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The Duchess of Cleveland

A 21-year-old trainer shows it still has what it takes

By ALTON K. MARSH

Trickery may be the mark of a good instructor, once the multiengine student has the skills to handle it. Instructor and pilot examiner Charlie Wentz obviously felt I was ready. A sudden yaw of the Beechcraft Duchess 76 meant Wentz had pulled an engine. Motor skills learned years earlier but now covered with rust kicked in. I felt as though I was watching someone else as my hands flailed at engine controls, a foot applied pressure against the rudder pedal that offered the most force, and I banked two or three degrees into what I hoped was the good engine. And there I sat, in control but unsure of all those other little things a multiengine pilot should do, like making a decision about whether to feather the bad engine once it is identified. So Wentz did it several times more during the flight that had originated from Cleveland's Burke Lakefront Airport.

Even the takeoff was an emergency, as Wentz pulled an engine shortly after I brought the power up and was concentrating hard on maintaining the centerline as the aircraft began to yaw. This was my second flight for refresher training — yes, the first was easier. This time I was getting something called the Wentz Workout, and that's not a complaint. Wentz is a former aerospace engineer who worked on unmanned missiles designed to knock out enemy radar, but he likes flight instructing better.

HITS AND MISSES

Hits

- o Good performer on one engine.
- o Good payload with full fuel.
- o Excellent cruise speed of 160 KTAS.
- o Can climb rapidly.
- o Prime is done by pushing magneto switch. No manual priming required.
- o Very forgiving in single-engine emergencies.
- o Large baggage door.
- o Avionics are divided between two bus bars and two alternators, so if one fails you don't lose both radios.

Misses

- o Electric trim is very fast and can result in overtrimming.
- o Elevator is very effective and pitch control requires a delicate touch.
- o Gear can be lowered at 140 KIAS, but can't be raised again until airspeed is 112 KIAS or less.
- o Nose can't be seen by the pilot, and therefore can't be used as a visual cue during flight.
- o Doesn't like to slow down and descend. Takes some practice to fly it well.
- o There aren't that many available on the market.
- o Not much legroom for the rear-seat passengers.

The Duchess is operated by AirSports Aviation and is available not only for training but also for rental to students with as little as 200 hours of total time, an instrument rating, and 20 hours logged in multiengine aircraft. Primarily its role is as a trainer, allowing the rapidly growing AirSports school to add ATP training to its courses.

If you're in a bit of a rush at this point and need to know the bottom line on the Duchess, here it is. The Duchess is fast (160 knots true airspeed [KTAS] at 24 inches of manifold pressure and 2,400 rpm), almost sporty in climb performance (1,500 fpm on this 18-degree Fahrenheit day last winter), economical (two 180-horsepower engines drink 18 gallons total an hour), and is capable of hauling a reasonable load. With myself (200 pounds) and Wentz (175 pounds) aboard and full fuel of 100 usable gallons, we each could have taken a 111-pound suitcase. Not that we would. And it is a safe airplane that will treat the rusty multiengine pilot well, as I learned during several engine-out drills and a minimum controllable airspeed demonstration. (Test pilots demonstrated spin recovery, but Beechcraft decided not to certify it for intentional spins. Multiengine aircraft are not required to demonstrate spin recovery; many multiengine aircraft, including the Piper Seminole, have not been spin tested.) According to Vref, AOPA's aircraft valuation service (www.aopa.org/members/vref/), there are 272 Duchess aircraft still flying out of only 437 built. That's bad news because it means they are hard to find and the price is higher because of market demand.

The dollars and cents

The Duchess at AirSports is leased from owner Blair Martin, a Cleveland-area pharmacist who is also a patron of the Rock and Roll Hall of Fame and Museum, only a few hundred yards from Burke Lakefront Airport. More about that later. The aircraft had only 1,250 hours total time on the 1982 airframe when he bought it last year: He paid \$190,000, or about the same price as when it was new in 1982. (Older models can be found ranging in price from \$84,000 to \$106,000.) It has had only three owners and was never used for flight instruction. To be honest, Martin had his eye on a new \$430,000 Piper Seminole at the time of the Duchess purchase, but he and his partners were frustrated by bankers. "If you don't need the money, they'll give it to you," Martin quipped.

Martin bought the aircraft in Minnesota and took it to Air Camis at Akron-Canton Regional Airport in Ohio for some freshening. He added a new all-leather interior for \$6,900, and installed a Garmin 430 GPS/com (\$7,968) and a Garmin 340 audio panel, and several other items such as push-to-talk switches (totaling \$1,562). (Leather seats were installed at AvCraft Completions in Tyler, Texas.) He had the props overhauled for \$5,112 and did some battery work to cure charging problems for \$553. The airplane has its original paint, which is in excellent condition. An annual inspection costs about \$2,200, while 100-hour inspections are \$1,650.

