

# TAILWINDS



**EAA CHAPTER  
974  
NEWSLETTER  
FEBRUARY 2021**



Butler County Regional Airport  
Hamilton, Ohio



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# **FEBRUARY 2021 CHAPTER GATHERING WRAP-UP**

The February chapter gathering was held virtually once again in the interests of covid protection. VP Joey Shreve acted in place of president Tom. We hope to meet in person in March, but that will depend partly on weather and partly on the area infection spread status. We recognize it is much safer for us to be able to open the hangar to the air, but we need the weather to cooperate for that. Stay tuned.

Young Eagles: Scott Balmos : tentatively planning a rally on 4/10. Volunteer pilots will be needed. Make sure you have current Youth Protection Certificate.

Technical Counselor Report: Ray Parker reports he is assisting Shaun Wheeler with wiring in his RV4.

## Project Reports:

Joey Shreve has installed firewall and built new seats for his Double Eagle project. Pictures to follow in this edition.

Mike McKosky continues to work on his Zenith 750. Wings and flying surfaces nearly complete. It is plans built. He plans to install a Corvair engine.

Scott Balmos' RV9A will be in the paint shop approximately 2 more weeks. Pictures shared during meeting were stunning!

Bob Dombek has built a new battery box for his Fisher Tiger Moth. The battery will be moved to the forward cockpit floor just aft of the firewall to correct the CG.

Dave Glasmeyer is building a Kit Fox. He reports riveting his boot cowl in place. He will be installing a rebuilt Corvair engine which he has test run for 5 hours.

## **VMC CLUB WITH BILLY BIE**

The following is a brief partial summary of Billy Bie's VMC Club presentation at the February gathering. Joey has recorded the gathering and has sent a chapter wide email with a link to the recording. The best thing is to be there on Zoom or in person which will come again soon!



EAA-VMC question of the month: You are about to take off in a Super Cub using a 18/36 runway. The wind is blowing from 270 at 1 knot below the cross wind limit for the aircraft. Which runway would you use? Answer: use 36 to take advantage of the left turn tendency of this aircraft in take off configuration.

### Airworthiness Quiz Summary:

1. The worst adverse effect of aircraft storage is corrosion
2. Ground run with no time to fly should take engine to operating temp but always best to fly. 1 hour would be ideal.
3. Put engine in storage condition if unable to fly at least every 30 days. There is some disagreement about this but it's always best to fly as often as possible.
4. When considering the restoration of a classic aircraft, be prepared for anything, especially surprises.
5. Do not turn a radial engine backward before starting. Oil tends to accumulate in the lowest cylinder and can result in a hydraulic lock and serious engine damage.
6. The top fuel problem in certified aircraft is poor fuel venting and fuel mismanagement.
7. The top fuel problem in experimental aircraft is clogged fuel filters and not using aircraft grade fuel lines, hardware and fittings.
8. Most preflight inspections fail to inspect aircraft tires and propeller blade face.
9. When shopping for an airplane, don't fall in love with one for sale until you call your mechanic for a pre-purchase inspection.
- 10..The most important step in starting a home built aircraft project is to set up and maintain a builder's log.

### "There I was.....Lessons learned"

Billy Bie shared an experience with erratic ammeter readings in his RV7A that had been going on for several months. During run-up and climb out, the ammeter showed stable normal reading. At other times, the meter would read all over the scale. During his recent condition inspection, he cleaned the connections and coated with dielectric grease. Meter readings were completely normal and stable afterwards. This was a relatively simple cure to a potentially complex problem.

Thanks Billy for another terrific VMC session!



## THE PREZ SEZ

Ready to resume... Cautiously!

Hi everyone,



I myself am not a fan of winter weather, so as I look out the patio window today, I am thrilled to see that all but a few small mounds of snow have melted, a spring breeze is wisping by, and a few birds are out at the feeder. I know the calendar says it's still February, but my mind is on the warmth of spring, being outside again, and getting to see all of you.

At current there are many exciting Aviation events on the calendar for 2021!

