CARB HEAT

Newsletter of the Experimental Aircraft Association Chapter 245
Ottawa, Ontario, Canada
Volume 51 No. 3 December 2021

Our Next Meeting

SPEAKER TOPIC: Tentatively – “Makerplane”
PRESENTER: John Nichols (To be confirmed)
WHEN: January 20th, 2022 General Meeting
WHERE: Zoom
Check your email in-box for a meeting invitation to be sent by our Chapter President.
(it’s not hard at all to join a Zoom meeting – try it, if you’re having trouble, contact one of the execs who will help you out)

Important Chapter News

Unfortunately, COVID-19 is still with us in the form of new variants (Delta, Lambda) and these remain cause for concern. Our Chapter hangar remains open however, gatherings remain under the restrictions imposed by provincial and local health regulations. Two metre spacings are required indoors and outdoors if unmasked and, ideally wear a mask indoors in any case.

Please stay tuned for updated guidance from our President and Operations Manager as the situation evolves.

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EXECUTIVE ROUNDUP

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Peter Whittaker – EAA Chapter 245 Newsletter Editor

Hello EAA 245,

Here we are already, the end of 2021 and the final issue of Carb Heat for the year. Thanks to all contributors and to the executive team that has kept us up to date via the Executive Roundup. The aim for 2022 will be to issue Carb Heat on a quarterly basis. Feel free at anytime during a quarter to submit an article, a favourite flying related photo (and a caption or some level of description), a paragraph or two on something you have done, have made for an airplane or somewhere that you have flown to that made an impression on you or others.

Best Wishes to all members for a New Year filled with great flying opportunities and of course, articles for Carb Heat!

Keep on Building and Flying,
Peter W

President’s Message

Mark Richardson – EAA Chapter 245 President

Hey Everyone,

Season’s greetings from Cedar Hill International Airport, and Dog Sitting!

As I write this message it is late November, the leaves are gone, the temperatures have dropped, and the sun has gone into hibernation for the winter. However, the holiday season is approaching, and we are all anticipating the opportunity to kick back and not think about our day jobs (for those of us poor slobs that still work) for a few days and enjoy the company of friends and family. The holiday season, at least for me, is often a time of reflection on not only the past year, but the past in general. I remember the excitement of Christmas morning as a kid, getting up stupidly early, rushing downstairs to see the lit up Christmas tree (in black and white, actually, since I'm that old) and what Santa had brought. Keen observers that they were, my parents always had at least something airplane related under the tree.

It is a little different these days. First, I don't go "rushing" anywhere; I'm afraid I might break a hip or something. Second, with the invention of colour in the 1960's, things are a lot prettier now. But the biggest difference is that I'm now more interested in what is happening around the tree as opposed to what is under the tree. The important part of Christmas is not receiving gifts of things, but receiving gifts of relationships, people, laughs, and friendship. We have those things all year round, but sometimes it takes a special occasion for us to stop and think about it.

So, please accept my wish for you and yours to have a very happy, healthy, and relaxing holiday season with lots of laughs, too much food, and (many of you will understand this) plenty of naps. Naps are awesome!!!

Mark

Vice-President

Mark Briggs – EAA Chapter 245 Vice-President

Hi All,

On so many fronts 2021 has been quite a year. No matter which onslaught we faced, the wonderful spirit of EAA Chapter 245 shone through. We got together when we could and shared stories and laughter. We stayed home when we had to. Through it all, we continued to find ways to keep our aviation passion alive. I take my hat off to our members for continuing to be positive in spirit and generous in action.

Our elections this fall turned up a surprise or two. Perhaps my surprise was greater than that of others; some day I'm going to figure out and fix the cause of my hand going up when volunteers are being called for! Having faced some stiff challenges in my family life in 2020 and 2021 I stepped away from the two positions I held on the EAA 245 Executive. We have received a pretty terrific "staff upgrade" through the efforts of Andrew Henry in taking on the role of Young Eagles Coordinator and Peter Whittaker who has heroically taken over the reins of *Carb Heat* – my thanks and appreciation go out to these folks for stepping up and bailing me (and the chapter) out. As election time approached I realized that my personal life was starting to stabilize and that I might indeed be able to provide more support to our Chapter. Besides, I found myself feeling that I was missing the excellent camaraderie and "can do" spirit of the Executive. Silly me... On election night I stuck my hand up and, well, here we are. It looks like you're stuck with me for another couple of years!

