Volume 24, issue 10

THE SLIPSTREAM

THE NEWSLETTER OF GREEN RIVER EAA CHAPTER 441 KENT, WA

October 2022

Next Meeting

Thursday, 27 October, 7 PM

17618 S. E. 303rd PL, Kent

This Month's Program

Mark Owens discusses aircraft alternators

Inside this Issue:

President's Column

Workshop Season

...and just like that, the "workshop season" is here. No more do we need to worry ourselves about being distracted from doing useful things by the clear blue sky and warm temperatures, beckoning us to go flying. We won't need to feel guilty about that rivet line that's not going to get de-burred or that joint that won't get cleaned up, glued, and clamped up just because we were out flying. It begins with the wildfire smoke. Even if we wanted to go flying, it's clear and 2-1/2, so unless you can manage an IFR takeoff not to mention finding your way back to the airport in the slog and trying to keep track of that centerline in poor visibility, we're better off staying on the ground anyway. Don't worry, the rain will clear the smoke. On the evening news tonight, we were assured that once it starts, it's going to be wet, gloomy, and blustery, probably until April.

So here's the workshop season. Dust off the shop lights (we will need extra light to avoid SAD in a couple of months. We're losing 4 minutes of daylight every day. Take a deep breath, here we go!

But it's not so bad. This is our opportunity to go heads down and make solid progress on that lonely project. Guilt-free. We have a number of active projects in the chapter. Talk it up. Go visit each other's projects (take cookies). Get a Technical Counselor to look at your work. Help someone who needs a hand hoisting an engine or holding the level, talk through a challenge, or maybe even learn a new skill in the shop. This is what EAA and being part of a chapter is all about!

Meeting's on the 4th Thursday. Come out, remind everyone who you are and what you are working on. You just never know how much help a single evening with EAA'ers can be.

Chapter Officers

President: Brian Lee
(253)-639-0489
Vice-President: Mark Owens
Secretary: TBD
Treasurer: Steve Crider
Tech Counselors/Flight Advisors:
Brian Lee (253)-639-0489
Dave Nason
Jonathan Lee (253) 508-1376
Newsletter Editor: Ron Wanttaja
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ron@wanttaja.com

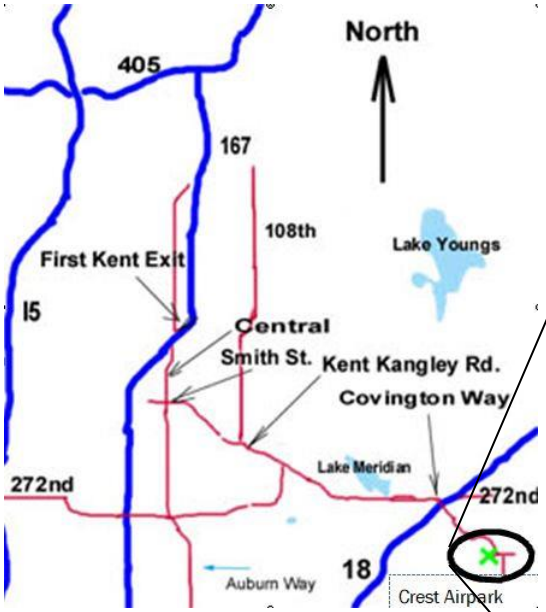
What did we talk about Last Month?

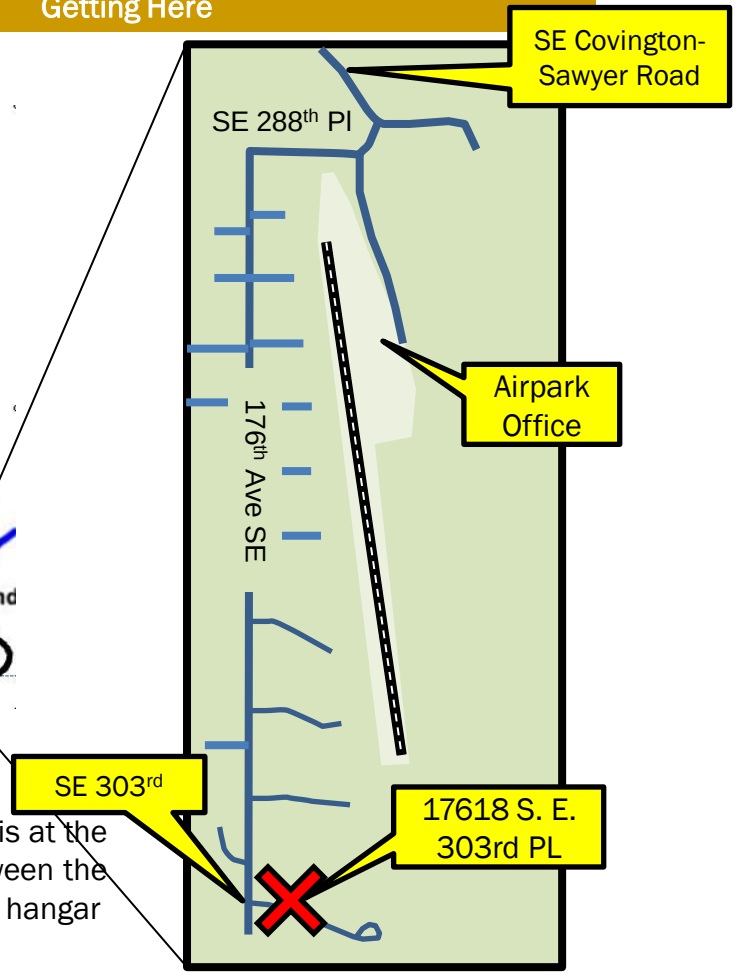
Flying gliders in France

A round trip to Oshkosh 2022

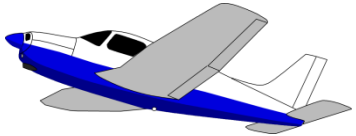
Re-Rigging a Bowers Fly Baby

Getting Here





Park along side of road at 303rd, meeting is at the second house. Walk down the driveway between the garage and the house, and go downhill to the hangar



Chapter 441 is fortunate to have two tech counselors. Feel free to call Brian (253)-369-0489 , or Dave Nason any time. You don't need to wait for some significant milestone in your project.

