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# Oklahoma Aviator



Vol 20, No 3

Your window to Oklahoma Aviation...Past, Present, Future

March 2002

## The Windecker Eagle- Part 3: Certification, Production, and Stealth

by Mike Huffman

In the first two installments of this series, we talked about how I came to be employed at Windecker Research and the development of our flight test Windecker Eagle prototype. Last month, our story ended with the crash of the prototype on a West Texas road, as a result of a flat spin on the last flight of the last day of FAA flight testing.

There we were, out of money, our flight test airplane destroyed, and a flat-spin design problem facing us. It was pretty grim. Over the next few weeks, there were lots of closed-door meetings with the investors that I was not a party to. However, in the end, a couple of "heads rolled"--among them, the president Ken Smith (who went on to become an executive at E-Systems in Greenville, TX). Dr. Windecker was put back in charge, additional funds were made available, and we continued on. The design problem with N802W was found to have been caused by weight distribution problems in the wings and fuselage, perhaps aggravated by the position of the horizontal tail, which blanked the vertical tail and rudder in a deep stall. Dr. Windecker and his son Ted redesigned the wings and aft fuselage to eliminate weight. They also added a sharp-edged ventral fin below the fuselage to increase drag if the aft fuselage were moving sideways, as in a flat spin.

We began the construction of a new flight test aircraft and, since we were already on "borrowed time," the work schedule became even heavier. However, the effort

finally paid off-- N803WR (S/N 002) made its first flight in September 1969. The spin tests were repeated with success (this time with a properly-designed ballast hopper and spin chute controls).

Shortly afterward, the FAA Type Inspection Authorization (TIA) was issued, which meant that all tests were complete and ready for FAA review leading up to certification. One of the sticking points that came up during that review was the question of what happens to a composite airplane when lightning strikes. There were many divergent opinions-- some "experts" thought lightning was unlikely to strike a composite aircraft. Others thought it might penetrate the composite outer skin, attracted to metal components underneath, and cause much more

damage than in metal airplanes. In truth, nobody knew-- this was the first composite airplane! There was considerable haggling between the company and the FAA, but in the end, I think the FAA just gave in. Incidentally, J. Andrew Plummer, then of GE High-Voltage Labs, was brought in to evaluate the lightning-strike issue. He is now the leading authority on lightning strike in composites.

Thus it was that on December 18, 1969, Type Certificate A7SW was awarded for the Windecker Eagle I Model AC-7, the first all-composite type-certificated aircraft. Christmas 1969 was the first calm time I had experienced since moving to Midland.

After New Years 1970, the corporate directors

brought in another professional manager as president, who began gearing up for production. In April, an Initial Public Offering (IPO) brought in an additional \$4 million and we began hiring more people. Experienced people were easy to find, since this was the time when the aerospace business was taking a big dive. Along about then, a group of laid-off Boeing-Seattle workers reportedly put up a billboard saying, "Last one out, turn out the lights!" A lot of my time was spent designing and implementing the production quality assurance systems, preparing for the FAA Production Certificate, and supervising a growing department. By summer 1970, I supervised about 25 employees, while the company headcount had grown to over 300.

That year, we built two

Eagles. The first was N804WR (S/N 003), the company demonstrator that appears in most of the publicity photographs of the Eagle. In September 1970, we delivered N4195G (S/N 004), the first "production" Eagle, to the First National Bank of Midland, Texas.

However, rumors were circulating that we were once again in financial trouble. On the day before Thanksgiving 1970, the company management gave each of a turkey and sent us off on our Thanksgiving holiday. When we returned the following Monday, they announced that we were all being laid off, effectively immediately. (I sometimes tell people we got a turkey before Thanksgiving and a "goose" afterward.)

Jobs in aviation at that point (and everywhere, for that matter) were few and far between. Our family moved to Oklahoma City and I bought a Snap-On Tools franchise (which turned out to be fun and profitable). It would be three more years before I would be able to return to a job in aviation.

Meanwhile, in early 1971, Dr. Windecker brought back a few former employees and finished three more airplanes-- N4196G (S/N 005), N4197G (S/N 006), and N4198G (S/N 007). Sometime that year, Dr. Windecker suggested to the U.S. Air Force that the composite construction of the Eagle might allow for a smaller radar return signature than metal airplanes. The Air Force subsequently tested N4195G at the RATSACAT test facility in



*The second Windecker Eagle certification prototype, N803WR. Note the added ventral fin below the horizontal stabilizer, one of the changes made to eliminate the flat spin problem encountered by the first prototype, N802W.*

continued on p. 8.

## Stop State Senate Bill 1321!



Since we took over publishing of the Oklahoma Aviator, it has been our firm policy to print good news about aviation. We have specifically avoided controversial issues, political issues, accident statistics, and anything else that would cast a shadow over this sport we love so much.

However, I am making an exception this month. The reason is that a member of our esteemed state legislature has introduced a bill that, if enacted, would greatly hinder aircraft flight training.

Specifically, State Senator Kevin Easley has introduced Senate Bill 1321, which would make it unlawful to provide flight training (including ground school) to any person who is not a United States citizen.

This bill is an example of ill-conceived, knee-jerk reactions to September 11 that are occurring in state legislatures across the country. If enacted, it would place a big burden on flight schools and would probably result in some of them going out of business rather than deal with the red tape required for compliance.

We need to squash this bill. I encourage each of you to write a letter or email to Senator Easley and to contact the Senator from your own district, to express your opposition to this bill.

Senator Kevin Easley  
State Capitol  
2300 N. Lincoln Blvd., Rm. 417-C  
Oklahoma City, OK 73105-4808  
easley@lsb.state.ok.us

The bill is reprinted below in its full text for your review.

### SENATE BILL 1321

By: Easley  
AS INTRODUCED

An Act relating to crime and schools; making provision of flight instruction to persons not citizens of the United States unlawful; setting penalties; prohibiting private vocational schools, public and private secondary schools and charter schools, and public and private higher education entities from providing flight instruction to persons not citizens of the United States; requiring loss of charter status, revocation of license, and loss of accreditation; stating legislative intent that Oklahoma State Regents for Higher Education determine certain sanctions; providing for codification; and declaring an emergency.

