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TWIN & TURBINE

FOR THE PILOTS OF OWNER-FLOWN, CABIN-CLASS AIRCRAFT

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A FLIGHT REVIEW WITH HISTORY

DORNIER DO 28



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The Next Chapter

As we start a new chapter at Twin & Turbine, I want to recognize and thank those who came before me. Rebecca Groom and I have worked on multiple projects throughout the years, and I have grown to trust and respect all she does. She was part of the team that helped launch the new Textron Aviation brand initiatives when Beechcraft was acquired. Later, she wrote the Mooney Aircraft newsletters to Mooney owners worldwide.

At Twin & Turbine, Rebecca provided an excellent resource for owners and pilots of cabin-class aircraft. She overhauled the website, updated the look and feel of the print publication, and kicked off several new editorial series.

I was honored and intrigued when Rebecca reached out a few months ago about possibly taking her place. Over the years, I have provided marketing support and content creation (including editorial review and art direction, photography, writing, and management of the teams producing that work) in the aviation, automotive, and creative industries. And the idea of leading a publication that I have enjoyed holding in my hands for years excited me.

In my short time working on this issue, my first one, I have come to admire the talented Twin & Turbine writers. This month, we get a history lesson and a flight review focusing on a unique set of two Dornier Do 28 aircraft in Wisconsin. Next, navigating FAA medical certification since 2020 has become murkier, especially as upticks in emotional and physical ailments have left many pilots with little information and few options. But there are ways to prepare more effectively for your next medical certificate renewal exam. In addition, we learn what it's like to own and operate the Epic E1000 GX. Closing out this issue are reports on upset recovery philosophies, icy weather troubles, and updates on the newest cockpit technologies. At Sun N Fun, Bose announced its new A30 aviation headset, and Twin & Turbine had the opportunity to provide one of the most in-depth reviews of the successor to the company's industry-leading A20.

In upcoming issues, I intend to continue Rebecca's initiative of providing owners and pilots of cabin-class twin and turbine-powered aircraft with relevant, fun, and up-to-date information. My experience as a professional pilot and an aviation business pro will enable me to provide you, the reader, with a compelling resource to improve your understanding, skills, and overall enjoyment of our special aircraft and aviation environment.

With all that in mind, I want to have an open-door policy. In this case, the open door is an email. Please let me know when I can do something better or if we can highlight a particular area you want to know more about. Pilots operate in a relatively unforgiving environment, so we always continue learning and want to get better and know more about what we do. The same goes for an aviation publication. Thanks so much for your continued readership.

A handwritten signature in black ink that reads "Lance Phillips". The signature is fluid and cursive.

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PHOTOS BY JAY SELMAN OF JAYBIRD AVIATION PHOTOS

A FLIGHT REVIEW WITH HISTORY

DORNIER DO 28

by **Matthew McDaniel**

For years, a derelict twin mounted high on floats sat in the grass adjacent to the little terminal building at the Shawano, WI airport. Only a select few pilots could identify it by type. Dan Fulwiler says he used to stare at it, thinking how unique and cool it looked. Pepe Anderas did the same, drooling and daydreaming about the plane while wondering what in the world it could be. Pepe and Dan agree; neither imagined in their wildest dreams that each would have one of their own. Unbeknownst to them, two more mystery planes were inside a nearby hangar. They were long dormant Dornier Do. 28A-1's, patiently awaiting rescue.

In 2015, Fulwiler took ownership of N12828, and Anderas watched with interest as his friend returned her to the air later that same year. In 2019, Danny also acquired N841RS in a package deal with a Cessna 180. Mainly he bought it for fear it would be scrapped or parted out. He had asked Pepe to buy it, but Pepe saw it as too much of a project and declined. So, Dan slowly began working on it, removing its floats and remounting its landing gear. Pepe, however, began to reconsider, thinking earnestly, "Well, soon Danny will have two flying Do.28s, and I won't have any!" A deal was struck in late 2020, and Pepe began repairing the plane. By April 2021, a second Do.28 was airborne above Green Bay, WI. These fast friends have thus become the owners of the world's last two flyable A-model Dornier Do.28s. After 20 years of captivity inside a shared hangar, they are not only airworthy again, they are airborne often. As long as Danny and Pepe remain able, their rare Dorniers will not be hangar queens and will certainly not be returning to their previous states of abandonment.

Dornier Metallbau

Literally translated, "Dornier Metal Works," the German company was founded in 1914 by Claude Dornier. In 1923, it became Dornier Flugzeugwerke (aircraft factory) while taking over the production facilities of several failing aircraft companies. Dornier soon became well known for its all-metal airliners, both land, and

water-based, including the massive 12-engine Do.X flying boat, at one time the largest and heaviest aircraft in the world.