Remember, this is not an "inspection". The shop doesn't need to be cleaned for a visit. All are quite used to looking at pieces, parts, and assorted bits, and will be happy to answer questions, offer advice, and generally talk about projects, building, flying, or whatever.

"I know engineers…they love to change things!"

- Doctor Leonard McCoy, "Star Trek: The Motion Picture"

Some of you are probably blinking with surprise in the changes to the EAA Chapter 441 newsletter. I AM an engineer…so changes shouldn't be THAT much of a surprise. But there's some method in this madness.

First, my predecessors have been building such excellent newsletters using Microsoft's "Publisher" program. The torch was passed to me last month…with a little dismay on my part. I'd never used Publisher. I was actually surprised to find that I even had it on my computer.

But that was because I had an older version of Microsoft Office. I intend to upgrade to Windows 10 at some point, which means I'd have to upgrade Office as well. Unfortunately, I found that Microsoft only includes Publisher with Office 365: The version of Office that you have to pay a yearly fee for. Didn't like that.

There were some format changes I wanted to do with the newsletter, and I figured a complete break from Publisher would be the easiest way for me. The next newsletter editor is certainly welcome to switch back to Publisher…I've kept the old files.

The big change I wanted was to switch to a Landscape format. The traditional Portrait mode, with its multiple columns, is great for sitting in an easy chair and paging through a paper copy.

Doesn't work quite as well on a computer. All of our monitors are in landscape format (some do pivot) and formatting the newsletter in landscape mode makes it easier to read on-screen.

The thing is, we don't even produce a hard-copy version of the newsletter any more. So let's optimize for online reading.

One advantage is that an online newsletter isn't restricted to a certain number pages to reduce copying and postage costs. We can add pages as necessary.

We'll work it out. Let's end with another movie quote: "Buckle your seatbelts, we're in for a bumpy ride."

Ron

Budd Davisson Named to Homebuilt Hall of Fame

Budd Davisson, of Phoenix, Arizona, known worldwide for his extensive writings on homebuilt aircraft, aerobatic flight, and aviation safety, will be honored by EAA on November 10 with his induction to the EAA Homebuilders Hall of Fame. Davisson is one of five individuals to be honored that evening with various EAA halls of fame inductions.

Davisson's 1969 monthly column for Air Progress magazine, which went on to run for 46 years in three newsstand aviation magazines, was the first of nearly 4,000 magazine articles. Approximately half of his nearly 300 pilot reports have been on experimental amateur-built aircraft and EAA magazines have published nearly 400 of his articles, beginning in the late 1960s.

EPA Issues Proposed Endangerment Finding

On Friday, October 7, the Environmental Protection Agency (EPA) released its long-awaited proposed finding of endangerment regarding lead emissions from piston aircraft. This was not unexpected and is the first step in a multi-year, multi-step regulatory process that will most likely conclude with the eventual removal of lead from avgas.

Our industry has joined with the Federal Aviation Administration (FAA) in the Eliminate Aviation Gasoline Lead Emissions (EAGLE) initiative, which provides for an orderly and safe transition to a lead-free avgas future.

It's important to note that lead cannot be removed or "banned" from avgas by the EPA or FAA until multiple regulatory steps prescribed under the Clean Air Act are taken - likely not for a number of years.

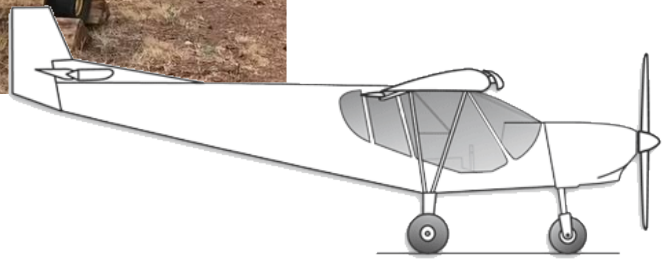
On September 1, the FAA issued supplemental type certificates to allow General Aviation Modifications Inc.'s (GAMI) 100-octane unleaded fuel (G100UL) to be reportedly used in every spark-ignition engine and every airframe powered by those engines. The deployment of this fuel and its adoption by general aviation will help guide the EPA and FAA's regulatory efforts.

Jason Fish has first engine start

Jason Fish is building a Zenith 750 Cruzer with a Rotax 912iS engine and an Airmaster CS prop. He started the engine for the first time on the 13th of October.

It's only been 14 months since Chapter 441 members helped Jason unload his kit from the delivery trailer!