BE IT ENACTED BY THE PEOPLE OF THE STATE OF OKLA-

HOMA:

SECTION 1. NEW LAW A new section of law to be codified in the Oklahoma Statutes as Section 1174 of Title 21, unless there is created a duplication in numbering, reads as follows:

It shall be unlawful for any person to instruct a person who is not a United States citizen in airplane flight skills and procedures, including ground school courses. Any person violating the provisions of this section shall be guilty of a felony and upon conviction shall be punished by imprisonment in the State Penitentiary for not more than five (5) years or fined by not more than Five Thousand Dollars (\$5,000.00) or by both imprisonment and fine.

SECTION 2. NEW LAW A new section of law to be codified in the Oklahoma Statutes as Section 1-122 of Title 70, unless there is created a duplication in numbering, reads as follows:

No private or public school, including charter schools, shall instruct any person who is not a United States citizen in airplane flight skills and procedures, including ground school. The sponsor of a charter school that violates this provision shall revoke the school's charter. A private or public school that violates this provision shall not be accredited by the State Department of Education for a period of five (5) years from the date the State Department of Education determines that a violation occurred.

SECTION 3. NEW LAW A new section of law to be codified in the Oklahoma Statutes as Section 21-103a of Title 70, unless there is created a duplication in numbering, reads as follows:

A private school shall not instruct any person who is not a United States citizen in airplane flight skills and procedures, including ground school. The Oklahoma Board of Private Vocational Schools shall revoke the license of a private school found to have violated the provisions of this section.

SECTION 4. NEW LAW A new section of law to be codified in the Oklahoma Statutes as Section 3250 of Title 70, unless there is created a duplication in numbering, reads as follows:

No institution, higher education center, or constituent agency of an institution within The Oklahoma State System of Higher Education or private higher education institution shall instruct a person who is not a United States citizen in airplane flight skills or procedures, including ground school. It is the intent of the Legislature that the Oklahoma State Regents for Higher Education shall determine appropriate sanctions, including loss of accreditation, for any higher education entity determined to have violated the provisions of this section.

SECTION 5. It being immediately necessary for the preservation of the public peace, health and safety, an emergency is hereby declared to exist, by reason whereof this act shall take effect and be in full force from and after its passage and approval.

## Richard Fowler's C-180 Appears on Trade-A-Plane Cover

COLLINSVILLE - Richard Fowler, owner of America's Aircraft Engines, was recently honored by having a photo of his beautifully-restored 1954 Cessna 180 appear on the cover of Trade-A-Plane. At 2700 hours total time, the airplane is still "almost new" by the standards of other airplanes of similar vintage. As only its third owner, Fowler keeps the airplane at his home on Gundy's Airport in Owasso.

The story of the restoration reads like a "who's who" of Oklahoma Aviator advertisers and contributors. Of course, as one might expect, everything firewall forward was completely overhauled at America's Aircraft Engines in Collinsville. Some of the engine innards were overhauled by Aircraft Specialties Services.

After reskinning the elevator, rudder, and horizontal stabilizer due to some light hail damage, Richard took the airplane to Ada Aircraft Painting for its distinctive light gray, black, and white polyurethane paint job. The interior was done by John Fisher at Speed-Craft Interiors, also located on Gundy's Airport.

The next point of attack will be the instrument panel. Under Richard's direction, a complete new panel with a full complement of digital instruments will be built and installed by Autopilots Central.

According to Fowler, taking the photographs for the Trade-A-Plane cover was an adventure in itself. While talking with Bob Ferguson of Autopilots Central, the question of a suitable "camera ship" came up. The suggestion was made that perhaps Greg Merrill, owner of Aircraft Specialties Services, might be willing to press his Robinson R-44 helicopter into service for the task. A quick call to Greg confirmed his eagerness and the appointment was set.

The photo setting was to be the buildings of downtown Tulsa. With Richard flying the C-180, Greg flying the helicop-

ter, and Bob Ferguson taking photos, the group made "many, many circuits" around downtown, jockeying the relative positions of the two machines to get just the right shot at just the right moment against the backdrop of buildings. Of course, Richard found himself constantly on the inside of the turn, disconcerted by



*The smile is justified, as Richard Fowler poses with his beautifully-restored 1954 Cessna 180.*

the presence of the spinning rotor seemingly so near his wing.

Fowler, who has 8000-9000 flying hours, started his career as an A&P Mechanic in 1963. Ten years later, he became a part owner of Mid-States Aircraft Engines, doing much of the test flying for them. Then, in 1991, he started America's Aircraft Engines. The company now employs 14 people in its 8550-sq. ft facility and overhauls 15-20 engines per month.

America's Aircraft Engines is now one of only five engine shops across the country who are approved by Superior Airparts to produce Millennium-certified engines carrying the Millennium logo. According to Fowler, the improved engine tolerances required for Superior Airparts certification have been carried over to his own line of overhauled engines. Thus, "our customers get the benefit of cloer-tolerance, smoother-running engines across the board," says Fowler.



*Richard Fowler's Cessna 180 in flight over downtown Tulsa. This is the photo that appeared on the cover of Trade-A-Plane.*

# Up With Downs



Earl Downs

## The Sport Pilot Has Arrived!

The FAA has been working with the light plane industry since 1993 in an effort to improve the lot of those of us who just want to fly for the fun of it. Now, after almost 10 years, the Notice Of Proposed Rulemaking (NPRM) for establishing the sport pilot and light sport plane regulations has been issued. The FAA will now collect comments regarding this series of regulation until May 6, 2002. After considering the comments, a final rule will be issued. By the summer of this year, general aviation will take a "step back" into the future.

When I learned how to fly in the 1950s, planes were simpler and the rules to obtain a private pilot certificate reflected that simplicity. Simple rules and simple airplanes meant lower cost to fly. The current private pilot training requirements exceed those that I had to meet when I got my commercial license in 1959. Over the years since then, the general aviation industry expanded its products and capabilities causing training and licensing to become more extensive and expensive. The sport flyer was lost in the dust of the fast moving wheels of progress.