During WWII, the company designed and manufactured many successful bomber and fighter designs for Germany, culminating in the fastest piston-engine fighter of the war. This push-pull twin, the Do.335



Stub wings were added to mount the new twin engines.

Arrow, first flew in Oct. 1943 and had a top speed of 474 mph. However, the lack of engine availability limited its production, and it saw no real war-time action. After the war, Dornier survived on aeronautical consultancy services in Spain and elsewhere outside Germany. In 1954, it returned to original design work with the Do.25, which failed to be selected for production by the Spanish military.

Further development led to the Do.27 in 1955, which was chosen for production by both Spanish and German military forces. During the type's subsequent decade of production, approximately 470 were built.

Eventually, over 20 nations would utilize Do.27s for utility, transport, liaison, and general-purpose missions. It could accommodate 4 fully outfitted troops in the cabin and the two pilots up front. Its rugged construction and exceptional STOL capabilities kept the Do.27 in military service well into the 1980s.

After several years of Do.27 production, in 1959, Dornier developed a twin-engine version to be certified for civilian sales and marketed it for various military and governmental roles. The design goals were enhanced redundancy and

performance with expanded load capabilities while retaining the basic design's ruggedness, classic taildragger configuration, and STOL pedigree.

27 times 2 = Do.28

The similarities between the Do.27 and Do.28 are extensive. Removal of the engine from the nose allowed room for a slight expansion of the cockpit area. The cabin officially accommodates 6 (versus 4) on two bench seats in a club configuration, though it would be tight with 3 adults across each. Otherwise, the fuselage and empennage are identical. The Do.27 wing was retained on the Do.28 prototype, but a 5-foot increase in wingspan was incorporated into the production Do.28 A and B models.

Despite the commonalities, the unusual configuration of the Do.28 is unmistakable. Stub wings were added to the lower fuselage, providing engine mounting platforms. Relocating the main landing gear below the engines allowed a much wider stance than on the narrow-tracked Do.27. For the production A-1 model, Dornier settled on 250hp, carbureted, Lycoming O-540's, spinning 2-bladed, constant-speed props. The B-models upped the ante by adding fuel injection, 3-bladed propellers, and an increase to 295hp.

From any angle, the Do.28 is a unique twin. But one must admire Dornier's break with tradition for maintaining commonalities and keeping the main wing's highly effective STOL design intact. One continuous slat clings to the wing's leading edge from tip to tip.

Massive flaps can be deployed down to 45 degrees on the trailing edge. As the flaps deploy, the two-segment ailerons divide into halves. The outboard halves continue to function traditionally. However, the inboard halves become flaperons, drooping as a percentage of flap deflection and remaining functional as ailerons for roll control. The 3-surface system just adds to the Do. 28's non-traditional design philosophy. With the added lift of the lower stub wings and engine nacelles, 5 additional feet of span on



Edge-to-edge slats enhance the wing's STOL capabilities



The new stub wing up close

the main wing, and the added horsepower of the second engine, the Do.28 succeeded in increasing payload by approximately 700 pounds above that of the Do.27, while retaining similar STOL capabilities.

Dornier produced 60 Do. 28A-1's before introducing the Do.28B-1 in 1963. Coincidentally, 60 B-1s were made, too, with production ending in 1966. They served in various civilian and military roles similar to the Do.27, ranging from bush flying in the heat of Africa to the cold of Greenland to covert hauling for "Air America." In 1966, the Do.28D Skyservant was tested, and production began in 1967. But, the re-use of the Do.28 designation is wildly misleading, as the D-models have essentially no commonalities with the A/B outside of their similarly unconventional configuration. The Skyservant was a clean sheet design of a much larger aircraft rather than a Do.28A/B refinement.

Tale of Two Island Hoppers

The Red One: Serial #3012 (production #11) was built in 1961 and briefly registered in Germany. Within a year, it was re-registered as OY-ALL and was hauling supplies to remote mining sites in Greenland for its Danish owners. The bright red color scheme enhanced its visibility in that

hazardous role while flying between Edinburgh, Scotland, and the Faroe Islands on iceberg patrols and search and rescue missions. In those days, it landed on wheel-penetration skis. In 1983, it entered service with the Isle Royale Seaplane Service, which was contracted to transport tourists between Michigan's Upper Peninsula and Isle Royale National Park, far out into Lake Superior. In that role,

"Ruby" (as she is now affectionately referred to by her owner) was mounted on straight floats. She labored as an island hopper for 18 years until 2001, when the service was grounded after 9/11 and Ruby (still on floats) was pushed into the back of a Shawano, WI hangar, where she would collect dust for the next 20 years.