The annual SUN 'n FUN event is scheduled to go on in Lakeland, Florida, April 13<sup>th</sup> – 18<sup>th</sup>, and EAA AirVenture is on for July 26<sup>th</sup> – August 1<sup>st</sup>. It is great to see these events on the calendar this year! SUN 'n FUN has posted their COVID policy on their website as well as the EAA for AirVenture (COVID Policy). Be sure to brief yourself on these before attendance.

I have been unsuccessful so far in getting information back from EAA Chapter 48 as to whether Funday Sunday is on for this year during the first weekend in May, but I will continue to try and get more information.

For our Chapter, with the weather starting to warm up, we plan to have our monthly gatherings back in person in our hangar starting with the March gathering on Sunday March 7<sup>th</sup> at 2:00PM. Similar to back in November, we ask that all attending wear a face covering, weather permitting we'll open the doors enough to keep a good cross-breeze, and food will be served vs. buffet style. Speaking of food.... VP Joey is planning on serving up his famous meatballs for lunch, and I've heard that Sharon will be bringing dessert. Definitely something not to miss!!!

For those that may have missed it, here are our remaining planned Chapter Gatherings and events for 2021:

March 7 <sup>th</sup>	August 8 <sup>th</sup>
April 11 <sup>th</sup>	September 12 <sup>th</sup>
<b>May 2<sup>nd</sup></b>	October 3 <sup>rd</sup>
June 6 <sup>th</sup>	November 7 <sup>th</sup>
July 11 <sup>th</sup>	December Holiday Party - TBA

# **THE PREZ SEZ...CONTINUED**

*During the May 2<sup>nd</sup> Gathering we are planning to also have the 2020 Holiday Party that had to be cancelled. Additional planned events this year include restarting our Young Eagle events in April, scheduling multiple outdoor movie nights on the side of the hangar this summer, and getting our Young Eagles RC Build and Fly program off the ground. Lots of opportunities to get together again!*

*Lastly, it is that time of year... If you haven't yet paid your 2021 dues (\$20.00), please come prepared to the March gathering with cash or check and get things settled up with Roger McClure. Our dues are an important part of our vitality as a chapter and ensuring that we can fulfill our mission to grow participation in aviation.*

*Safe landings and I look forward to seeing everyone in person... Safely!*



*Tom Martin EAA #1061241*

*President, Chapter 974*

*E: [President@EAA974.org](mailto:President@EAA974.org)*

## **CHAPTER CONTACTS**

### **CHAPTER CONTACTS—HOW TO CONTACT EAA CHAPTER 974**

[officers@eaa974.org](mailto:officers@eaa974.org) — will reach president, vice president, treasurer, secretary as a group

[president@eaa974.org](mailto:president@eaa974.org) — will reach chapter president (Tom Martin)

[newsletters@eaa974.org](mailto:newsletters@eaa974.org) — will reach newsletter editor (Bob Dombek)

[youngeagles@eaa974.org](mailto:youngeagles@eaa974.org) — will reach Young Eagles Coordinator (Bob Burkhardt)

[techcounselor@eaa974.org](mailto:techcounselor@eaa974.org) — will reach technical counselor (Ray Parker)

[general@lists.eaa974.org](mailto:general@lists.eaa974.org) — group e-mail to all chapter members

[list.admin@eaa974.org](mailto:list.admin@eaa974.org) — to be added or removed from the group email list

# **CHAPTER BOARD BUSINESS MEETING**

03 February 2021 Board Meeting Minutes

6:10 p.m. - Meeting called to order by Tom Martin

Attendees: Thomas Martin, Roger McClure, Joey Schreve, Brandi Brewer, Scott Balmos, Scott Hersha

Secretaries Report -

No report this month

Treasurer's Report -

Income \$120 from Rent

Expenses \$540 - Supplies

Balance \$4,458.33

Young Eagles -

YE Rally tentatively scheduled for April 10, 2021, per Scott Balmos.

Old Business -

Donated Kits to be sold will be posted Barnstormers by Tom Martin. Tom Has volunteered Scott Hersha to be the main contact for the listing, as he is most knowledgeable about donation.

Insulation in Hanger needs to be rehung by the back door - Request to complete.

Chapter By-Laws being revised. Will be sent via email for review/comment and then voted upon.