The ultralight regulations of the 1980s and the recreational pilot regulations of the 1990s helped but did not hit the mark. The ultralight regulations

aimed at unlicensed pilots flying unlicensed airplanes. The recreational pilot license aimed at simplifying the licensing requirements but it stayed with existing production airplanes. Its requirements were too close to the private pilot license to allow very much reduction in training or cost.

The sport pilot/light sport plane proposal is a complete overhaul of many regulations. These changes create more than just a new pilot license. They create a whole new way to certify airplanes, maintain airplanes, and train pilots to fly them. It is aimed at the "sport pilot" who flies for fun and pleasure as well as for limited transportation. The proposal is lengthy so I will only highlight a few of the key areas here.

**The airplane** - It can be a current certified airplane or it might be specifically designed and built as a light sport plane. It can be factory built or the owner can build it from a kit. A light sport plane can be certified for rental. It will be limited to two seats, a maximum weight of 1,232 pounds, a maximum cruise speed of 115 knots, and a maximum stall speed in landing configuration of 39 knots.

**Maintenance** - A builder or buyer can become certified to perform maintenance and inspections without obtaining an A&P mechanics license. The airplane or kit manufacturers will provide training programs to accomplish proper certification. A current A&P mechanic is also allowed to perform maintenance and inspections.

**The sport pilot** - The sport pilot applicant must be at least 16 years old to solo and 17 years old to obtain the sport pilot license. A sport pilot must have either an FAA medical certificate OR a valid drivers license. At least 20 hours of flight training will be required of which 15 hours must be dual instruction. A knowledge (written test) and flight test will be required.

**The license** - The certificate will be a category certificate. For example, it will say a sport pilot is qualified in an "airplane" or "glider" etc. Specific airplanes that the pilot is approved to fly will be accrued through logbook en-

dorsement after training by an authorized flight instructor. For example, training for the license does not include control tower operation. Therefore, the most basic sport pilot cannot operate at a towered airport. But, by receiving appropriate instruction in tower operations, an instructor can lift the restriction through a logbook endorsement.

Pilots who hold existing pilot certificates can use them to operate as a sport pilot by simply following the sport pilot rules. Existing pilots do not need to take an additional FAA check ride to obtain sport pilot privileges.

**Flight instructors** - An existing Certified Flight Instructor (CFI) can provide sport pilot training but will need a logbook endorsement for the light sport plane that is being used. A new type of instructor, the sport pilot instructor, will be created. This instructor will only be allowed to train sport pilots and will hold a sport pilot certificate.

Let's take a look at "Earl's Crystal Ball".

**Airplanes** - Dozens of manufacturers will jump on the bandwagon to produce factory built sport planes and sport plane kits. A handful of these manufacturers will produce quality planes, kits, and support them with training programs. Many will produce nothing but promises and some will be outright frauds. **BUYERS BEWARE!**

**Training** - Most private pilots require 60 to 70 hours of flight training (the FAA requires 40 hours) to get a private certificate. I think between 25 and 30 hours of flight training will be a very realistic number for the sport pilot. I believe the big "airline pilot factory schools" will not get into the sport pilot training business. It may take a while for sport pilot schools to show up. Ultralight training schools may be the first organized training operations to provide sport pilot training. If you are going to buy or build a light sport plane, make sure you line up a qualified instructor.

**Costs** - The cost to get a sport pilot license will be less than half that of a private license. Expect to pay a higher fee for your instructor than for private pilot training but your total cost will still be a lot lower than for a private license. Quality kit planes that include everything and that resemble other contemporary general aviation planes will run between \$30,000 and \$40,000. Factory built versions of these planes will add about \$10,000 to the cost. Ultralight-style two-place kit planes will probably run in the low \$20,000 range while completely built versions of these planes will sell for between \$25,000 and \$30,000. Some models of existing certified airplanes such as the Aeronca Champs and Piper Cubs will qualify as a sport planes. I have seen prices on these airplanes range from \$13,000 to \$50,000.

**Rentals** - The fact that the FAA will allow a light sport plane to be used for rental is a major step in the right direction. The problem is rental insur-

ance. At this time, commercial insurance is so expensive that many small rental and training facilities have gone out of business. The manufacturers will have to work with the insurance industry to assure that schools will be able to operate. Insurance for private owners will probably be reasonably priced.

That's it in a nutshell. As for me, I'm excited! Comments or questions? earldowns@hotmail.com.

## Mrs. Gundermann Presented with Framed OA Article

Pete Curtis, a local real estate developer, and Roger Wieden, owner of Gundy's Airport, recently surprised Marion Gundermann by presenting her with a framed copy of her article about the history of Gundy's Airport which appeared in our November issue. We at the *Oklahoma Aviator* were honored to be in attendance for the presentation.



Left to right: Roger Wieden, Marion Gundermann, and Pete Curtis.

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## TASM Announces Friday Flight Day on March 22



Have you ever watched a hawk soaring in the sky and wondered what it would be like to fly? Take your first step towards flying into that clear blue Oklahoma sky at the Tulsa Air and Space Museum's Friday Flight Day on March 22. Sit in the cockpit of a real Navy F-14 Tomcat and see how it might feel to pilot a fighter jet at 2 times the speed of sound. Try your hand at flying a full motion simulator and see if you might really like to learn to fly.

Once you've tried a few aircraft on for size you can speak to representatives of Tulsa area flight schools to learn exactly what it takes to become a licensed pilot or even an aircraft mechanic. Spartan School of Aeronautics, Robertson Aviation, Christiansen Aviation and their representatives will be on hand to answer any questions

you may have about flying--or aviation in general. You will also be able to hear the stories of pilots who dreamed of flying and made that dream a reality.

By visiting the Tulsa Air and Space Museum on Friday Flight Day you can not only take your first step towards the sky but you will also experience a day of just plane family fun! As Leonardo Da Vinci wrote, "When once you have tasted flight, you will forever walk the earth with your eyes turned skyward, for there you have been, and there you will always long to return."