On a more direct aviation topic, the season for pre-heating our aircraft is in full swing. I had previously been pre-heating our aircraft using a cellular/WIFI router and a WIFI smart plug. This worked well until the smart plug started calling home to its manufacturer, gobbling up data and tripling the monthly cost of my "inexpensive" cellular data plan. I mention this as a heads-up to those who might be using similar technology. If you have purchased a bottom-of-the-line cellular data plan, keep an eye on your data consumption lest you find a nasty surprise in the form of an unexpected data overage charges.

The snow removal season is likewise here. As in years past, I would ask that we please refrain from driving up the Row Hangar asphalt ramp, especially before snow removal operations have been completed. Car tires on fresh snow pack the snow into cursed ice ridges on the asphalt. The intent of the asphalt is to provide a means for row hangar aircraft to get to the taxi way. It's sure not fun to be

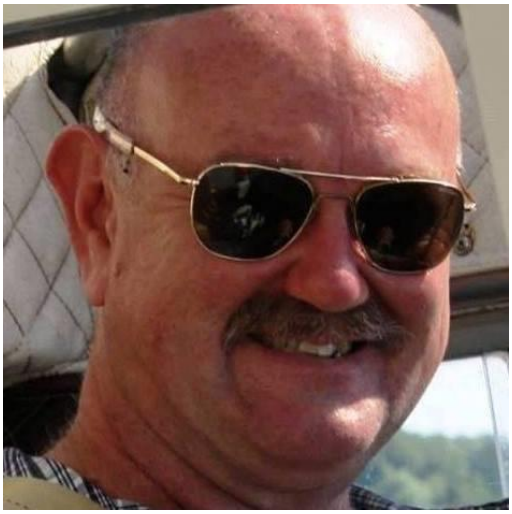
unable to taxi on the asphalt because it is a rutted, icy mess thanks to an unthinking person who took the short cut in their car to the chapter parking lot. Please don't be that unthinking person.

As 2021 winds down and the prospects of a new year lie before us I wish the members of EAA Chapter 245 a wonderful Christmas season and a healthy, aviation-filled 2022. May all your dreams take flight!

Blue skies and tailwinds...
Mark

Treasurer and Marketing Manager

Ken Potter – EAA Chapter 245 Treasurer & Marketing Manager



Hello Everyone,

See Ken's article on upgrading his Grumman Cheetah to a modern instrument panel, a great read, and an impressive outcome! (Ed.)

Cheers,
Ken

Secretary

Mark Cianfaglione – EAA Chapter 245 Secretary

Hello Everyone,

"Lather-Rinse-Repeat" These instructions on any shampoo bottle can be used for the current wave of COVID. The ominous sounding Omicron however the same measures we've already used for the last few waves will work again. Distancing, avoiding crowded spaces, mask wearing, and washing our hands often. Doing things safely is the hallmark of flying (At least for me) and the way to deal with this latest wave is another example.

With the winter weather firmly here (Well at least for this week) Please be careful around the hangar and make sure the doors are properly shut.
As your parent's probably said "We're not heating the outdoors. Close the door". Our heating is from electricity and as you probably know the rates went up again. As well we want to prevent the plumbing from freezing so when you have finished using the washroom please close both doors firmly to keep the heat in.

Please be safe everyone. I want all of us to come through in the end and have a great time of hangar talk.

Mark C.

Operations

John Montgomery – EAA Chapter 245 Operations

Hi All,

I hope all our chapter members were able to spend quality time with friends and family over the holiday. The current Omicron wave has certainly thrown a wrench in the works for everybody, especially during the holiday season. But we Canadians are a resilient bunch - we find a way to make it work. In the meantime, please respect the safety of other chapter members and wear a mask while inside the chapter hangar.

Winter is most definitely here. The heat has been turned on in the hangar workshop and the washroom areas. It is critical that we all double check that the doors to these areas are left fully closed and latched to retain the heat. Note that the washroom door closer does not have enough tension to fully close the door. Please ensure this door is fully closed every time you leave the washroom. Does anyone have a line on a source for some hay/straw bales? In the past we have used bales to block the wind and insulate around the base of the washroom extension. If you know where we can get some bales, please contact the chapter.

I suspect that we have issues with the GFI plug outside the rear wall of the washroom when plugging in the septic line heater and in past years the breaker has been found tripped a few times. Unfortunately, the washroom heater is on this circuit, and we had to replace a frozen/burst toilet bowl. To avoid a recurrence of this please do not plug anything into the outside GFI outlet during the winter.

Please remember that a chapter member (Adam) currently has his Zenith aircraft in the hangar. Do not block the hangar door and then go flying without first checking if the aircraft will need to be moved in or out. If possible, use the parking lot. Failing that, please park near the gate and walk across Bravo.

