



**EAA Chapter 100**  
**April 2020 Newsletter**

<http://eaa100.org>

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EAA Chapter 100 is a nonprofit association involved in the promotion of aviation through adult and youth education, hands-on training, building and maintenance of experimental aircraft, and through community awareness programs.

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Reader submissions and comments are strongly encouraged.

**President Reflection**

*-- Jim Owens*

Hello Aviation enthusiast!

I am amazed how quickly the snow disappeared at the airport without too much flooding. Warm weather flying season will soon be here! I just completed a deep inspection of the Sonex after reaching 200 hours. The first flight after maintenance went well with no squawks. I believe we are all feeling the turbulence of the virus situation. Our May and June chapter calendar is in a bit of flux at this time. Our Young Eagles rally is scheduled for May 16th and the pancake breakfast is June 21st. I am reluctant to add to the long list of May/June "event cancelled" notifications, people need something to look forward to and I believe we have a bit more time to cancel. Our next check point is May 3rd for a go/no-go for the rally. To comply with state guidelines and to be conservative, all of our April chapter meetings are cancelled including: 3/31/2020 business meeting, 4/8/2020 Flight Following, and 4/11/2020 hangar flying. Note that the April Flight Following meeting was scheduled to be a presentation on the FAA Wings program. If you happened to already see that on the Wings site, note that it is cancelled and will be rescheduled.

Jim

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**Parakeet Rebuild**

*-- Jeff Hanson*

The parakeet rebuild is coming along nicely. With moving last fall and all of the struggles we had getting the initial wood order delivered, it took me a bit to get going but now the new shop has a distinct coating of sawdust and is permeated with the sweet smell of T-88. I am building a new top left wing panel and am learning the intricacies of the parakeet construction versus the how the Hatz was built. I currently have all of the full ribs completed and am about halfway through building the nose ribs. I have the new bench built to assemble the wing panel and hope to have the spars cut within the next two weeks. The goal being to have the wing completed and ready for covering by the end of May.

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# Secretary Comments

-- Jeff Hanson

## EAA Chapter 100

Meeting notes 3/13/2020 Dodge Center. 11 members present. We had a wonderful hangar flying discussion including the tribulations of converting an SLSA aircraft to an Experimental. Thank you Jason!

*Editor:* Jim Owens submitted since Jeff missed last meeting.

Respectfully submitted,

Jeff Hanson

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*(Continued from page 1) - Parakeet Rebuild*

After stripping the fabric off of the other three wing panels last summer, we went through and removed all of the existing hardware, fittings, and wires. Surprisingly, except for the hardware, after close to 50 years, the wings looked almost like new under the old fabric. Dad then brought each of them home and has meticulously gone through them. Each one was inspected, cleaned



up, re-varnished where necessary, and reassembled. All of the steel fittings were stripped and repainted and all of the hardware and drag wires were replaced with new (aside from the turnbuckles, which were all sandblasted and re-CAD plated). He also added a step in the bottom wing of the right side of the airplane. All three wing panels are now ready for fabric and awaiting

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# History of Leaded Aviation Fuels

-- Dick Fetcher

When the Wright brothers first took to the air, the fuel they used was a straight run gasoline with only about a 37-octane rating.

Straight run is basically a light fuel that boils just below the kerosene fraction and has no additional processing done to it. Due to the poor cooling of the Wright engine, it usually started detonating or pre-igniting shortly after takeoff.

Since straight run gasoline was one of the limiting factors for aviation, especially for the military, a huge research effort was launched by the oil companies, the military, plus numerous other research agencies in the early 1900s for a better solution.



FROM THE LIBRARY OF CONGRESS, THE FIRST PHOTO OF ORVILLE WRIGHT IN FLIGHT, COVERING 120 FEET ON DEC. 17, 1903.

When I started working for Shell, one of my projects was working on lead scavengers. This led to a lot of looking through old research reports on the subject. I was really surprised at the scope and amount of basic research done on the subject.

The first work was refinery process changes that would reduce the knocking tendency of fuels. It was quickly

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(Continued from page 2) - Parakeet Rebuild

their fourth sibling to join them. Dad is currently working on removing the old paint from all of the wing struts and other metal parts and getting them primed and ready for new paint. As soon as we get some decent (warmer) weather we'll be transporting the fuselage to Stewartville to start the disassembly process.

start flying and now, after 10 years of flying, it's really nice to have a project again.