Martin said the aircraft must be rented at least 50 hours a month to break even on fuel, oil, the \$50 tiedown fee, insurance, engine overhaul, and the monthly loan payment. It rents for \$180 an hour to pilots who belong to the school's flying club.

Martin's Duchess was a factory demonstrator from 1982 to 1984. Perhaps that is why it has a radar altimeter: I meant to watch it count off the final 1,000 feet, but somehow found myself too busy with the landings to take a glance. Wentz insists that all landings be nose high — no flat ones allowed. When I did it perfectly once Wentz withdrew a handkerchief from his pocket and — dabbing his eyes — insisted that he was weeping from the sheer beauty of my effort.

A great place to train

With all those Wentz Workouts, it was nice to have interesting attractions within walking distance where I could take a break. Martin's status at the Rock and Roll Hall of Fame led to a behind-the-scenes tour of the pyramidlike glass structure, not that we had to leave the airport to see an interesting museum. The International Women's Air & Space Museum is located in the Burke Lakefront Airport terminal building. It includes animated exhibits throughout the building, along with a reference library and gift shop in a central office. Especially interesting is a wall of the terminal where all female astronauts are pictured — both American and Russian: There are 41 photos. The first two in history were Russian.

New York City tried mightily to become the location for the Rock and Roll Hall of Fame, but the people of Cleveland wanted it more. Plus, Cleveland has a historical connection to the genre: Cleveland-born radio, television, and movie personality Alan Freed, on his first show on July 11, 1951, refused to use the more common "rhythm and blues" moniker, renaming the music "rock and roll." He died in 1965, his career in tatters after he fell victim to the payola scandal involving payments to disc jockeys by record companies to feature their artists. Interactive exhibits in the museum allow visitors to hear virtually any song recorded by any major group or artist: I looked up Learning to Fly by Pink Floyd. Or you can read Bob Dylan's thoughts: "Hearing Elvis Presley for the first time was like busting out of jail."

Later Wentz and I stopped by the Crawford Auto-Aviation Museum operated by the Western Reserve Historical Society at 10825 East Boulevard, next to the campus of Case Western Reserve University. The museum, a 15-minute drive from Burke Lakefront Airport, features antique autos and several interesting aircraft.

A trainer from the start

Once the side trips were over, it was back to work for another refresher training flight in the Duchess. Wentz teaches ground schools to make up for times when Cleveland-area winters don't support flying. Last winter was especially severe. Consequently, Wentz knows systems and multiengine procedures well, as might be expected of any pilot who is also an instructor, ground school teacher, and examiner. He teaches students not to think until they are about 10 steps into any engine-out reaction: Move mixtures, props, and throttles forward; bring gear up; bring flaps up (or flaps up prior to gear if going around on one engine); turn fuel pumps on; move the fuel selector to another tank if applicable; identify the dead engine and verify it. Then think. "That's the first time I want to think," said Wentz. Thinking includes deciding whether there is time to troubleshoot, and if not, feathering the failed engine and following the engine shutdown checklist. The counterrotating props on the Duchess mean there is no critical engine.

The Duchess was designed for training and rental at Beech Aero Clubs, and many of its special design features make it good for personal travel as well. There are two doors so Wentz and I could enter at the same time and quickly close up the cabin — important in frigid temperatures. Visibility is greenhouse-like, a much appreciated trait given the training environment and the congested airspace around Burke Lakefront, which sits partially on a landfill next to Lake Erie and the city skyline. The airport was once threatened by closure, but airport officials said city officials now appreciate its role in the local economy and have approved future development plans. (See "[AOPA Action: Fresh Burke Lakefront Bashing Raises Red Flag](#)," July 2002 *Pilot*.) Celebrities such as football coach Don Shula, actor and director Rob Reiner, singer LeAnn Rimes, then-presidential candidate George W. Bush, former President Bill Clinton (since leaving office), and Oprah Winfrey use it. This year Fleetwood Mac and Elton John used the airport. It is also favored by visiting basketball, hockey, and baseball teams. Even the Ohio governor lands there.

