

# Back in business

AEROSPACE TESTING INTERNATIONAL TAKES AN EXCLUSIVE LOOK AT THE FLIGHT TEST PROGRAM OF N262AZ, AN INCREDIBLE REPLICA OF THE FIRST COMBAT FIGHTER JET, THE ME-262



## Flight one

Back to flight one. After the target test points for the first flight, it had been decided that the first five test sorties would be conducted out of Mather near Sacramento, as its runway was 11,301 x 150ft versus 4,000 x 100ft. We would return to Eagles nest after verifying landing performance at Mather.

The first landing approach, contrary to the pilot's desires, was made from a 'tight' left base turn to RW-22L due to FAA-imposed limitations. The very short final approach was stabilized and trimmed at 125 KIAS and the flare and touchdown were very controlled. During high-speed taxi tests and on this landing, N262AZ humbled the pilot with a directional PIO during deceleration braking. Even with high-gain, low-amplitude response, the pilot had to wrestle with this characteristic of the boosted brake system. The system requires a breakout pedal force that, once reached, inputs a threshold brake pressure slightly above zero.

After shutdown on the Mather ramp, N262AZ was thoroughly inspected and serviced for a second flight. An inop boost pump shut the aircraft down and flight two was delayed for a week awaiting replacement.

The next series of four flights from Mather were used to continue system functional tests; make initial gear and flap cycles, and trim force changes; and to take an initial look at stall speeds, initial static and dynamic longitudinal stability, short period damping, dihedral effect and steady heading sideslips, and landing field performance, prior to redeploying to Eagles Nest.

“Upon arrival at Eagles Nest, the right landing gear leg collapsed when clearing the runway”

BY JOHN C. PENNEY

The Me-262 was the first jet fighter to be employed in combat in Europe during the latter stages of World War II. N262AZ was the first of what was intended to be five flying replicas originally contracted by the Messerschmitt Foundation to be built by Texas Airplane Factory. The project changed hands and ended up at Paine Field in Everett, Washington, where its construction was completed and an FAA Phase One flight test program was signed off as complete. The owner of the aircraft, Judge Lou Werner, decided to have it ferried to Sanders Aeronautics to be checked prior to beginning operational flying. He subsequently donated the aircraft to the Collings Foundation. The saga begins there...

Upon arrival at Eagles Nest, the right landing gear leg collapsed when clearing the runway! This event offered a small clue as to what would follow as they began to dig into the airframe and the aircraft's systems. The in-depth list of items that Sanders chose to address looked at the major projects completed prior to the test pilot's involvement, which included: re-engining the aircraft with certified engines; total rewiring of the electrical system; redesign and upgrade of the hydraulic and fuel systems; rebuilding the leading edge slats; removing twist from the left wing, horizontal stabilizer, elevators and rudder; redesign of the horizontal stabilizer trim system; and a complete redesign of the cockpit controls and instrument panel. This took about four and a half years, but was no less than absolutely necessary.



**FAR LEFT:** The J-85 power plant had been informally assigned with the approval of the Messerschmitt Foundation in Germany

**LEFT:** John Penney took the Me 262 up for its first test flight after a five year restoration at Sanders Aeronautics on June 2, 2011 to begin a 25 hour test flight profile

### Test flight initiation

The original test pilot, CJ Stevens, a talented and combat-experienced F-4 fighter pilot, race pilot, and lead test pilot for the CAFE foundation, was suddenly faced with a medical challenge that resulted in myself assuming the primary flight test duties.

We needed to come up with a flight test plan that drew upon the information we could glean from the storybook accounts found in the pages of the aircraft's logbook (there is no official data), and from the ground functionals accomplished by lead Me-262 project manager Corey Wells and Brian Sanders. Prior to starting the test program, it was imperative to complete a

flutter ground vibration test (GVT) to identify any critical flutter modes. The results identified several items to be addressed in the flight control system and revealed that all the flight control surfaces were considerably below critical mass balance. It also resulted in massive anti-flutter ballasting in the forward section of the engine compartments to counter a possible wing torsional flutter mode. There had been no flutter analysis/testing, ground or flight, prior to this time. We were getting closer.

The first flight occurred on June 6, 2011. Goals for that flight (which was performed gear down, flaps in) were to assess basic controllability, verify basic systems integrity, reconfigure flaps to landing, and assess final approach trim and controllability and go-around controllability and performance. Several pace call-outs verified that the airspeed indications were reasonably accurate up to the planned maximum of 150 KIAS.

Functioning of the aircraft systems was satisfactory, but this pilot was quite interested in a few characteristics that were not anticipated. The fact that the Me-262 may be the only production fighter aircraft with underslung, wing mounted engines, really didn't sink in with the test pilot until making power changes; symmetrical power changes resulted in an expected pitching moment.

However, what was not anticipated was the degree of noticeable rolling moment due to thrust asymmetry. We all know that dihedral effect is more pronounced in aircraft with wing sweep, but one can usually identify a slight yaw as the lead-in to the roll. With the 262, a thrust asymmetry of as little as 2% rpm seemed to result in an immediate, pronounced rolling moment. I am still sorting in my mind whether the differential pitching moment caused by differential thrust with the lateral displacement of the engines may be a factor here. And, to make this more of a nuisance, the cabling to the engine fuel controls had as much as a 0.5in hysteresis band perceived at the throttle knobs. The throttle cables have subsequently been replaced. ■

*John C. Penney is president of MiG Masters LLC, based in Colorado, USA*

## First-ever flight

On April 18, 1941, the prototype Me-262 V1 flew for the first time. Delays in supplying the BMW 003 turbojet meant the aircraft was powered by a nose-mounted Junkers Jumo 210 propeller engine. The prop engine was retained on the prototype as a safety feature following the arrival of the BMW 003s. This proved lucky as both turbojets failed during their initial flight, forcing the pilot to land using the piston engine. Testing in this manner continued for over a year and it was not until July 18, 1942 that the Me-262 flew just as a jet.

Messerschmitt test pilot Fritz Wendel's Me-262 beat the first Allied jet into the skies by about nine months. As the aircraft was refined, the BMW 003 engines were abandoned due to poor performance and replaced by the Junkers Jumo 004.