Friday Flight Day starts at 10:00 AM and ends at 8:00 PM. Admission is \$4.00 for adults, \$3.00 for seniors and students, \$2.00 for children 6-12 years of age. Children 5 years and under are free.

The Tulsa Air and Space Museum is located at 7130 E. Apache on the Tulsa International Airport. Drive into the airport past the lower-level departures area. As the airport drive curves back toward the expressway, turn right onto Apache and drive past Mercury Air on your right and Spartan School on your left. TASM will be on your left about a block after the turn.

## AAAE and OAOA Join to Host Annual Airports Conference



The South Central Chapter of the American Association of Airport Executives (SCC/AAAE) will join with the Oklahoma Airport Operators Association (OAOA) for their Annual Airports Conference in Tulsa, Oklahoma from April 13 through 16, 2002. The conference is being held at the DoubleTree Warren Place.

AAAE Accreditation exams will be held on Saturday, April 13. A golf tournament at Forest Ridge Golf Club will kickoff the events on Sunday, April 14, with registration and exhibitor set-up beginning at noon. All attendees are invited to attend the Welcome Reception Sunday night, being held at the Tulsa Air and Space Museum. Performers from Discoveryland will entertain us with hits from their musical "Oklahoma!" and other patriotic tunes.

The theme this year is "Securing Our Future" and the conference

will have an emphasis on current security and funding issues, which all airports are facing. Technical Session topics will include an update on security and funding issues from a panel made up of AAAE, FAA and State officials from Texas, New Mexico, Kansas, and Oklahoma. Also included will be an environmental issues update, breakout sessions on contract towers, regional jet service and GIS, and an interactive presentation by Pam Kennedy, Sooner Flight Academy, entitled "Working Together to Keep Our Airports Safe."

A special program is planned for guests and spouses of conference attendees. Registration information is available from Debra Coughlan in Tulsa at 918-838-5018 (DebraCoughlan@ci.tulsa.ok.us). Anyone interested in sponsoring should contact Bob Williams at 918-838-5014 and exhibitors should call Carl Cannizzaro at 918-663-0870. All airports registering by March 15 will be eligible to win a laptop computer and all conference attendees will be eligible to win many great prizes. The early bird cutoff date is March 15, 2002, so don't delay in getting registered. This conference promises to be an informative and enjoyable event!!

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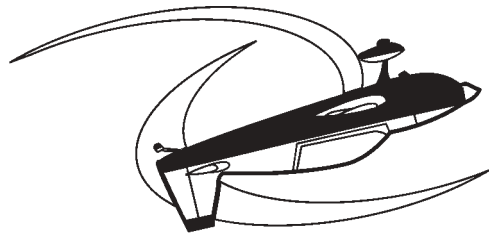
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# ASK THE DOCTOR

BY DR. GUY BALDWIN

Senior Aviation Medical Examiner  
ATP, CFII-MEI



## Kidney Stones

Kidney stones are a subject of interest to the FAA Aeromedical Branch because of the possibility of sudden pilot incapacitation and the inability to get an airplane safely on the ground. The following are three examples of airmen I have seen with kidney stone conditions.

The first airman was a 45-year-old male applying for a renewal of his second class medical. His medical history revealed that a month prior to the visit, he had developed hematuria (blood in the urine) and pain lasting 24 hours. X-rays taken at a local emergency clinic had revealed a stone in the right kidney. The clinic sent him home with instructions to drink large amounts of water, take the pain pills prescribed, and strain all urine looking for the stone. He passed the stone and took it to his family doctor for analysis--it was calcium oxalate. On his visit to my office, he presented a letter from his doctor stating that he was stone free.

The second airman was a 38-year-old female, requesting a third class medical. Her history revealed that she had passed small stones uneventfully but does have residual stones in the "meat" of the kidneys, but not in the urine-collecting parts.

The third airman was a 50-year-old male who applied for renewal of his third class medical. His history revealed a retained stone too large to pass. He had no symptoms and did not know the stone was present until an x-ray for another procedure revealed it.

Between 600,000 and 1,000,000 people per year have kidney stones-- 10 percent of men and 5 percent of women between the ages of 30 and 50. Kidney stones are about five times more prevalent in Caucasians than in African Americans. Two-thirds of all men who pass the first stones will pass subsequent stones, on the average nine years apart.

The classic symptoms start with pain, usually at night or early in the morning. The pain usually starts in the back, the waist, or in the flank, but it can be in the stomach or groin, mimicking appendicitis. Nausea, vomiting, chills, and fever are common, as is hematuria. Occasionally, stones are pain-free-- the so-called "silent stones." They are often diagnosed using x-rays or other routine procedures such as urinalysis, CT scans, and ultrasound.

Kidney stones are of several types. Seventy to eighty percent are composed of calcium oxalate, insoluble phosphate, or both. Forty percent of these are caused by metabolic disease such as hyperparathyroidism.

Twenty percent are struvite stones, made of crystallized magnesium and ammonia byproducts of the bacterial breakdown of urea. These stones are known as "infection stones" and are more common in women because they have more frequent urinary tract infections.

Five to thirteen percent of kidney stones are uric acid stones. Some people, mostly men, build up excessive uric acid in kidneys and joints.

One to two percent of all stones are the cystine stones, which are composed of an amino acid found in nerves, muscles and other body fluids.

Several treatments are available for kidney stones. Most commonly, the patient is treated by forcing fluids, taking pain pills, and straining the urine. Diet does play an important part in the treatment.

In extracorporeal shockwave lithotripsy (ESWL), shockwaves are created outside the body and directed at the kidneys to break down the stones, which are then expelled during urination. Percutaneous nephrolithotomy is used when the stones are quite large. A surgeon makes a small incision in the back and then introduces an instrument to locate and remove the stones. In ureteroscopic stone removal, no incision is required. Instead, the surgeon passes a scope up the urethra into the kidney to find the stones. He then grabs them with a basket or shatters them with a shockwave.

