each piece. First, we had to devise methods to make the production tool or jig or fixture. Then, we had to make it. And then, use the tooling or forms to make the part we needed." For example, each bulkhead was unique and only two of each wing ribs (left and right) were the same, creating lots of jigs.

Larry Telford (EAA 600834) did all the CAD/CAM (computer aided design/manufacturing) work to Nate's specifications. Nate also changed a few things, like adding modern brakes adapted from a Cessna T-50 and using 2024 T3 aluminum.

Test Flying

When Nate first called me to do some test flying, I explained my process and that I'd want the plane mostly apart to inspect it before flying. He said we'd have to plan around his crew of volunteers, and that they could have the plane apart in a weekend. I would arrive on a Friday to inspect. The crew would reassemble the plane on Saturday and be available for help on Sunday if any issues came up. I'm accustomed to dealing with the main builder and was not sure how this would go, with the volunteers involved. Usually I ask builders to have family and friends absent for my inspection and first flight. Later, after sorting out the details, we have a first public flight and all goes much more smoothly.



The fuselage under construction viewed from inside and out. Each bulkhead was unique to itself. “In many cases, we had three jobs to do for each piece. First, we had to devise methods to make the production tool or jig or fixture. Then, we had to make it. And then, use the tooling or forms to make the part we needed,” says Nate Mayo, project leader.

What I didn’t realize was the level of involvement of these volunteers. They have contributed several thousand hours and are equal co-builders in this project. As I met them and watched them work, I was impressed that such a diverse group could work together so well and accomplish such great things.

John Dunning (EAA 617881) was the first crew member I came to know. He took me flying in his Comanche to survey the area around the airport. At 51, he’s the baby of the group. He works as a troubleshooter in high tech but loves flying. Another pilot among this group is Bobby (Barbara) Altman, a retired graphic designer who met a pilot when she was 50 and learned to fly “just in case.” Hooked on flying, she got her instrument rating and bought an airplane. “Years later when I retired and needed something new, I went to school and became an aircraft mechanic,” she said. Bobby then moved to California and volunteered for a few muse-

Somebody is going to buy this plane and have a ball at air shows, but probably nobody will have as much fun as the team that built it from scratch.

ums. Moving back to Boston, she asked around about any aircraft projects and joined up with Nate and the P-26.

When I asked if anyone had looked at the project from a quality assurance standpoint, I was introduced to Harvey Sanford (EAA 123644). Not only was he an FAA inspector for 15 years, in May 1945 he was drafted and sent to Tuskegee Army Airfield as a sergeant and airplane engine inspector. There is also Don Nicklaus, who start-

ed with models in the 1930s and after 44 years with General Electric started volunteering at the Collings Foundation. He followed Nate to help with

the P-26. His son, David, takes lots of pictures along with John Dunning, and the history of this build is very detailed. I was able to go to John’s website (www.JRD.org) and look at pictures of the project from the beginning.

Frank McQuaide has no aviation history, but as a retired teacher with a passion for World War II history, he brings a perspective to this group based on his years in a classroom

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Mounting the nine-cylinder, 600-hp Pratt & Whitney 1340 engine in this small shop wasn't an easy task.

(the phrase “herding cats” comes to mind). The cast includes more volunteers, but these were the ones whom I talked with during testing. What you can't forget once you meet Nate and his team is the enthusiasm and energy they bring to this project.

How does this baby handle? As you'd expect from looking at the gear, it has a narrow track and high center of gravity. Before I even started taxi testing this plane, I contacted Steve Hinton at Planes of Fame Air Museum as he had been flying its original P-26. He gave me some hints on strut settings and said the rest was pretty good for a 1930s plane.

Taxi testing commenced, and engine and systems were checking out. We had some issues with the tail wheel locking and the brakes. We did some testing with the wheel spats removed to aid cooling of the brakes.

The first flight was done with the spats off, and the plane handled well. It flies much like the Polikarpov I-16 (another 1930s era design) except with excellent visibility. We had some nose-heavy trim issues to deal with, but eventually it flew hands-off. Stalls are easy with hardly

any tendency to fall off left or right. The lateral stability went way down with the spats on. They act like little forward rudders, and you have to stay a little busy to keep everything going straight. The ground handling was a surprise. Takeoffs were so quick that it's just a nonevent. You can add full power and raise the tail in two plane lengths without any big rudder excursions.




Landings are easy, both wheel and a n d three-point, and the directional

control is good. The thing that got my attention was any crosswind would tip the plane dramatically. Much like the F4F Wildcat, you could be in a 12-degree bank but tracking straight with both wheels on the ground. The problem is, any more wind and you could lift the upwind wheel and then just guess which way you'll go. Until we gained more experience, we set a low 4-mph crosswind component and will sneak up on its limits. Surprisingly, the Wildcat, with similar tendencies, is one of the best crosswind landing planes. Hopefully the P-26 will have even less issues as it



Top: The aluminum speed ring cowl is attached to check its fit.

Bottom: Instrumentation was kept to 1930s basics.

has great brakes and very little side area. As I've gained experience with this plane, I've been exploring higher winds and crosswind limits; so far the ground handling has been good. Pilot comfort, other than flying in minus temps, is great; easy cockpit, nice control harmony, and excellent visibility. This plane is a kick to fly and a great-sounding plane, too. Somebody is going to buy this plane and have a ball at air shows, but probably nobody will have as much fun as the team that built it from scratch. I can't wait to see their next project. 

Dave has logged 27,000-plus hours in more than 300 types of aircraft including 38 prototypes. He has constructed four homebuilts and restored four others. He holds ATP Learjet, N-B25 Commercial ASELs, RH, G, Flight Instructor ASMEGI, All Makes and models of warbirds A&P, DAR, DE, EAE, and Flight Engineer Turbojet ratings. He is a recipient of the Spirit of Flight award from the Society of Experimental Test Pilots and has set 13 speed records, 10 of which stand.



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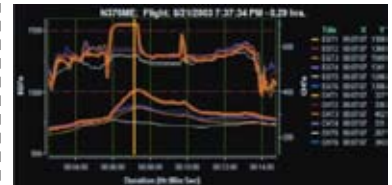


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