The greenhouse visibility has its drawbacks, however. Pilots can't see the nose, so it is impossible to use single-engine tricks like putting the nose on the horizon for the approximate correct climb attitude and speed. In fact, in level cruise the correct Duchess attitude appears to the pilot to be nose down, and it takes some training time before the feeling goes away. I found the electric trim to be lightning fast, so fast in fact that on the first flight I was always over- or undertrimming. By the second flight I had learned to blip the trim switch momentarily for finer adjustments. Trim aside, the powerful elevator up there on the T-tail at first gave me fits: Setting the descent on the attitude indicator to a bar width down, the aircraft tended to descend at 1,000 fpm. But one should hardly complain that the elevator is too effective; it's much better than if it were ineffective.

The Duchess 76, so named because it first flew in 1976 (but wasn't delivered to the first customer until 1978), needed few modifications after the design was certified. Over its four-year production run there were improvements to door locks, cowl flap hinges, engine mounts, and in 1981 a muting system for the landing-gear warning horn. The warning horn comes on whenever the airplane configuration suggests a gear-up landing — annoying when teaching stalls and slow flight. Its airworthiness directives over the years have been relatively minor and affected the main

landing gear, flight controls, and the electrical system. The fleet was grounded briefly in 1978 when a trim pushrod failed in flight, but it was strengthened as required by an AD and was improved on subsequent aircraft.

Overall the aircraft has an excellent safety record with few fatalities. Whether it's initial training, refresher training, or ATP training, you'll enjoy the experience. After a day of engine-outs, the crew at AirSports recommends you celebrate at Johnny's, a steak restaurant on Cleveland's West Sixth Street. You can trust the recommendation because they know how to treat their customers. They get a lot of practice. After all, they have royalty in their midst, the Duchess of Cleveland.

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SPEC SHEET

BEECHCRAFT DUCHESS 76
PRICE AS NEW: \$197,281
PRICE AS TESTED: \$190,000

SPECIFICATIONS

Powerplants	Two Lycoming O-360-A1G6D, 180 hp @ 2,700 rpm
Recommended TBO	2,000 hr (2,200 hr if flown at least 40 hr per month)
Propellers	Hartzell two-blade, full-feathering, constant-speed, 76-in dia
Length	29 ft 5 in
Height	9 ft 6 in
Wingspan	38 ft
Wing area	181 sq ft
Wing loading	21.5 lb/sq ft
Power loading	10.8 lb/hp
Seats	4
Cabin length	7 ft 11 in
Cabin width	3 ft 8 in
Cabin height	4 ft
Standard empty weight	2,446 lb
Empty weight, as tested	2,703 lb
Max ramp weight	3,916 lb
Max gross weight	3,900 lb
Max useful load	1,470 lb
Max useful load, as tested	1,197 lb

Max payload w/full fuel	870 lb
Max payload w/full fuel, as tested	597 lb
Max takeoff weight	3,900 lb
Max landing weight	3,900 lb
Fuel capacity, std	103 gal (100 gal usable) 618 lb (600 lb usable)
Baggage capacity	200 lb, 19.5 cu ft

PERFORMANCE

Takeoff distance, ground roll	1,017 ft
Takeoff distance over 50-ft obstacle	2,119 ft
Accelerate-stop distance	2,450 ft
Accelerate-go distance @ 3,600 lb	6,200 ft
Max demonstrated crosswind component	25 kt
Rate of climb, sea level	1,248 fpm
Single-engine ROC, sea level	230 fpm
Max level speed, sea level	152 kt
Cruise speed/range w/45-min rsv (fuel consumption) @ 24 in and 2,400 rpm, best power mixture, 6,000 feet	166 KTAS/600 nm (23 gph)
Service ceiling	19,650 ft
Single-engine service ceiling	6,170 ft
Landing distance over 50-ft obstacle	1,881 ft
Landing distance, ground roll	1,000 ft

LIMITING AND RECOMMENDED AIRSPEEDS

V_R (rotation)	71 KIAS
V_X (best angle of climb)	71 KIAS
V_Y (best rate of climb)	85 KIAS
V_{XSE} (best single-engine angle of climb)	85 KIAS
V_{YSE} (best single-engine rate of climb)	85 KIAS
V_{MC} (min control w/one engine inoperative)	65 KIAS

V_{SSE} (min intentional one-engine operation)	85 KIAS
V_A (design maneuvering)	132 KIAS
V_{FE} (max flap extended)	110 KIAS
V_{LE} (max gear extended)	140 KIAS
V_{LO} (max gear operating)	
Extend	140 KIAS
Retract	112 KIAS
V_{NO} (max structural cruising)	154 KIAS
V_{NE} (never exceed)	194 KIAS
V_{S1} (stall, clean)	70 KIAS
V_{SO} (stall, in landing configuration)	60 KIAS

All specifications are based on manufacturer's calculations. All performance figures are based on standard day, standard atmosphere, sea level, gross weight conditions unless otherwise noted.