Now, getting back to the outcomes of the three cases I described earlier. We were able to pass the first airman uneventfully because of the letter from his doctor stating that he was stone free. Without that letter, he would not have been able to hold his present medical or be issued a renewal.

The second airman was eventually passed based on reports from the urologist that the stones that do pass are so small they will not have any possible chance of incapacitation. The retained stones in the "meat" of the kidney will not pass and are of no consequence. In this case, the FAA required annual check-ups and reports.

We were able to pass the last airman since his stone is so large there is no chance of it causing problems-- it will not pass and will not cause pain.

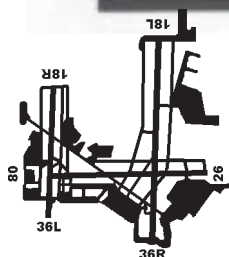
All the above cases were worked individually with a phone call to the FAA doctors. If you have any medical condition that may make your medical challenging, verify that your AME is comfortable "going to bat" for you by calling the FAA. If not, call us at our office- 918-437-7993.

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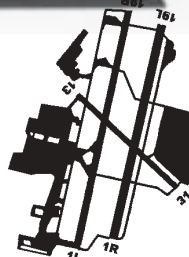
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# Oklahoma Destinations: The Cherokee Strip Museum in Perry

by J. Thomas Pento

It was a fresh December morning, with a scattered layer at 3000 ft and a solid cirrus layer high above. I was in the air and on my way to visit the Cherokee Strip Museum in Perry, OK. The barren brown fields with patches of yellow-green grass below formed a patchwork marking the beginning of another beautiful Oklahoma winter. Several weeks earlier I had read a newspaper article in the *Oklahoma Daily* about the Cherokee Strip Museum and decided that this was the perfect day to see it first hand.

Nearing Perry from the south, a freshly resurfaced airstrip jumped into view. I initially thought it to be the Perry Municipal Airport; however, according to my sectional chart, it was in the wrong location. Had it been moved? That was unlikely, so I took a closer look at the sectional. Of course, this was the Ditch Witch factory private airstrip, just east of I-35 and northwest of the city. The Municipal airport is located approximately 6 miles north of Perry and has multiple runways, which made it easy to identify from the air.

After landing at the proper airport, I was greeted by the affable airport manager, Ty Engel. He shared a bit or airport history then he gave me the keys to the courtesy car-- a well-maintained Dodge Caravan-- and directions to the Museum.

The country-side north of Perry is typical Oklahoma farm country with wide-open rolling fields. The quail were flitting from field to field in search of a meal from the remnants of last year's harvest. On the 6-mile drive down highway 77 to Perry, I passed an interest-



*The Cherokee Strip Museum, located just east of I-35 at Perry, OK.*

ing ostrich and llama farm located just north of a small river bridge about half way into town.

The Museum, located just east of I-35 near the highway exit, provides a historical overview of the Cherokee Strip, which originated with the U.S.

Treaty of 1828. The treaty granted the Cherokee Nation a strip of land approximately 57 miles wide from Tahlequah westward to the Oklahoma panhandle. During the 1836 "Trail of Tears," some 16,000 Cherokees were relocated from the Southeastern U.S. to the Cherokee Strip, which was originally known as the "Cherokee

hungry settlers moving west. This led to the opening of the Oklahoma Indian Territory to settlement and the Oklahoma land runs of the 1890's.

Museum visitors can see an interesting presentation of some of the State's colorful history through photographs, artifacts, original documents, and other authentic memorabilia. Located on five acres surrounding the Museum, exhibits re-create a turn-of-the-century frontier town complete with general store, territorial-era one room school house, outdoor jail, and numerous antique farm implements. Displayed inside the Museum are beautiful vignettes recreating a frontier kitchen, music room, and offices of early-day physician D.F. Coldiron and dentist F.C. Seids, as well the office of former Oklahoma Governor, Henry S. Johnson.

The Cherokee Strip Museum, owned and operated by the Oklahoma Historical Society, is open Tuesday through Friday from 9:00 AM to 5:00 PM and 10:00 AM to 4:00 PM on Saturdays. The Museum is closed on holidays and the first two weeks in January. Admission is free, and you can call for information at 580-336-2404.

Outlet." Over the next several decades the U.S. government relocated other "friendly" tribes such as the Osage, Kaw, Ponca, Pawnee, Nez Perce, Otoe-Missouria, and Tonkawa into the eastern part of the Cherokee Strip.

Following the Civil War, Texas cattlemen drove huge herds north along the Chisholm Trail to railroads in Kansas for transport to eastern cities. The Chisholm Trail crossed through the Cherokee Strip and the Cherokees leased grasslands to cattlemen for grazing. By the late 1800's, government officials were persuaded to open the Cherokee Strip to land-



*Tom Pento's Cherokee on the ramp at the Perry Municipal Airport.*

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*Spartan students recently surprised Robert Davis, WWII veteran and Spartan ground instructor by surreptitiously arranging for him to ride in Dr. Guy Baldwin's Harvard. Davis flew T-6s in WWII training. Front row: Dr. Guy Baldwin and Robert Davis. Back row: Spartan organizers.*

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## New Roadhouse Aviation FBO to Host Open House at RVS

TULSA - Kent Faith, local businessman, airline pilot, and Chipmunk owner, recently announced the planned opening of his new fixed-base operation, Roadhouse Aviation, at Jones/Riverside Airport in Jenks. To celebrate the opening, Faith has planned an Open House Fly-In.

Roadhouse Aviation will be located in the former Cypert Aircraft facility. Initially, its services will include:

- Fuel- Texaco 100LL and Jet A.
- Tiedowns.
- Pilot lounge.
- Online weather.
- Aviation supplies.
- Charter availability- Baron, Cessna 421, Citation, King Air.

With time, instruction and aircraft rental will be added. For now, maintenance will be referred to existing maintenance operations on the field.

Faith outlined his goal to provide the fastest possible refueling of aircraft all over the field, from his three radio-dispatched fuel trucks. "Our hours of

operation will be whatever is required by the customers," Faith said.

Faith plans to remodel the pilot lounge, giving it a 1930s art deco feel, with the plan for it to become a place where aviators automatically "check in" when visiting the airport.