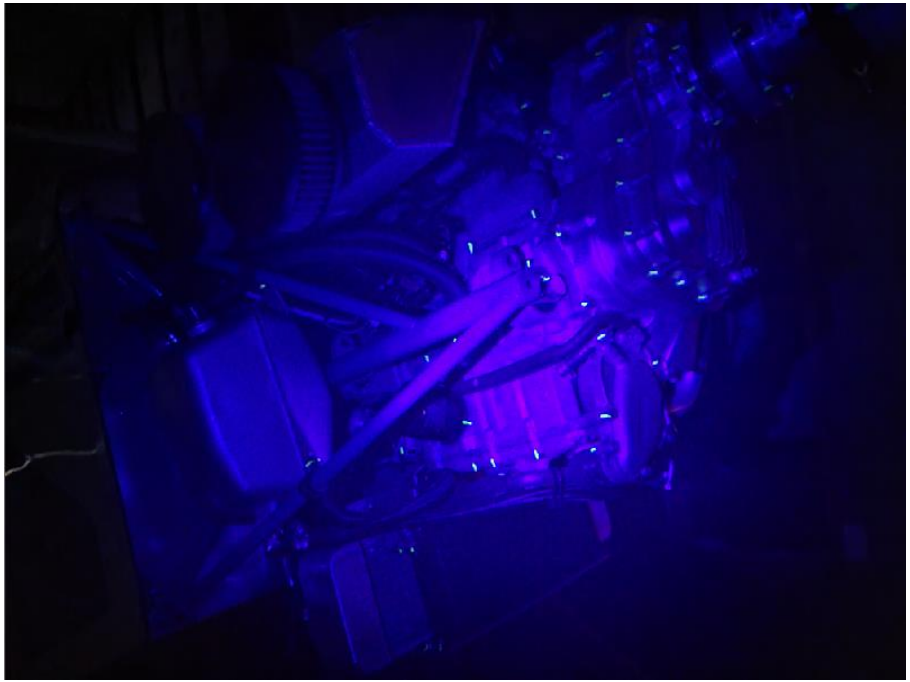
Unloading August 2021



Steve Cameron's Scottish Highlander Update

I had a two-month stand down, due to the usual "life happens" stuff, including getting COVID. On the second flight after this hiatus, I found coolant all over the bottom of the plane and the coolant overflow tank was empty. I did some ground engine runs, but couldn't find any sort of a leak in the system anywhere... It seems to have been pushed out the overflow tank, through the overflow tube exit at the bottom of my engine compartment, and then dripped down the entire length of the fuselage bottom. I'm suspecting something with the coolant cap, but ordered an exhaust gas detection kit to look for exhaust gas in the coolant -- to rule out a head gasket leak. It has flown fine since then, so it's sort of a mystery to me... I think airplanes just like to be flown regularly to keep all their gaskets and seals and relief valves in proper order.

In other news, I've got the Grand Rapids Technology CAN Bus to Serial Converter all wired up and 'communicating' with the automotive-based CAN bus that controls my engine. GRT is developing the CAN-RS232 conversion table needed to properly convert the CAN bus data to RS232 serial format so I can display it on the EFIS. Right now the info is flowing, but the EFIS doesn't understand it. I'm looking forward to being able to display analog/round dial engine parameters on the EFIS instead of reading rows and columns of digits in the AEM CAN bus display.



I also tried out using a UV light to look for oil leaks on my engine, and was pleasantly surprised to 1) not find any leaks, and 2) observe how the UV light makes it super easy to see all the nut rotation witness goop. (Continued on next page)

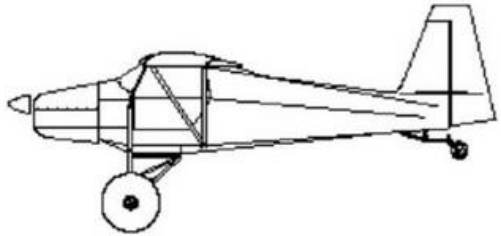
Steve Cameron's Scottish Highlander Update (Continued)

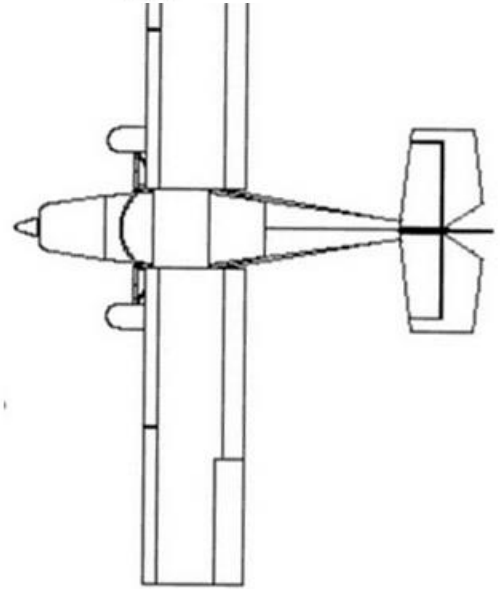
I will also say that I need to modify my normal flight test techniques a bit just because of the power to weight ratio of this plane. I climb on initial takeoff at about 20 degrees of climb angle (flight path marker on my EFIS) and I'm not even climbing at best rate or best angle of climb because I like being able to see over the nose just a teeny bit.

So I'm not too sure I'm going to use full power for power on stalls, because they would be an aerobatic maneuver... probably going to use approach speed power settings for 'power on' stalls.

Also, I found an interesting vibration that happens right when the engine prop speed becomes less than the windmilling speed of the prop. Apparently, the sprag clutch is intermittently pushing and coasting at that point. For now, I avoid that speed/power regime. More to follow as I test this out a bit more.

I finally have the 1st flap landing speeds, power settings, and (occasionally) landings figured out. Thank God for Monster Shocks! Using normal 1st flap, front side landing techniques on 34 at Auburn, I exit the runway at A2 with no problem. I can't wait to start exploring some back side landings.