Likewise, do not park on the taxiway in front of the row hangar bays. This taxiway is actually not chapter property. It was installed and paid for by the hangar bay owners themselves to use for *aircraft* access.

Mark Briggs tries to help the chapter out with his tractor and snowblower to ensure that we have fire access to the chapter hangar. Because we need a place to blow the snow we may need to sometimes move aircraft to different tie down spots. Let's all try to make it easier for Mark.

We recently replaced the carburetor on the chapter snowblower, and it no longer drips fuel. The blower has been tested and is available for use by chapter members to clear around their own aircraft. Note that for safety we store snowblower fuel in the shed. Please try to avoid storing any aircraft fuel jugs in the chapter hangar as well.

Someone did an oil change and left their used oil in the hangar in a water jug. Please always remove and properly dispose of your garbage and oil after working on your aircraft. The chapter does not have garbage service - it is up to each member to help take all garbage (and recycling) away.

If you see something you think we can do to maintain or improve the hangar or tool crib, let me know. Let's all attempt to leave the chapter in a better state than we found it.

Hope to see you all around the hangar,

John M.

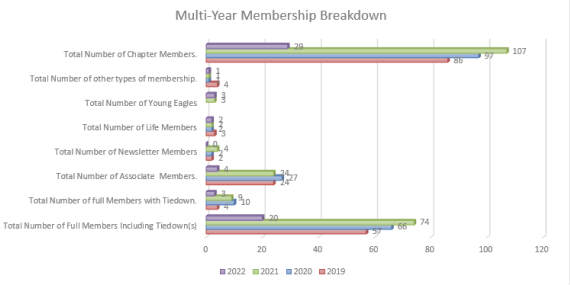
Membership and Webmaster

Phillip Johnson – EAA Chapter 245 Membership Coordinator & Webmaster

Hello Everyone,

It's been a tough year from the personal standpoint, with the desire to remain safe yet be active within the chapter community. I have a lot of years stacked up behind me, but hopefully, next year I will prove to be a little more sociable. With little physical contact we have managed to be verry successful in bringing in new members and we also have a good number of members with their membership already paid up for 2022. If you joined the chapter late in the year your membership is good for the whole of 2022 and you won't be on my naughty list in the new year. Just a reminder, associate membership is $50 and full membership is $100 for the calendar year.

As usual the graphics below show the membership at the end of the last four years with the following breakdown:



Remember, you are required to me a member of our parent organisation, to be eligible for chapter membership. Our insurance is impacted if our members allow parent membership to lapse.

Of the flying front, I've managed to get some good flying in this year but was in a hiatus when I did my lengthy Annual Inspection, and unfortunately this caused me to miss my goal of flying to the Casey fly-in in Quebec. For those of you who do not know about Casey, it's a disused cold war airport similar to the one at Killaloe. In the past, pilots used to fly into the airport on an agreed September date and just have fun and camp with absolutely no amenities. 2022 was different in that a group has leased the airport and cleaned it up somewhat so that they can make the event more exciting, with entertainment, food,

and even camping accommodations. The event is now called Aero Venture, similar, but different to AirVenture in Oshkosh. The guys making all of this work are pressing to have the airport identified as a private airport and will be in the CFS. Hopefully, next year, I will arrange a chapter fly-out to this September event.

BTW, did you all know the Killaloe VOR has gone? I was flying around in the Pembroke area, a few days ago, so I thought I would see how well my VOR was working. I have a modern Garmin SL-30 that I almost never use for navigation other than to test it. Well, when I was over the VOR all I got was noise. I thought I had a problem with either the SL-30, or the antenna, so I was about to check it out when I looked on SkyVector: Flight Planning / Aeronautical Charts and there was nothing showing a VOR. Likewise, the same was true for FltPlan.com . Huh; I did not know that as I only use GPS for my local flying.

Anyway, that is all from me on the membership front so now onto the Webmaster's role:

Webmaster Report (Chapter 245 (eaa.org))

I don't know how many of you are reading the Chapter website, but it does change regularly and if any of you have an aircraft that is not on display at Members Aircraft and Status (eaa.org), then please cany you send me a high resolution picture and a couple of sentences to be included. If you've sold your aircraft and I am still showing the picture, please let me know as I only want pictures of aircraft that are currently in the possession of a member. (Projects should also be included and encouraged as it lets other people know what we are doing at Chapter 245).

I do have a page Members Videos (eaa.org) that links to member's YouTube Video's so If you would like to have your video's included, please let me know and give me the link to your video and I will get it included. The more the merrier.

Remember, this is your website so if anyone has additional requests on what is needed from a chapter website, please contact me at Membership@eaa245.org .