The Roadhouse Aviation Open House Fly-In will be held April 20 8:00AM-4:00PM and will feature warbirds and other interesting aircraft in attendance. All fly-in and drive-in visitors are welcome. Lots of door prizes will be provided and a special low fuel price will be in effect. Says Faith, "We also hope to have Chet Peek, author of *The Spartan Story*, and Tom Maloney from Cushing. Tom is a WW-II P-38 ace and quite a guy."

Asked how Roadhouse Aviation will compare to other FBOs on the field, Faith thought a minute, then replied, "Well, our competition provides Otis Spunkmeyer cookies to customers. Think of us more as Double-Stuff Oreos folk!"

## Angel Flight to Host Annual Meeting and Free Barbecue Fly-In

TULSA - Tulsa Angel Flight director Doug Vincent recently announced that Angel Flight will once again hold its annual meeting and barbecue fly-in at Riverside Airport on Saturday May 4, 2002 from 11:00AM until 1:30PM.

Everyone is invited including not only current Angel Flight pilots and volunteers, but also anyone else who is curious about the group or who might want to become an Angel Flight pilot or volunteer. Families and other guests are also welcome. Barbecue will be cooked by Angel Flight's own Kevin Hine and door prizes will be provided.

The Fly-In will be held at Doug

Vincent's hangar in the Northeast T-Hangar. To keep the taxiway open around the hangar, fly-in attendees are requested to park at the Christiansen Jet Center on the west side of the field. A shuttle will be provided to the east side and back.

Similarly, drive-in visitors are asked to park adjacent to the picnic pavilion on the east side of the airport, where a shuttle will take them to the Barbecue Fly-In.

Attendees are asked to please RSVP by April 26, so Angel Flight will know how much to cook-- phone 918-749-8992 or FAX 918-745-0879.

## Oklahoma Aviation & Space Nominations Being Accepted

OKLAHOMA CITY - Omniplex is accepting nominations for induction into the Oklahoma Aviation and Space Hall of Fame for 2002. Individuals wishing to propose candidates must have their nominations in no later than March 15, 2002.

The Hall of Fame was established 22 years ago to honor Oklahomans who have made significant contributions to the advancement of aviation, the exploration of space, the development of the aviation and aerospace industries, or the development and use of aviation in the U.S. military. Non-Oklahomans who have made significant contributions to aviation or aerospace progress within the state of Oklahoma are also eligible for induction.

Each year approximately six individuals are chosen for induction. The 22nd annual Hall of Fame induction ceremony and dinner will be held at Omniplex September 21, 2002. Pictures and biographies of new honorees will join those of nearly 150 past inductees who are permanently recognized in the Hall of Fame exhibit in the Air and Space Museum at Omniplex. In addition, the Clarence E. Page Memorial Trophy will be given to an individual who has shown dedication to the promotion and/or progress of the aerospace industry in Oklahoma.

Log onto the website at [www.omniplex.org](http://www.omniplex.org) for a nomination criteria form. For more information, contact Stuart Howard at 405-602-3715.

## Windecker "Eagle": Certification, Production, and Stealth, cont'd

continued from p. 1.

New Mexico. The results were encouraging and the Air Force contracted with Windecker to deliver an Eagle, highly modified to further reduce the radar re-



**Windecker Eagle N4195G mounted on the RATSACAT pedestal in New Mexico, undergoing the beginnings of stealth testing**

turn. That airplane (S/N 009), designated as the YE-5 by the Air Force, was the last Eagle to be built. Thus, Windecker was an early participant in the development of the stealth technology that has become so successful today.

In succeeding years, Windecker Re-



**The highly-modified YE-5 (Eagle S/N 009) in flight over New Mexico.**

search participated with Lockheed in the SAVOIR and AEQUARE Remotely-Piloted Vehicle (RPV) programs. In 1976, Windecker's Board of Directors suspended all operations and "closed the doors," withdrawing from the follow-on AQUILA RPV development.

In the 1980s, Dr. Windecker was employed by Avtek Corporation to develop the composite airframe of the Avtek 400, a twin-pusher turboprop business airplane. Later, he formed a joint venture with Nippon Steel of Tokyo, Japan in support of their graphite fiber production subsidiary. In the late 1980s, he began developing a new, two-place, fixed-gear airplane, called the Eaglet. The Eaglet's tooling and prototype parts, about 60% complete, incorporate the manufacturing lessons learned since the Eagle was certified.

The Eagles met various fates. N803WR was destroyed on the ground when a tornado hit Austin's Mueller Airport in 1981.

Dr. Windecker acquired N4195G from the First National Bank of Midland and used it as his personal airplane, finally donating it to the museum in Lake Jackson, TX, where it is on display today.

The YE-5 prototype crashed and was replaced by N4196G, which is now



**Eagle N4195G on display in a museum in Lake Jackson, TX, the place where Dr. Windecker's "plastic plane" ideas were first formulated.**

on display at the Army Aviation Museum at Ft. Rucker, AL.

N4197G was purchased by Dow Chemical and later donated to the Smithsonian Air and Space Museum; it is scheduled to be displayed at the new Udvar-Hazy Center at Washington Dulles International Airport.

N4198G was purchased by Gerald



**Eagle N4197G, currently being stored at the Paul Garber restoration facility of the National Air and Space Museum.**

Dietrick, of Florence, KY. When Windecker finally closed in 1976, Dietrick acquired ownership of the type certificate and the demonstrator aircraft, N804WR. For over twenty years, he tried in vain to resurrect the project. A few years ago, Anita Dietrick, Gerry's widow, sold the type certificate and the two aircraft to a Canadian company, where they are today.

So, why was the Windecker Eagle not a financial success? Well, these are only my opinions, but here goes. The basic problem was that the airplane, even after certification, was not "ready for prime time," particularly as a head-to-head competitor to the Beech Bonanza, which had a reputation for solid, aristocratic class.