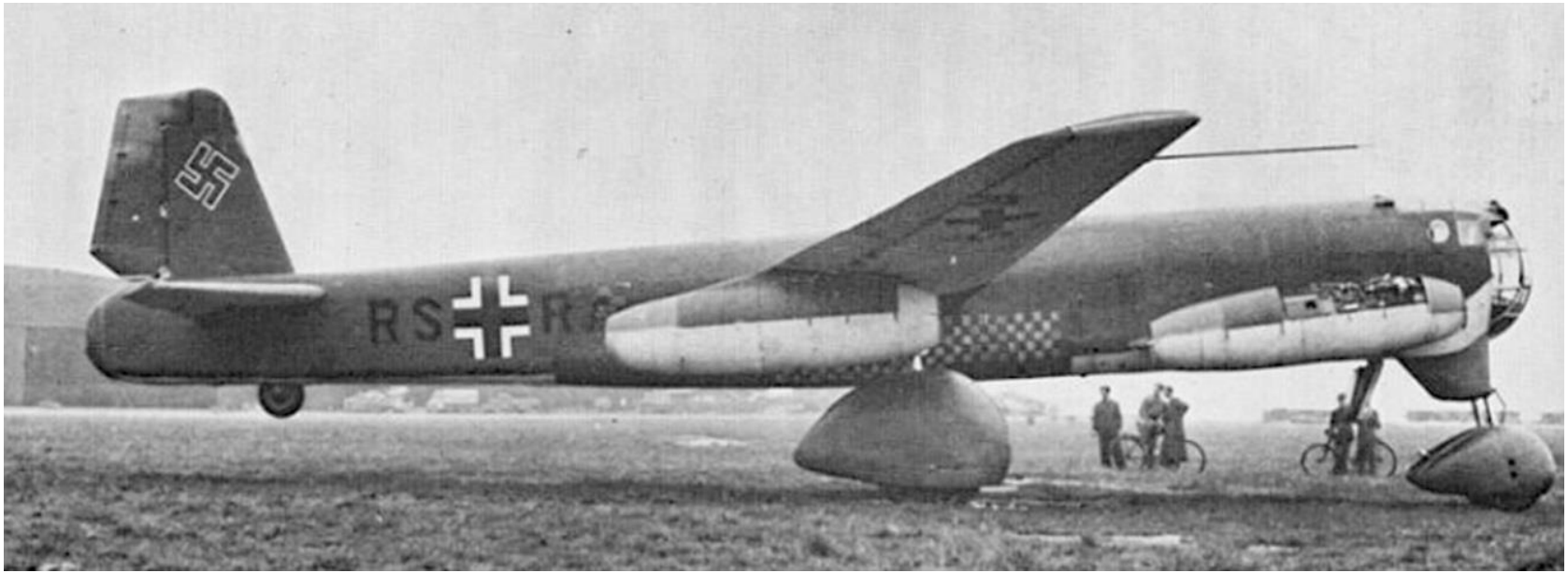


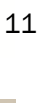
Hi fellow EAA members,

I am currently selling my unfinished S-18 project. If you or someone you know who is interested, please contact me at:

Norm Pauk: Tel: 253-561-4801
Email: Npauk@msn.com

This Month





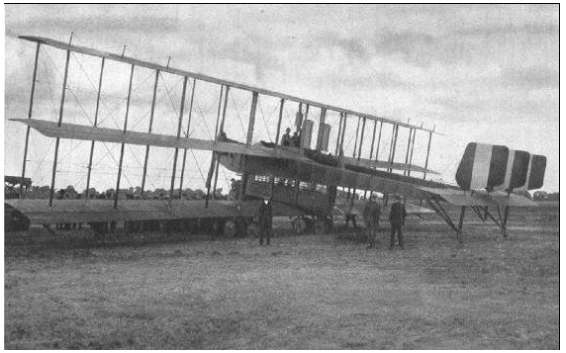
Last Month: Caproni Ca.4

The Caproni Ca.4 was an Italian heavy bomber of the World War I era.

Development

After designing the successful Ca.3, Gianni Caproni of the Caproni works designed a much bigger aircraft. It shared the unusual layout of the Caproni Ca.3, being a twin-boom aircraft with one pusher engine at the rear of a central nacelle and two tractor engines in front of twin booms, providing a push-pull configuration. The twin booms carried a single elevator and three fins The main landing gear was fixed and consisted of two sets of four wheels each.

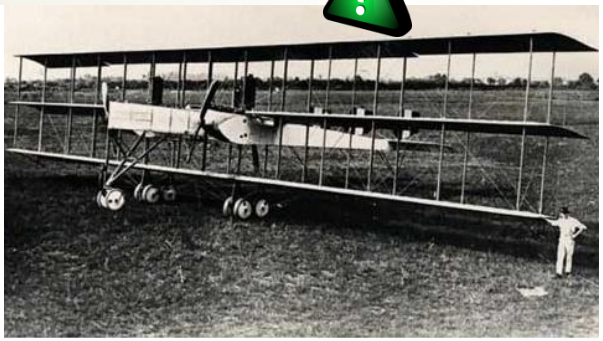
The huge new bomber was accepted by the Italian Army under the military designation Ca.4, but it was produced in several variants, differing in factory designations.