Phillip Johnson

Young Eagles

Andrew Henry – EAA Chapter 245 Young Eagles Coordinator

Hello Membership,

Did you know that the Young Eagles program began in 1992? Since then, 2,242,512* kids between 8-17 years of age have experienced a free introductory flight with members of the EAA. As noted in our previous newsletter, we have dates marked for events coming up in 2022.

<u>Proposed Young Eagles Dates for 2022.</u>

-Saturday, May 28
-Rain date Sunday, May 29

-Saturday, Sept 10
-Rain date, Sunday, Sept 11

This is for the group events, but as also noted it is possible to accommodate individual flights as well. Paul Groulx has done just that recently with two young women in his Fleet Canuck. The picture above proves the value!

We are still looking forward to having several more members step forward to help with making our event days successful. Please consider what support you may provide, whether it is as pilot, ground crew, or whatever. Message me (Andrew) at young.eagles@eaa245.org. Thank you!

**Numbers as of December 30, 2021*

Thanks,
Andrew Henry
Young Eagles Co-Ordinator
EAA 24

MEMBER ARTICLES

A New Panel for Grumman Cheetah C-GQIG

Ken Potter

In the winter of 2017, I began to look around for a hangar for my Nieuport 17 replica which I'd had at home repairing after a forced landing. As we know, hangars for sale at Carp are "as rare as hen's teeth" and those that do sell are often not advertised. Such was the case with chapter member Rod Neufeld's row hangar at EAA 245. I approached Rod's family about buying the hangar and they replied that I'd have to buy Grumman Cheeta C-GQIG along with the hangar. Hmm, I looked at the re-sale values for Cheetahs and was encouraged, thinking I could sell the aircraft pretty easily.

Enter Mark Briggs who had been maintaining the plane for Rod and flying with him in in recent years. Shortly before the deal was to close Mark said, "let's go for a flight". I wasn't 5 minutes into that first flight when I made up my mind that I was not selling the Cheetah. It was a gem to fly and had the

performance to allow my bride and I to actually go places farther away than the usual $100 hamburger day trip. So, postponing any exotic vacation for Judy and I for the next 2 or 3 few years, I dipped into our savings and bought the hangar and Cheetah.

Throughout 2017 and 2018 we enjoyed the plane and put about 130 hours on it with few problems. Of course, this plane had been maintained by Mark Briggs, so it was mechanically sound, however, the panel was legacy 1977 including the avionics (it still had an ADF for cripes sakes). Of course, Mark was always there in the background with advice about the plane and soon talk turned to the unreliability of aircraft vacuum systems and options out there to replace them. Of course, the Garmin G 5 was the new kid on the block at that time, and I resolved to go ahead and purchase and install a set. The discussion continued and soon came around to how I was going to supply the G 5s with navigational data. The aircraft had no GPS and, after some searching, I soon found a new to me Garmin GNS 530 WT in California. The seller was very gracious and even had Garmin update the software and maps for me at no charge. But the price on what was supposed to be a simple panel improvement had now doubled.

You see a theme here, don't you?

There was no looking back as Mark B continued to whisper suggestions for further improvements ($$$$$) into my ear……

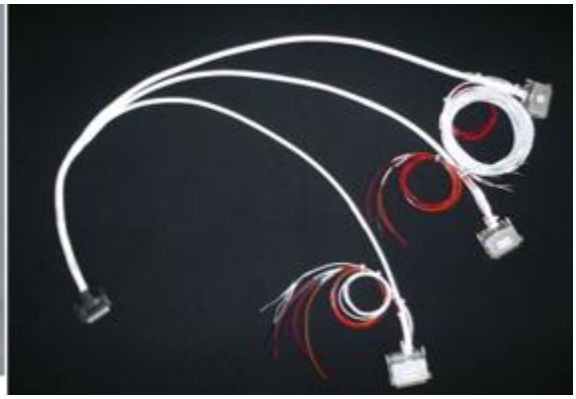
Through the winter of 2018 – 2019 I took to removing the instruments from the panel and removing wiring. What a mess some of it was. When a plane is 43 years old there have been inevitable modifications and I probably took out a couple of pounds of “ghost” wiring. But what surprised me most was that the quality of some of the Grumman factory’s electrical work back in 1977 would not have passed an amateur built aircraft inspection in 2021!!

By now the project was expanding into a full panel replacement. Around the time of Sun and Fun 2018 Mark told me about a great deal on a JPI EDM 830 engine monitor on sale. Sure enough, a dealer in Las Vegas of all places had a Sun and Fun sale going; US $ 2000 for the entire system. I purchased it and had it brought back to Canada for me by a “snowbird” coming back north. Note to file, it was some of the best money Mark spent for me on this project and the monitor would prove invaluable when flight testing began.