The structure of the Eagle was sound-- in retrospect, it would have needed considerable refinement to get the production costs down enough to make it profitable, but it was not tremendously different from today's successful composite airplanes. One of the lessons that has been learned from the Rutan and Quikie experience is that composite structures with solid foam cores cannot be easily inspected-- damage or improper construction is too easy to hide with filler and paint and there is no way to see the structure from the inside. Another lesson is that, to realize the benefits of composites, the structures

should not be designed the same way as metal structures-- you wind up with too many parts. Also, even in a composite airplane, metal has its place-- sometimes we designed composite parts that should have been metal.

The decision to go with a complex, retractable-gear airplane caused a lot of extra work, unnecessary complexity, design compromises, and certification effort. For instance, because of the retract gear, the wing center section, with its five spars, was complex. Because the five spars extended full-height across the width of the cabin, there was no well for rear passengers to put their feet-- the rear passenger floor was only a few inches below the lip of the seat, so that one's knees were up around one's ears. Also, the retract gear forced the installation of gear doors, which were complex and, to my knowledge, were never fully successful.

While the airplane's structure was basically sound, its systems were less so. In the hurry-up certification frenzy, systems tended to be designed using the philosophy of "how can we design this so we can build it today and test it tomorrow" rather than "how can we design this to make it functional, serviceable, and suitable for manufacturing."

Of course, besides technical issues, there were political issues between the Windeckers, the company management, and the Board of Directors. Since I was not privy to most of them, it is probably best to leave it at that.

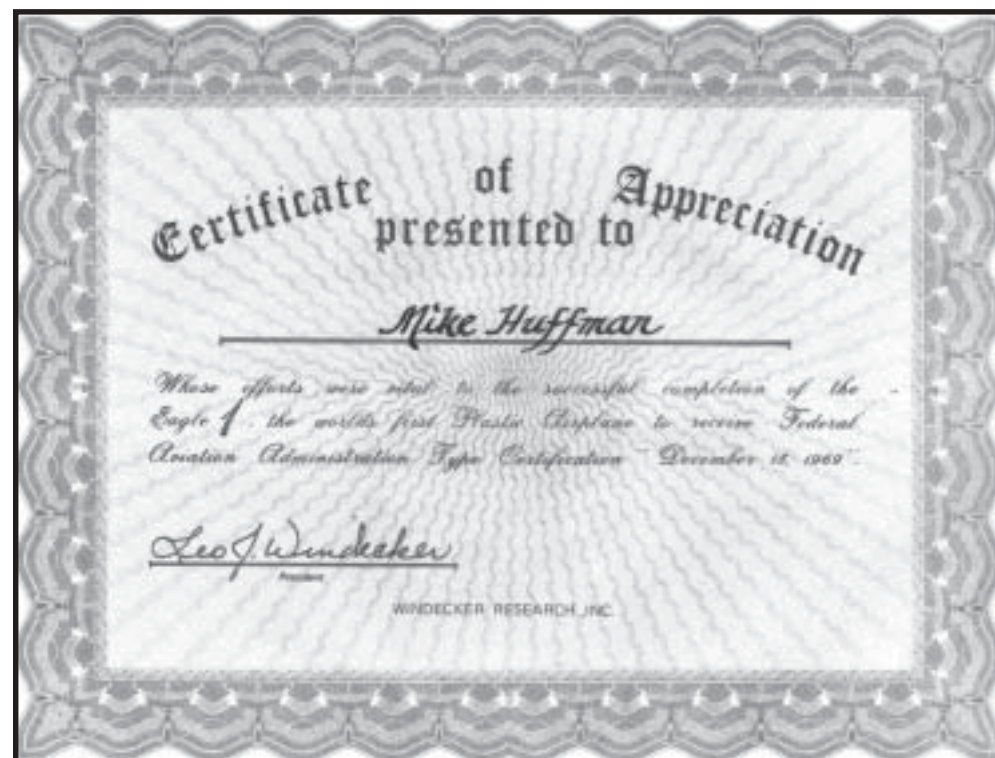
Fairfax Windecker died about ten years ago. Dr. Windecker now resides in Fredericksburg, TX, with his wife, Julia, where he enjoys his lifelong hobbies of photography and astronomy.

As for me, I am very happy to have

been a part of the pioneering Windecker experience. It is gratifying to see today's crop of composite airplanes and know that our efforts at Windecker were their genesis. Although the Windecker experience did not bring me fame or riches (as vainly hoped), it launched a lifelong career and interest in aviation. I got back into aviation and aerospace as quickly as possible, eventually working for Brittain Industries (autopilot manufacturer), Rockwell International, FlightSafety International, and other aerospace companies. Along the way, I built several homebuilt airplanes, had a custom aircraft restoration business, and continued involvement with composite airplanes, including building composite airplanes, teaching composites courses, and writing articles on composite construction.

The Windecker project, while not financially successful, was a remarkable technical innovation. The demanding certification program we undertook is an example of what a group of enthusiastic people can accomplish when they believe what they are doing is important. In retrospect, it was important, since it set the stage for technical innovations that are just now reaching their full potential.

[Editors Note. This is the last in a series of three articles about my involvement with the Windecker Eagle project. I would like to say a big "thank you" to Ted Windecker, the son of Dr. Leo Windecker and one of the key aerodynamics and structures designers on the Eagle project. When I decided to write this series of articles, I contacted Ted, having not seen nor talked with him in over 30 years. He graciously helped with details of the story that I had forgotten. Thanks very much, Ted!]



**A certificate presented by Dr. Windecker at certification time. It reads, "Certificate of Appreciation presented to Mike Huffman, whose efforts were vital to the successful completion of the Eagle 1, the world's first Plastic Airplane to receive Federal Aviation Administration Type Certification. December 18, 1969."**



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For a free listing of your event, email us at [OklahomaAviator@cox.net](mailto:OklahomaAviator@cox.net) or call 918-527-0429. To allow time for printing and publication, try to notify us at least two months prior to the event.