Description

The Ca.4 was a three-engine, twin-fuselage triplane of wooden construction with a fabric-covered frame. An open central nacelle was attached to the undersurface of the center wing. It contained a single pusher engine, pilot, and forward gunner. The remaining engines were tractor mounted at the front of each fuselage. At least one variation of the central nacelle seated the crew in a two-seat tandem format with the forward position for a gunner/pilot and the rear position for the pilot. Others used a forward gunner with side-by-side pilot positions to the rear of the gunner. Two rear gunners were positioned, one in each boom behind the center wing. An engineer or second pilot could also be accommodated there.

Last Month: Caproni Ca.4 (Data)



To Read More:

Wikipedia: https://en.wikipedia.org/wiki/Caproni_Ca.4
Aircraft Investigation: http://aircraftinvestigation.info/airplanes/Caproni_Ca.42.html
Airports Worldwide: https://www.airports-worldwide.com/articles/article1587.php
Wings of Linen: https://linen.miraheze.org/wiki/Caproni_Ca.42
The Aerodrome: https://www.theaerodrome.com/aircraft/italy/caproni_ca4.php
Wikipedia (1919 Ca4.8 Crash): https://en.wikipedia.org/wiki/1919_Verona_Caproni_Ca.48_crash
YouTube: https://www.youtube.com/watch?v=HDnIR7fiX2s

Specifications:

Crew: four (pilot, co-pilot, front gunner, and rear gunner/mechanic)
Length: 13.1 m (43 ft 0 in)
Wingspan: 29.9 m (98 ft 1 in)
Height: 6.3 m (20 ft 8 in)
Wing area: 200 m2 (2,200 sq ft)
Empty weight: 6,709 kg (14,791 lb)
Max takeoff weight: 7,500 kg (16,535 lb)
Powerplant: 3 × Liberty L-12 V-12 water-cooled piston engines, 298 kW (400 hp) each

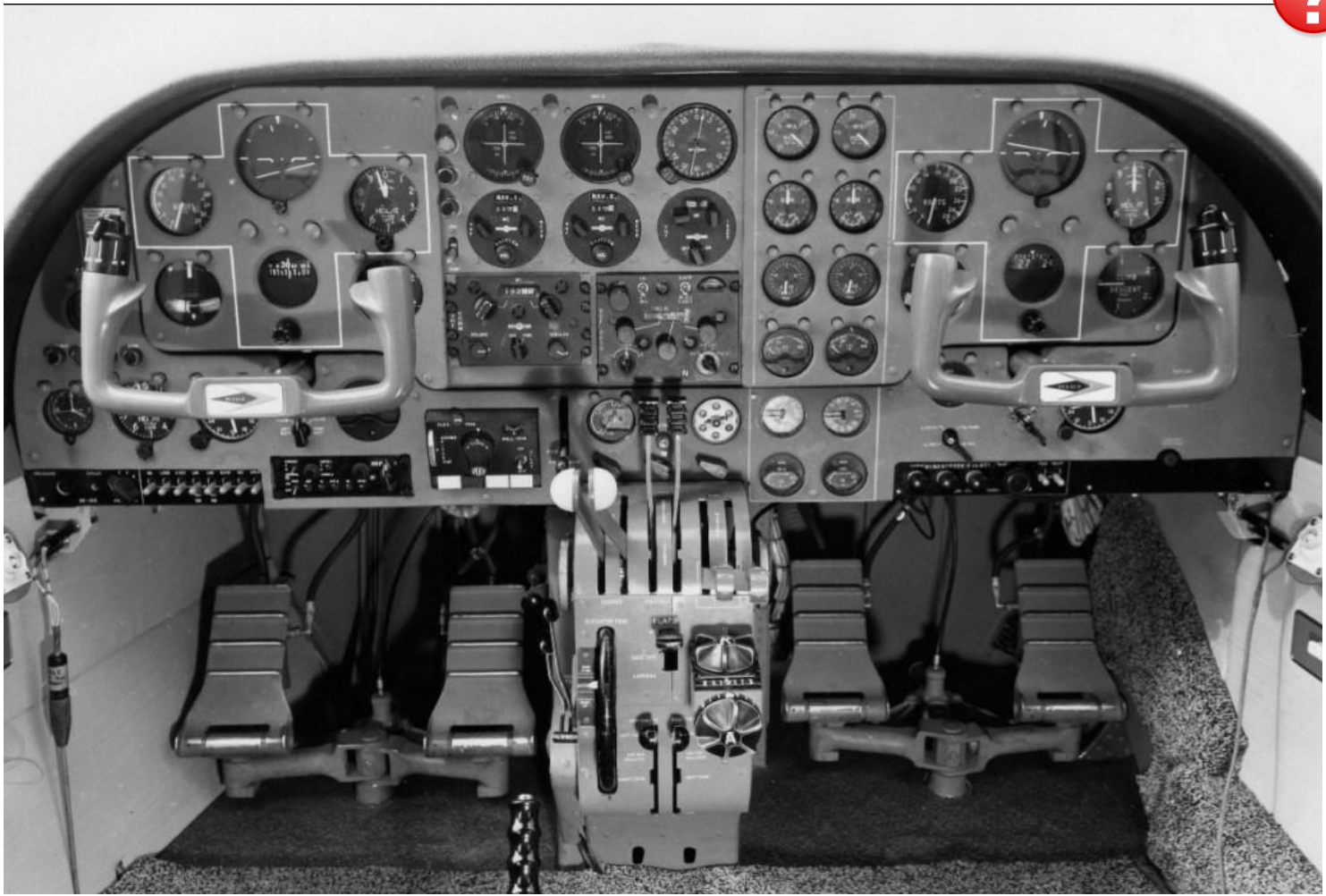
Performance

Maximum speed: 140 km/h (87 mph, 76 kn)
Range: 700 km (430 mi, 380 nmi)
Service ceiling: 3,000 m (9,800 ft)
Rate of climb: 2.083 m/s (410.0 ft/min)