The Green One: Serial #3023 (production #22) was also built in 1961 and is believed to have flown either for the German Police or a small airline. In 1980, it was overhauled by Dornier and then joined the Paramilitary Force of Lesotho, Africa. It was grounded there in 1982 with engine issues and didn't return to flight for a decade, by which time it resided in California. In 1993, it was wrecked and rebuilt using parts from a Do.28A that had tangled with a UH-1 Huey helicopter. It returned to flight status in 1995 and was quickly sold to Isle Royale Seaplane Services and moved to Wisconsin. They parked it as 1996 ended, with plans to eventually convert it to a floatplane and incorporate it into their existing fleet of four Do. 28's. But that didn't happen. It sat until joined by its Isle Royale sister ships just as 9/11 abruptly ended the planes' operations.



Flights of Not-so-Fancy

My impression of flying the Do.28A was not one of drama or hyperbole. Instead, I found the machine to be just what it looks like. Oversized proportions, robust construction, serious STOL capabilities, and simple, specialized systems. Climbing aboard requires some dexterity to utilize the fuselage step and handle to hoist oneself onto the stub wing without bonking your head on the bottom of the main wing. But the cockpit door/window hatches are enormous, and once you've coaxed your legs inside to straddle the floor-mounted control column, the station is roomy and comfortable. Controls fall readily to hand with the centrally mounted power quadrant. The fuel tank cutoffs and crossfeed selectors are ceiling-mounted, where they are unlikely to be moved inadvertently.

The flight controls are well harmonized in all three axes, neither heavy nor light. They require a little muscle, but not too much, and are solid enough to never be twitchy. However, they are not at all "heavy," in the way that is common among "truck-ish" piston twins. Pitch trim is controlled manually via a massive

trim wheel between the pilot seats. The ship-like wood and metal wheel is easy to find and grasp and effective and precise without looking at it. Pitch trim can be fine-tuned to fly hands-off with ease. With matched engine thrust, the Do.28 can be flown with an occasional tap on a rudder pedal to keep the wings level. Slow flight, steep turns, and stalls can all be summed up in a single word – benign. Each maneuver was predictable

characteristics, the learning curve is quick, and it only took one takeoff for me to develop more patience and anticipate the airplane's slow reactions to the pilot's yaw inputs before getting too aggressive with my feet.

Climb and cruise were total non-events, and the Do.28 quickly settled into a 115 KTAS economy cruise speed. Being big and draggy, pouring more fuel through the engines doesn't generate a significantly higher cruise



The cockpit door/windows are enormous

and easy to accomplish via the well-harmonized controls and easy-to-scan instruments.

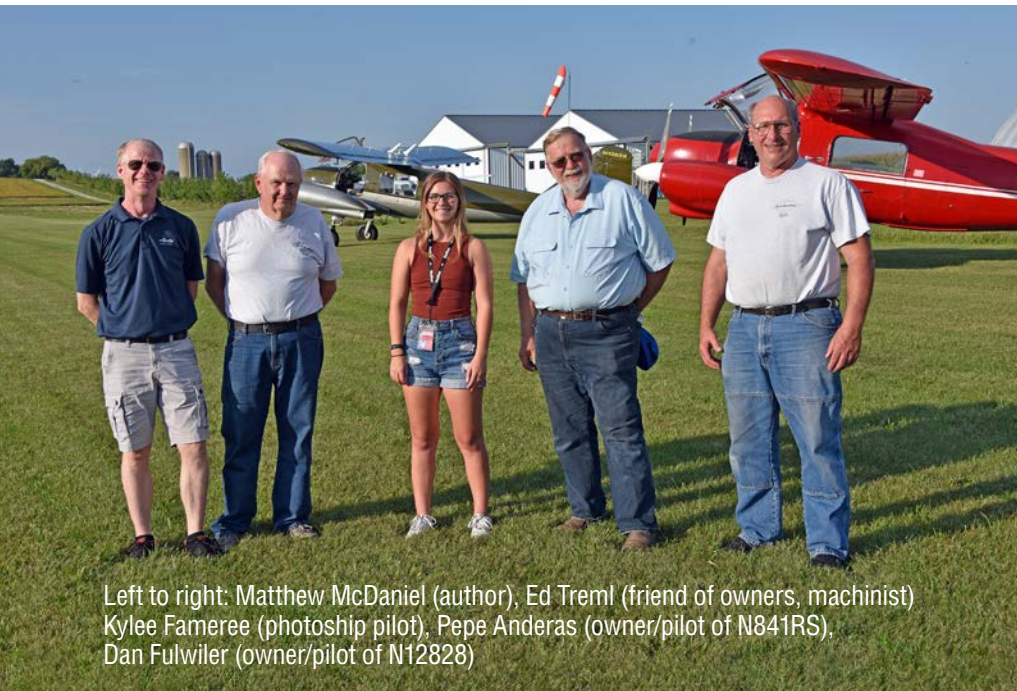
During my initial takeoff in Ruby, I discovered a bit of lag in rudder response. Once rudder pressure is added for directional control on the runway, it seems wholly ineffective at first (even when near liftoff speed). But, when it finally responds, the pilot is reminded the rudder is indeed large and authoritative. During the lag, though, I was fooled into overcompensating with the rudder, meaning when my action took effect, it was with far more yaw than I needed. Of course, this created an out-of-sync series of yaw corrections that left me wandering across the centerline once the tail was up. Yet even with its nuanced yaw