WHEN	WHAT	WHERE	CONTACT	DETAILS
1st Thursday	Dinner Meeting- Oklahoma Pilots Assoc dinner and meeting	Wiley Post Airport, Oklahoma City, OK	Helen Holbird- 405-942-6308	
1st Saturday 7:30AM-10:00AM	Fly-In Breakfast- Ponca City Aviation Boosters Club	Ponca City Airport, Ponca City, OK	Don Nuzum- nuzum@poncacity.net Bruce Eberle- 580-762-5735	Held rain or shine
2nd Tuesday 6:30PM	Meeting- Women In Aviation	Spartan School of Aeronautics Jones/Riverside Airport, Tulsa	Laura Yost- 918-831-5354	
2nd Tuesday	Meeting- Spirit of Tulsa Squadron- Commemorative Air Force (formerly the Confederate Air Force)	Tulsa Technology Center Jones/Riverside Airport, Tulsa	Jim Dagg 918-224-6293	Restoring 1942 PT-19. Hangar space and workers needed
2nd Tuesday	Meeting- EAA Chapter 24	Aviation Tech Center OKC Airport	Martin Weaver- 405-376-5488 pacer59f@juno.com	Start 7:00PM
2nd Wednesday 7:30PM	Meeting- Tulsa Cloud Dancers Balloon Club	Martin Library Tulsa, OK	Frank Capps	
2nd Thursday 7:00PM	Meeting- Oklahoma Windriders Balloon Club	Metro Tech Aviation Career Center, Oklahoma City, OK	Ron McKinney- 405-685-8180	For all balloon enthusiasts
3rd Saturday	Meeting- Green Country Ultralight Flyers Organization (GCUFO)	Call 918-632-6UFO for location and details	Bill Chilcoat- 918-827-6566	
3rd Sunday	Tulsa Cloud Dancers Balloon Flight	Contact Frank Capps for time/location	Franks Capps- 918-299-2979	
3rd Monday	Meeting- IAC Chapter 10	Contact Joe Masek for time/place	Joe Masek- 918-596-8860 jmasek@tulsacounty.org	
3rd Monday 7:30PM	Meeting- EAA Chapter 10	Gundy's Airport, Owasso, OK	Bhrent Waddell- 918-371-5022 bwaddell@tulsa.oklahoma.net	
3rd Thursday 7:00PM	Meeting- EAA Chapter 323	Sherman Municipal Airport Sherman, TX	Billy Dollarhide- 903-868-7609 dollarhide@ti.com	For more information, visit our website: <a href="http://www.eaa323.org">www.eaa323.org</a>
Saturday following 3rd Monday	Pancake Breakfast- EAA Chapter 10	Gundy's Airport, Owasso, OK	Bhrent Waddell- 918-371-5022 bwaddell@tulsa.oklahoma.net	
4th Tuesday 7:00PM	Tulsa Chapter 99s Meeting	Robertson Aviation, Jones/Riverside Airport, Tulsa*	Charlene- 918-838-7044 or Frances- flygrl7102@aol.com	*Unless otherwise planned. All women pilots including students are welcome to attend.
4th Thursday 7:30PM	Meeting- Vintage Airplane Association Chapter 10	South Regional Library, 71st & Memorial, Tulsa, OK	Charles Harris- 918-622-8400	
Mar 8-Aug	IMAX Film- "To Be an Astronaut"	Omnidome Theater Kirkpatrick Center Oklahoma City	405-602-3689	Go inside the gates of NASA to experience the rigors of astronaut training. Includes "Maximum Velocity: The French Precision Flying Team"
Mar 13-15	13th Annual International Women in Aviation Conference	Nashville, TN		
Mar 15-16	"Star Station One"- international space exploration mission	Oklahoma Air and Space Museum Kirkpatrick Center, Oklahoma City	405-602-3689	Celebrate the International Space Station. Two days of participatory demonstrations and hands-on activities. For children and adults.
Mar 23	13th Annual Mary Kelly Wild Onions and Eggs Fly-In Breakfast	Tenkiller Airpark Cookson, OK	John Sevieri- 918-457-4183 jsclyde@aol.com	Those wishing to stay overnight may camp on the field or opt for a room at the Cookson Log Cabin Motel- 918-457-4116
Apr 4-6	35th Annual National Conference on Aviation and Space Education (NCASE)	Crystal Gateway Marriott Arlington, VA		
Apr 11 6:30PM	OU Student/Alumni Aviation Banquet	Commons Restaurant, Norman, OK	405-325-7344	Open to all OU alumnis. Call to get your name on our mailing list!
Apr 13-16	Annual Spring Conference, Oklahoma Airport Operators Association, and South Central Chapter, American Assoc of Airport Execs	Doubletree Hotel 6110 S. Yale Tulsa, OK	Debra Coughlan- 918-838-5018	This year's them is "Securing Our Future."
Apr 20 7:00-10:00AM	Fly-In Pancake Breakfast	William R. Pogue Airport Sand Springs, OK	Ken Madison- 918-246-2605 klmadison@sandspringsok.org	Held rain or shine
Apr 27	Angel Flight Annual Fly-In Meeting and Barbeque	Jones/Riverside Airport Jenks, OK	Doug Vincent- 918-749-8992 DougieVin@aol.com	To be held at the pavilion-- NE corner of the airport. Open to the public-- come learn about Angel Flight!
May 3-4	Small Aircraft Transportation Systems (SATS) Exposition	Thomas P. Stafford Airport Weatherford, OK	Ordis Copeland- 580-774-4505 ordis@nts-online.net	For more info, go to <a href="http://www.weatherford-ok.org">www.weatherford-ok.org</a> or <a href="http://www.SATSExpo.com">www.SATSExpo.com</a>
May 31-Jun 1	16th Annual Biplane Expo	Frank Phillips Field Bartlesville, OK	Charlie Harris- 918-62208400	Forums, static displays, seminars, workshops, exhibits. All airplanes and pilots are encouraged to attend. Biplane crews and NBA members get free admission.
Jun 10-14	Tulsa Community Collge Aviation Careers Academy	Tulsa Community College 6111 E. Skelly Drive, Tulsa, OK	youth@tulsa.cc.ok.us	For 9th - 12th grades. Exposure to aviation careers. Includes 3 hours flight time.

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