Armament

Guns: 4 × 6.5 mm FIAT-Revelli machine guns, two in forward mounting and one in each of two rearward positions.
Bombs: 1,450 kg (3,200 lb) of bombs

This Month



Last Month: Curtiss-Wright X-19

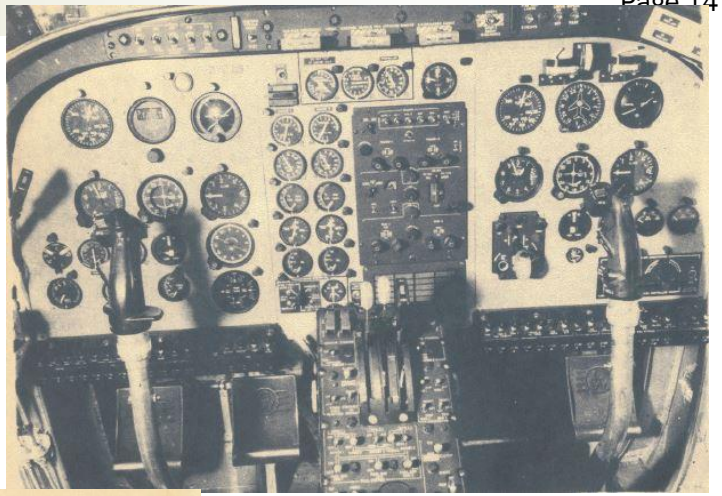
The Curtiss-Wright X-19, company designation Model 200, was an American experimental tiltrotor aircraft of the early 1960s. It was noteworthy for being the last aircraft of any kind manufactured by Curtiss-Wright.

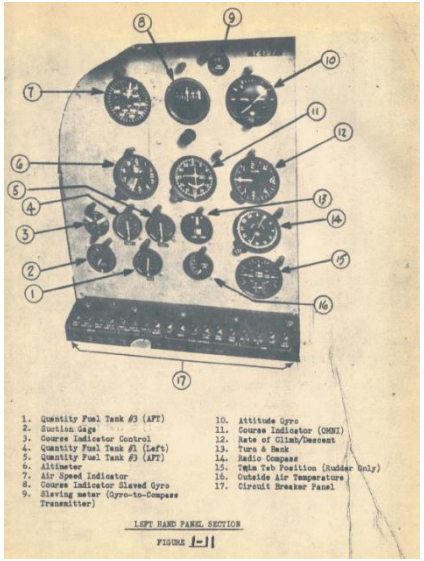
To Read More:

Wikipedia: https://en.wikipedia.org/wiki/Curtiss-Wright_X-19

Aerotechnews: https://www.aerotechnews.com/blog/2021/07/26/the-x-19-the-last-aircraft-built-by-curtiss-wright/

Youtube: https://www.youtube.com/watch?v=7GZeBVIdeDE

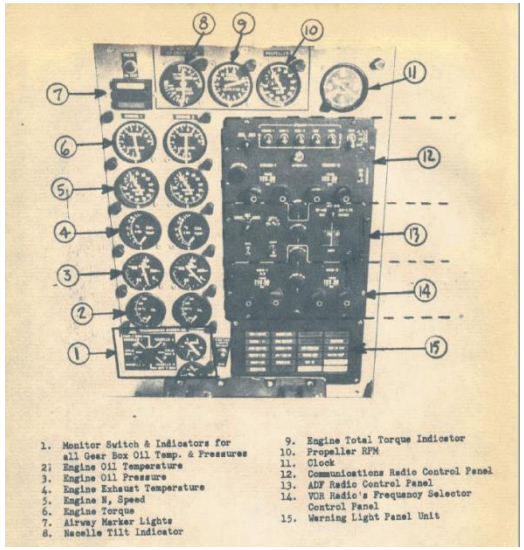




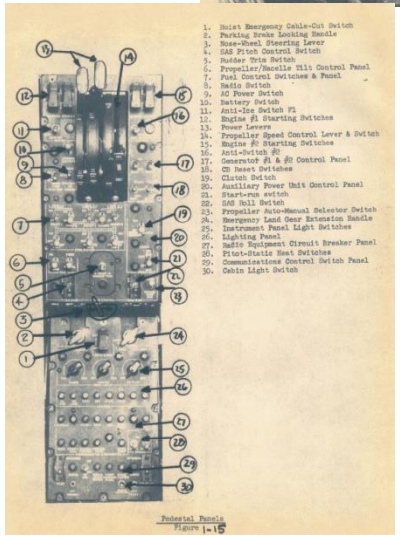
1. Quantity Fuel Tank #3 (AFT)
2. Suction Gage
3. Course Indicator Control
4. Quantity Fuel Tank #1 (Left)
5. Quantity Fuel Tank #3 (AFT)
6. Altimeter
7. Air Speed Indicator
8. Course Indicator Slaved Gyro
9. Slaving meter (Gyro-to-Compass Transmitter)
10. Attitude Gyro
11. Course Indicator (OMNI)
12. Rate of Climb/Descent
13. Turn & Bank
14. Radio Compass
15. Trim Tab Position (Rudder Only)
16. Outside Air Temperature
17. Circuit Breaker Panel