speed, with approximately 135 KTAS being max-power cruise. Pull one engine back to a zero-thrust setting to simulate a feathered prop, and directional control requires minimal rudder in cruise. V_{mc} was around 60 KIAS in the clean configuration as we slowed to explore the ability of the rudder to maintain directional control at the bottom end of the flight envelope. Thus, Dan and Pepe use that as their minimum approach speed. Flap application is simple using the central Johnson-bar control with a thumb trigger release. Trigger the release and pull. The first extension is 15° and requires little effort. The second is 35° which takes a mighty pull to get the lever to click into position. This is where each owner usually leaves the flaps for landing,



rarely needing the maximum STOL capabilities of the aircraft. If the pilot needs that third notch of flaps (45°), the pull force required is shy of herculean thanks to the heavy loads on the massive flaps and flaperons.

Landings are a relatively low-stress affair thanks to the Dornier's simplicity (it being a taildragger notwithstanding). Pre-landing checks are a breeze with fixed landing gear, no cowl flaps, and lots of time to adjust settings at the slow pattern speeds. Pepe likes to apply the first notch of



Left to right: Matthew McDaniel (author), Ed Trembl (friend of owners, machinist) Kylee Fameree (photoshop pilot), Pepe Anderas (owner/pilot of N841RS), Dan Fulwiler (owner/pilot of N12828)

flaps and carb heat on downwind and the second notch of flaps by base leg. Final approach is at 60 KIAS in that configuration, and between the flaps, flaperons, fixed slats, and servo-tab boosted ailerons and flaperons, control authority feels like it does in cruise with barely even a hint of mushiness. Three-point attitude is attained with only minimal flare, and a gentle sweep of the power to idle settles the plane in. Any tendency to bounce is easily arrested in standard tailwheel fashion by pinning the tail to the runway with a timely but firm pull on the yoke...and keeping it there.

What of the STOL capabilities, you ask? We landed at two well-maintained turf runways, the shorter of which was 2,200'. Using only two

notches of flaps, with two people aboard and nearly full fuel with no headwind, Ruby was down and stopped in half the available length without any serious braking effort. Fulwiler followed in his green machine, with the additional weight of 4 adults aboard, requiring no more runway than Ruby had. When flown to its limits by well-schooled and practiced pilots, the Do.28A could be squeezed into and coaxed out of some seriously short landing sites (as in sub-1,000').

Caretakers

As with most antique aircraft owners, Fulwiler and Anderas quickly point out that they consider themselves caretakers. Their joint mission is to save aircraft from obscurity

(they've each rescued multiple abandoned aircraft and returned them to flight). The Dorniers are not coddled, but they are well-maintained. They are flown to local grass strips, small weekend fly-ins, antique aircraft displays, and the world's largest airshows. Thanks to Dan and Pepe, these classics are shared with aviation lovers everywhere. Now we all can learn about these rare twins' origins and histories. And until such time as their caretaker roles are complete, they will continue to fly and share their treasures. I am confident they will seek out similarly motivated buyers when that time comes. And with any luck, the Do.28A will continue to be active in our American skies. **T&T**

Matthew McDaniel is a Master & Gold Seal CFII, ATP, MEI, AGI, & IGI and Platinum CSIP. In 32 years of flying, he has logged over 20,500 hours total and over 5,700 hours of instruction given. As owner of Progressive Aviation Services, LLC (www.progaviation.com), he specializes in Technically Advanced Aircraft and Glass Cockpit instruction since 2001. He's a Boeing 737-series Captain, holds 8 type ratings, and has flown over 120 aircraft types. Matt has earned the Master CFI designation for 10 consecutive two-year terms. He can be reached at: matt@progaviation.com or 414-339-4990.

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