It's hard to believe that it's been over 10 years since we completed the Hatz. I remember towards the end of that 10-year project how ready I was to be done building and



*(Continued from page 2) - History of Leaded Aviation Fuels*

determined that they could improve the fuel some, but they needed an additive to help them meet the requirement of many newly developed aircraft engines.

Then they figured out that most liquefied metal compounds worked to reduce knocking in test engines, however all of the metals tested had some negative side effects. For example, iron compounds greatly increased engine wear, the manganese additive cause red whiskers on the plugs, the lead additives would short out the spark plugs, and on and on.

But work continued, concentrating on finding scavenger compounds that would negate the bad side effects of the metallic additives. They eventually found that a lead compound used with a combination of bromine and chlorine scavenger agents (plus a phosphorus supplemental additive) could be used in high compression engines. This worked especially well with a new alkylation refinery processed fuels. This resulted in 100/130 avgas, which had no lead limit, but usually contained about 3 grams of lead per gallon.

The fuel for lower compression engines had a 0.5 grams of lead per gallon limit or 80/87 fuel. This worked well with the lower spark plug core temperature for these engines.

The 100/130 avgas was just what the high-powered military aircraft used in World War II needed. These fuels allowed the Allied aircraft engine manufacturers to greatly increase the compression ratios and performance of their engines and gave the Allied forces a significant advantage over the German and Japanese forces.

After the war, the aviation community settled on the two fuels and they remained unchanged until the early 1970s.

At that time the commercial aviation world had converted over to almost all Jet-A engines and the volume of avgas had gone down to an almost insignificant percentage of the world fuel market. That meant the total volume was too low to support two separate grades.

The oil industry reached a compromise and converted over to just one grade, 100/130 low lead. In this com-

promise the level of lead in 100/130 was limited to 2 grams per gallon and the 80/87 fuel was eliminated.

Unfortunately, this compromise did not work well for either sector of general aviation. The increase from 0.5 to 2 grams lead per gallon caused spark plug fouling and increased engine deposits on many aircraft.

And even though the lean rating of 100LL was greater than the old high leaded fuels, the decrease in the rich rating for the 100LL fuels resulted in a significant increase in knocking complaints.

The lead story on the automotive gasoline side was similar. The demand for increased performance caused an octane race. In the 1960s compression ratios kept increasing. By the late 1960s, there were numerous high-performance vehicles with 11 to 1 compression ratio or even higher.

Then in 1971, most of the auto manufacturers reduced the compression ratios into the 8 to 9 to 1 ratio to allow for the use of unleaded auto gas. They have now switched to electronic fuel injection and timing controls, plus many other systems, to return back to the 1960s performance levels using lower octane fuels.

The piston aviation community is now facing the switch

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## Benson's Airport

— EAA Chapter 745

Coffee and Doughnuts, Benson's Airport (6MN9), White Bear Lake, MN

EAA Chapter #745 Fly-in/Drive-in Coffee and Doughnuts, 9 am – noon, 3rd Saturday of the month at Benson's Airport (6MN9), White Bear Lake, MN. Stop in for some free coffee and doughnuts. Runway is NOT plowed. Kim: 763-503-0161 Airport: 651-429-0315.

We plan to continue doing these every 3rd Saturday of the month.

Benson Airport  
5860 Highway 61 N  
White Bear Lake MN 55110  
(651)-429-0315

### EAA Chapter 745

White Bear Lake, Mn



(Continued from page 4) - *History of Leaded Aviation Fuels*

to unleaded fuel with lower anti-knock performance in the real world than 100LL and probable exhaust valve recession in many engines. And the industry and government want to do it with no changes to the engines.

I feel this is an impractical goal without a research effort similar to that done before World War II that included thousands of very talented research scientists.

And the more important question: Who is willing to pay for it?

### Ben Visser

[Ben Visser](#) is an aviation fuels and lubricants expert who spent 33 years with Shell Oil. He has been a private pilot since 1985.

Editor: Compliments to [GENERAL AVIATION NEWS](#).

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## FAA Policy Extends Certain Medical Certificates in Response to COVID-19

— EAA.org

**March 27, 2020** - On Thursday, March 26, the FAA released a policy statement that allows any pilot who holds a first-, second-, or third-class medical certificate that is valid on March 31, 2020, to continue operating under the privileges of that certificate until June 30, 2020. The unprecedented policy is in response to the COVID-19 pandemic, allowing certificate holders to continue flying during a period when the nation's health care system is coming under strain and routine appointments such as AME visits are being deprioritized.