LEFT HAND PANEL SECTION

FIGURE 1-11



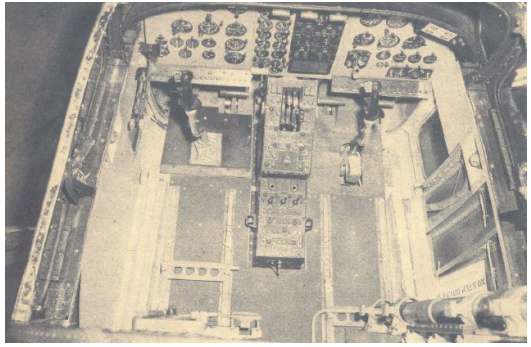
1. Monitor Switch & Indicators for all Gear Box Oil Temp. & Pressures
2. Engine Oil Temperature
3. Engine Oil Pressure
4. Engine Exhaust Temperature
5. Engine N$_1$ Speed
6. Engine Torque
7. Airway Marker Lights
8. Nacelle Tilt Indicator
9. Engine Total Torque Indicator
10. Propeller RPM
11. Clock
12. Communications Radio Control Panel
13. ADF Radio Control Panel
14. VOR Radio's Frequency Selector Control Panel
15. Warning Light Panel Unit



1. Hoist Emergency Cable-Cut Switch
2. Parking Brake Locking Handle
3. Nose-Wheel Steering Lever
4. SAS Pitch Control Switch
5. Rudder Trim Switch
6. Propeller/Nacelle Tilt Control Panel
7. Fuel Control Switches & Panel
8. Radio Switch
9. AC Power Switch
10. Battery Switch
11. Anti-Ice Switch #1
12. Engine #1 Starting Switches
13. Power Levers
14. Propeller Speed Control Lever & Switch
15. Engine #2 Starting Switches
16. Anti-Switch #2
17. Generator #1 & #2 Control Panel
18. CB Reset Switches
19. Clutch Switch
20. Auxiliary Power Unit Control Panel
21. Start-run switch
22. SAS Roll Switch
23. Propeller Auto-Manual Selector Switch
24. Emergency Land Gear Extension Handle
25. Instrument Panel Light Switches
26. Lighting Panel
27. Radio Equipment Circuit Breaker Panel
28. Pitot-Static Heat Switches
29. Communications Control Switch Panel
30. Cabin Light Switch

Pedestal Panels

Figure 1-15



Last Month: Curtiss-Wright X-19 (Data)

General characteristics

Crew: 2
Capacity: 4 pax / 5,000 lb maximum
3,910 lb VTOL
Length: 44 ft 5 in
Wingspan: 23 ft 6 inrear wing
19.5 ft forward wing
Width: 34 ft 6 in propeller tip to propeller tip on rear wing
Height: 17 ft 0.25 in
Wing area: 56.1 sq ft forward wing
98.5 sq ft rear wing
Empty weight: 9,750 lb
Max takeoff weight: 14,750 lb CTOL
13,600 lb VTOL
Fuel capacity: 4,790 lb maximum fuel
Powerplant: 2 × Lycoming T55-L-7 turboprop engines, 2,650 shp each
Propellers: 3-bladed glass re-inforced plastic Curtiss-Wright radial lift force propellers, 13 ft 0 in diameter
1,203 rpm for take-off; 955 rpm cruising

Performance

Maximum speed: 400 knots at 20,000 ft
Cruise speed: 347.6 knots at 15,000 ft (4,600 m)
Range: 450 nmi with 1,000 lb (450 kg) payload VTOL
Rate of climb: 3,930 ft/min at sea level and 13,660 lb AUW

Little Gee Bee

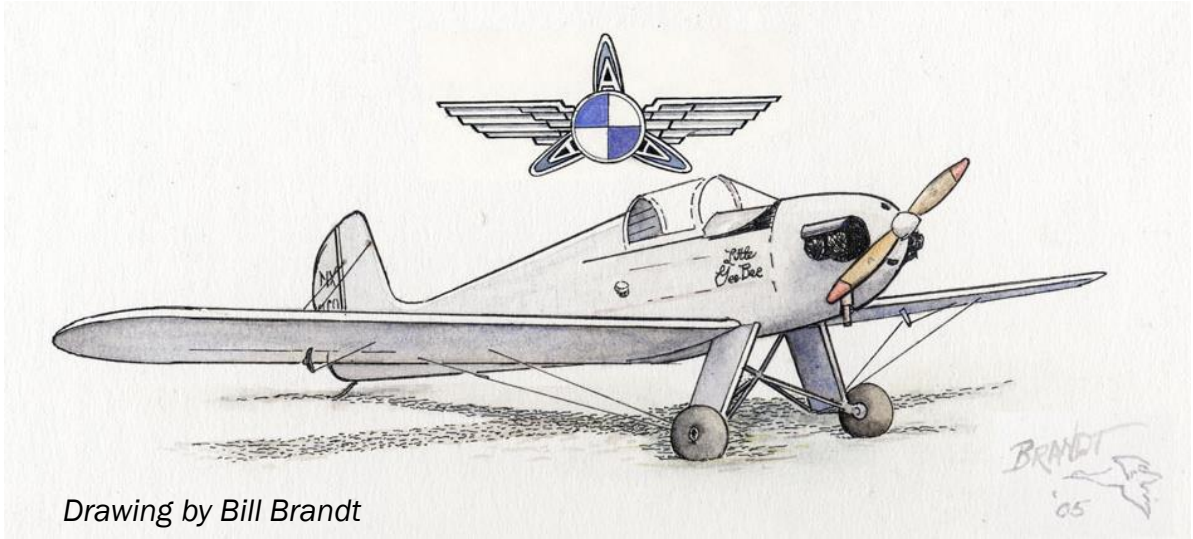
Eighty years ago, homebuilts were basically illegal. One man—with his little homebuilt, dubbed "Little Gee Bee"—helped bring about the freedoms we know today.