Scott Hersha recommended we consider offering to other Chapters Prop Balancing for \$100 - Consider a spring workshop out to other chapters as fundraiser. Team agreed it is worth pursuing. Will need to investigate parameters around EAA Insurance as an event.

Build & Fly aspect for approximately 4 children in Bob Dombeck's heated hangar (for Milo and friends), to allow Young Eagles, etc. to get involved in RC building has been postponed until warmer weather arrives.

New Business -

Tom Martin to order new entry pad for roll-up garage door, as the current pad is intermittently working.

2021 Chapter dues should be paid by members by mailing to chapter or bringing to in-person Chapter Meeting on March 7, 2021.

Inventory and value assessment need to be completed this Spring for all Chapter inventory.

Joey Schreve will be preparing meatballs for the March gathering, and Sharon has kindly offered to provide dessert. Many thanks to both of you!!

7:02 p.m. - Meeting adjourned by Tom Martin

Respectfully Submitted : Brandi Brewer, Chapter 974 Secretary



## ***IN THE NEST.....JOEY SHREVE'S DOUBLE EAGLE***

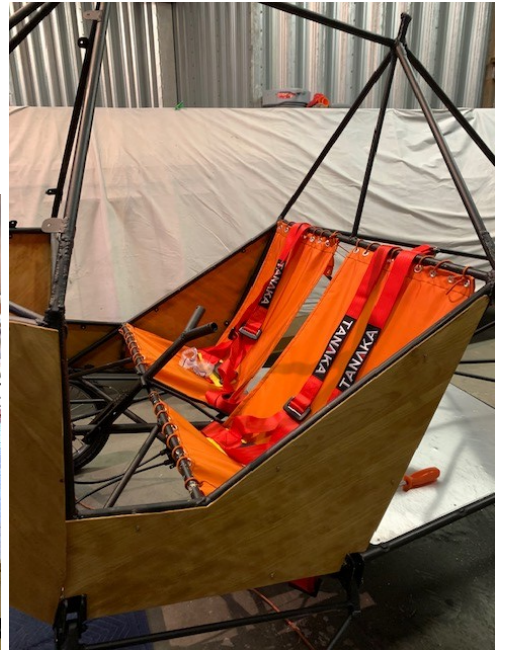
*I've devoted the next two pages to VP Joey Shreve's Double Eagle light sport. I missed the chance to show Joey's project last fall when he acquired it. This is my chance to make up for it. Joey wanted to have a chance to build his own aircraft. His Double Eagle was started by another builder, but there was plenty left to finish, enough to keep Joey busy and happy. Joey has worked hard all winter to take it to where it is. See next page.*

*The Double Eagle's is the descendant of the single place Legal Eagle ultralight. It's powered by a full 4 cylinder VW. The fuselage and tail components are welded steel tube while the wings are all wood. Joey said some of the welds were not the greatest. Enter Joey's son, a welder. How great is that. See next page. Over the winter, Joey painted the fuselage, built new seats, side panels, firewall and did work on the engine. Nice aluminum fuel tanks and two propellers were included with the purchase. As a former ultralight flier, I know the pleasure of this kind of flying. Joey, you will love it!*





# JOEY SHREVE'S DOUBLE EAGLE, CONTINUED





## **SCOTT BALMOS' RV9A HOME FROM THE PAINT SHOP**

Here is Scott Balmos' RV9A freshly home after 4 1/2 months in the paint shop in Alabama. Scott said he drove down on Friday 2/19, non-stop in about 8 1/2 hrs and flew her back the next day in about 2 1/2. Some of the shots were taken by the shop in sunset lighting and really show the colors. All can say is striking! I'll let Scott tell you the rest.....

"The original paint scheme and colors were all designed back in spring 2013, when I was 1 year into my build. Jonathan McCormick had just started Plane Schemer and was running early-customer specials at the time. So I was one of his first. Good builder motivation. We then made small updates to the design when I dropped the plane off in October. But it is largely the same design from 2013, before Jonathan became famous. Nowadays, he and his Evoke Aviation paint shop are well-known in the RV world and elsewhere, winning multiple Lindys at Oshkosh for years now. 3 of his planes from last year are in the 2021 Vans Aircraft calendar. He'll be submitting mine for consideration to be in the 2022 calendar."