Given the urgent circumstances, the FAA implemented the policy by simply attesting that they will not bring enforcement action against any pilot or flight engineer with an expired medical certificate (under the criteria specified) during the three-month period. Eligible medicals under this policy include those issued under special issuances. This suspension of enforcement does not apply to those who lack a valid medical, nor does it apply to those flying with a known medical deficiency,

## Newsletter Editor

-- Art Howard

Your Newsletter Editor is back home in Lake City, Minnesota. Wow, what a reception! We got back just before midnight on Monday, March 16. Stopped at Kwik Trip in Lake City to pick up some eggs, bread, and milk for breakfast. No eggs, one bread left (not our brand) and no milk! The rest stops along the way from Tennessee were being deep cleaned every hour! Little did we know it would be this bad. And now we are in a "Stay at home order".

Did get to Rochester Airport and move the Cherokee back to Red Wing. Before leaving KRST I did three turns around the pattern with a stop on the runway for "Last 90 Days Currency" per 14 CFR § 61.57 - Recent flight experience: Pilot in command. Since my IFR currency was still current, I did a "round robin" actual IFR flight and got 6 approaches on Friday, March 20. The ceilings around 800 feet, a nice base for easy IFR approaches. Then on Saturday, March 21, I did a Master WINGS Phase 3 Flight. I sent that paperwork off to my insurance company to keep my premium reduction. Sailing was nice but it is great to be back and flying again.

Each of us needs to stay safe in this current "Stay at Home" environment. However, we can still go outside and do things alone. So I plan to do some solo flying and no group activities. Just clean my hands with alcohol after fueling the aircraft.

EAA HQ guidance for Chapter Meetings and Events Regarding COVID-19 can be found [here](#).

Submissions to this newsletter are welcome from EAA Chapter 100 members. Please send articles and pictures to [newsletter@eaa100.org](mailto:newsletter@eaa100.org).

Your newsletter editor, Art Howard

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in violation of 14 CFR 61.53(a). The policy also does not address the Comprehensive Medical Evaluation required on a four-year basis by BasicMed.

Editor: For more information click [here](#) (EAA.org).

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# Items for Sale

**Note:** The following e-mail was received for inclusion in our Newsletter:

**From:** "aabebay@evertek.net" <aabebay@evertek.net>

**Sent:** Friday, December 6, 2019, 10:20:33 AM CST

**Subject:** Long EZ Project For Sale

Please forward this information to anyone that may be interested in purchasing a Project. I will no longer be able to get my pilot's license due to medical issues. The URL below will take you to my website that shows most of the components included in the sale. The price is \$3000, but I am open to partial or complete trades (looking for enclosed trailer or SCCA project car), open to all offers, the worst I can do is say no. I can store this project until spring if needed. Please email with any questions, or use the reply box on the website.

<https://longezforsale.godaddysites.com/>

Thank You,

Allen

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*Editor:* The airspace depicted below shows where you need ADS-B out. There is a lot of airspace where you **do not need** ADS-B out, including **KRST** and **KTOB**. ([FAA](http://www.faa.gov))

*Editor:* This is from the EAA Young Eagles Pilot Guidelines brochure: **Pilot Requirements**

The Young Eagles pilot requirements are basic, but **MUST** be followed.

- ◆ Be a current EAA® member and hold an appropriate airman's certificate (sport pilot or greater)
- ◆ Possess a current medical certificate (if applicable)
- ◆ Be current to carry passengers in the aircraft you plan to use
- ◆ Have a current flight review
- ◆ Complete the Young Eagles registration form before the flight, including parent or legal guardian signature, and pilot signature
- ◆ Conduct flights in an aircraft that is in airworthy condition
- ◆ Have aircraft passenger liability insurance for the aircraft used (owned, rented, or borrowed)
- ◆ Adhere to all applicable Federal Air Rules (FARs)
- ◆ Complete both the online training and basic background check as a part of EAA's Youth Protection Policy. For more information, visit [EAA.org/YouthProtection](http://EAA.org/YouthProtection).

*Editor:* Make sure you are current to fly Young Eagles at the EAA Chapter 100 Young Eagles event on Saturday, May 16, 2020.

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