Homebuilding had boomed in the 1920s and 30s. While the Civil Aeronautics Authority (CAA, the FAA's predecessor) established aircraft engineering and test standards, its jurisdiction was limited to aircraft used commercially. People were free to design and build their own airplanes for personal use.

But like ultralights in the mid-1980s, homebuilding became a victim of its own popularity. Accident rates surged as marginal designs hit the market and people who didn't know any better used substandard materials in construction.

Individual states got involved. They passed laws requiring that all aircraft in their states meet CAA design requirements. The result: By World War II, homebuilt aircraft had been banned in nearly every state of the Union.

Oregon was an exception. The state's laws still permitted people like Les Long to build their own airplanes, though they couldn't be flown outside the state. Despite being crippled by agoraphobia (fear of unfamiliar surroundings), Long had designed, built, and flown seven aircraft. He also led the Amateur Aircraft League, a national organization for homebuilders. *(Continued on next page)*



Drawing by Bill Brandt

Long died just as WWII was ending, and fellow Oregonian George Bogardus stepped into the leadership spot. He reorganized the group as the American Airmen's Association (AAA) and mobilized the membership. Changing laws of each state would be impossible, but if they could convince the CAA to give amateur-built aircraft official status, the federal law would trump the individual states. He and his fellow AAA members started to pester the CAA, both the local and national offices.

Bogardus' lobbying found some sympathetic CAA officials. In 1946, the CAA agreed to grant Experimental certificates to planes built before the war, and Bogardus was invited to return the next year to discuss the AAA's proposal for an Experimental Amateur-Built category.

In anticipation of the new category, Bogardus decided to buy a homebuilt. Just prior to the war, a man named Tom Story had built one of Long's designs, a low-wing, wire-braced, 65 HP single-seat airplane called "Wimpy." Bogardus restored the plane, renaming it "Little Gee Bee."

Impressed with the performance of the tube-and-fabric bird, Bogardus decided to fly Little Gee Bee from Oregon to Washington DC for the CAA discussions on the AAA's amateur-built aircraft proposals. After making a few changes, such adding a long-range fuel tank, Bogardus was on his way.

Two weeks later, after dropping in on AAA members across the country, he arrived safe and sound in Washington DC. The little wood and welded-steel homebuilt had proved that amateur-built aircraft weren't the deathtraps they were so often painted.

The CAA got the point. They immediately instituted temporary provisions for licensing homebuilt aircraft and began work on developing a formal certification category. It took four years, but in September of 1952, the Experimental/Amateur-Built category was officially adopted, its provisions remarkably similar to what we still have today.

The next time you stroll through the sleek aluminum and fiberglass birds at Oshkosh, remember: They're really just the descendants of a tough little fabric-covered single-seater. And without the intense lobbying of a dedicated Oregonian, homebuilding today would be quite a bit different.

Restored by EAA Chapter 105, Little Gee Bee is now on display in the Udvar-Hazy branch of the Smithsonian.

Kitfox– Oregon: While flying about 800 ft above a river during a personal flight, the pilot advanced the throttle to climb, but the engine started to lose power. The pilot elected to land on a nearby island, during which the airplane nosed over.

Postaccident examination of the airplane revealed that the throttle cable set screw on the aft side of the throttle body arm had backed out of its original position and was no longer securing the throttle cable. As a result, the cable moved freely with no corresponding motion on the throttle body arm. Maintenance records revealed that the pilot built and installed the throttle body arm about 7 months and 204 flight hours before the accident.

A note about "On the Wreckord":

The majority of aircraft accidents…homebuilts or no…are due to pilot error. However, "On the Wreckord" prefers to address accidents involving mechanical issues, whether spontaneous or due to builder or maintainer error. It's hoped that familiarity with mechanical issues for a variety of homebuilts might help us earlier detect problems with our own aircraft.

Just Escapade– Florida: While on a 1-mile final approach for landing, about 400 ft above the ground, the engine lost total power. The pilot applied full throttle and enrichened the mixture, but only a momentary return of power occurred before the engine lost power again. The airspeed decreased and the airplane entered an aerodynamic stall and impacted a house and terrain.

Postaccident examination of the airframe and engine revealed no evidence of any preimpact mechanical malfunctions or failures. Non-volatile memory data recorded during the accident flight revealed a large spike in fuel flow, followed by a 0 rpm reading, which was indicative of a total loss of engine power due to air passing through the fuel line and transducer rather than fuel. It is likely that the fuel flow to the engine was interrupted, but a postaccident examination of the engine and fuel system could not determine what caused the interruption.

Lancair Legacy– Texas: After leveling off at 9,500 ft, the pilot switched the fuel selector from the right to the left fuel tank. He noticed a change in the sound of the engine, a decline in fuel flow, and a partial loss of engine power. He switched back to the right fuel tank and turned on the auxiliary fuel pump, but this did not correct the problem. Realizing that he would not be able to glide to a nearby airport, the pilot made a forced landing in a plowed field.

Postaccident examination found that the fuel selector had separated just below the selector handle, and the selector valve was found in the 90-percent-closed position. The fuel selector assembly showed extensive wear. It is likely that the fuel selector separated with the valve in an intermediate position when the pilot changed the fuel selector handle position, which resulted in a partial loss of engine power due to fuel starvation as a result of the nearly closed fuel valve.