## Keeping It Experimental February 2021 Home Built Engine Monitoring System

Today's market for experimental avionics is filled with amazing products and technologies that seem limited only by our willingness to spend money.



Original Engine Gauges

The gauges in my 1995 Merlin GT that monitor its water cooled Subaru EA-81 engine operating parameters are automotive style analog gauges that ultimately take up the full right side of the panel. Most don't have simple indicators to tell good from bad, and from the pilot side of the cockpit they aren't very easy to read.

As I flew along one day, I decided it was time for an upgrade!

Initially I started doing research on-line to see what was [available](#), and yes there are some amazing products! But at an entry point of ~\$4,000, I decided... You know, this is supposed to be an experimental, so let's keep it that way!

I did find [Experimental Avionics](#) run by a gentleman named Oleg which has a great system, and an iPad EFIS called [WingMan](#) from Hungary, but decided these weren't exactly what I was looking for, so I decided to build it myself.

I'm not a professional software coder, and I don't have significant electronics experience. So with this set of articles, I'm going to take you along on my journey to see what it takes to create a home made Engine Monitoring System (EMS). I have made a lot of progress... but it is not done. So if you are interested, I invite you to pour a cup of coffee and come along on the journey. I also hope this might inspire you to consider making some of your own gauges using some really fun technology!

### Scoping the Project Requirements

How do you eat an elephant? One bite at a time. Using this philosophy, I decided to begin with the end in mind, determine all of the things I wanted the system to do when it was done, select the right sensors and computing technology and then build each section for final construction. Let's start with the gauges I want to replace. (I'm sure there will be others I'll add on later!)

Gauge	Measurement	Sensor
Engine RPM	Rotations Per Minute	Pulse Counter
Oil Temperature	Degrees Fahrenheit	Thermistor Sensor
Oil Pressure	Pounds per Square Inch (PSI)	Pressure Transducer
Water Temperature	Degrees Fahrenheit	Thermistor Sensor
Water Pressure (New!)	Pounds per Square Inch (PSI)	Pressure Transducer
Battery Voltage	Volts	Voltage Divider
Charging Current	Amperage (+/-)	Current Shunt
Exhaust Gas Temperature	Degrees Fahrenheit	K-Type Thermocouple



## Keeping It Experimental February 2021 Home Built Engine Monitoring System

The required sensors I learned through my research. So now that we know which sensors, how are we going to ingest the sensor signals, compute the correct value, and then display them in the cockpit?

When it comes to small hobby based sensor based IOT projects there are really two leading products in the market. The [Arduino](#) and the [Raspberry Pi](#). Both are fairly inexpensive (\$20 - \$80), and both have pros and cons.



Arduino UNO

The major difference to know is that an Arduino is a microcontroller. It is very good at connecting to, and controlling devices, but has a single core processor and is limited to running the same program in a loop over and over.

The Raspberry Pi can be thought of as a mini-computer. It has an operating system, can run more complex programs, and has more computing power than the Arduino.



Raspberry Pi

Let's remember though that we did get to the moon using the [Apollo Guidance Computer](#) that had 1,300 times less computing power than your smartphone!

Since we really just need a single program to keep looping through the current values of the gauges and display them I chose the [Arduino Mega 2560](#) for the project. One of the other key advantages of the Arduino is that it tolerates being shut on and off very well without any special sequencing. Cutting power to the Raspberry Pi without properly powering it down can damage the unit.

The Arduino is really well supported with a large on-line community out there that have published tutorials, and [forums](#) to help get questions answered. As a note, for more complex projects you can connect an Arduino and a Raspberry Pi together, but that's a story for another day.

In my next edition, we'll be building a prototype of the first component of our project, a thermistor temperature sensor for the oil and water temperature monitor and displaying it on a simple two line LCD screen. This building block could be used on its own, if this is the only sensor you want to replace with a digital unit.

Want to get started tinkering on your own using the Arduino? Here is a [kit from ELEGOO](#) that I would recommend from Amazon. It has more than enough hardware and good tutorials to make lots of cool things!

Until next time... Keep it Experimental!



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