Soon the remaining panel details started coming together with the purchase of a PS Engineering 8000 audio panel, a Garmin SL 30 Nav/Com and a Garmin GTX 327 transponder. While not cutting-edge technology it was looking to be a vast improvement on the old Cheetah panel

Earlier in that winter I had set out to build a new wiring harness, teaching myself along the way. I didn’t get very far in when I realized that this was the one part of the project that had a learning curve I couldn’t keep up with. I began to look around for a company to build a harness for me. One company I inquired with wanted US $ 4,000 just to draw the harness out for me and, just as I was sinking into the depths of depression, I stumbled upon a company by the name of Approach Fast Stack. If you’ve not heard of them, they build complete systems harnesses based on a hub system. All instrument wiring goes to a central hub where the inter-instrument connections are done.

Sweet I thought! A quick call to them and they quoted me on the entire harness including hub for $ 2100 US. By the way, I can’t say enough about this company. Their support was incredible and even after 1½ years when I finally installed the encoder and discovered they had supplied the wrong cable, they graciously sent me a new one at no cost. In the end, all wiring behind the panel was replaced with the exception of the main power wire to the main bus which was in good shape.



When I started the project, I was semi-retired and thought it would take 6 months max. Well, the best laid plans as the saying goes. In June of 2019 I was offered a chance of a lifetime to go back to the Transportation Safety Board and received this notice.

"Her Excellency the Governor General in Council, on the recommendation of the President of the Queen's Privy Council for Canada, pursuant to section 4 of the Canadian Transportation Accident Investigation and Safety Board Act, appoints Kenneth Potter of Lanark, Ontario, to be a part-time member of the Canadian Transportation Accident Investigation and Safety Board, to hold office during good behaviour for a term of eighteen months, effective June 18, 2019."

(Yes, I hear you snickering about the "good behaviour" clause) This of course was supposed to be a part time position, but I spent the next 6 months working full time and as a consequence the Cheetah panel project slowed down to a crawl.

But work did continue. After 10 - 14 months of working hunched over in the cockpit I began to question if there was a better way if the windshield was removed. Sure enough, inquiring with some online Grumman forums I learned that the windshield came out easily with the removal of 11 bolts. So, one warm late winter day in 2020 Mike Lamb and I took to removing the windshield which turned out to be an "easy-peasy" 20-minute job. From then on, I could stand beside the plane and work behind the panel. My productivity soared and my Robaxacet purchases plummeted.

One setback vexed me for a couple of months during the winter of 2019 – 2020. The JPI oil temperature probe was supposed to be installed on the upper front of the engine after removing a plug from one of the oil galleries. Well, back in 1977 when the engine was built, Lycoming had never thought that this plug would have to be removed and installed it with some type of glue that made the plug impervious to turning. Firstly, I managed to strip the hex in the plug. Awe thought Ken," I've seen this before", I'll just drill it out and use an easy-out. Folks, that plug was made of some sort of super material as it took a diamond tip drill bit to drill a hole. Here we go then, insert easy out and start turning until…. SNAP!!! The easy out broke in the hole…. crap. Luckily no one else was around the hangar that afternoon as I turned the air blue with expletives. Folks around the Chapter were great though and came up with some ingenious solution for removing the broken easy out (although I think they were secretly snickering at my plight). None worked so I put on my thinking hat and concluded that I couldn't have been the first idiot to make such a stupid move. Turns out I was right; a quick search revealed that the Brown Aviation Tool company in the US made an "easy-out removal tool" which is essentially a diamond studded glorified dentist's drill. It worked like a charm, and I soon had the easy-out and plug removed, and the sensor installed.

In late Feb 2020 I ordered a new panel overlay from a supplier in the US to be shipped to the UPS store in Ogdensburg. Judy and I then went on a 10-day Caribbean cruise. When we arrived home covid was just starting to spread and shutdowns loomed. I immediately booted it for Ogdensburg to pick up the panel and headed back across the boarder to Canada. I "dodged a bullet" that time as when I got home, I learned that the border had closed just after I crossed it. With the panel overlay installed I could start to see light at the end of the tunnel and begin installing instruments.

At Mark's suggestion I proceeded to change out all the legacy fuses with Klixon circuit breakers. As well, it was suggested that I change out the 40-year-old switches for new ones. Sigh, another order off to Fletchair in Texas but, at less than $5.00 per switch, a good investment.

We were heading into the home stretch now. In an effort to further reduce the aircraft weight I installed a light weight Skytech starter and a B&C 60-amp alternator. Around this time folks started pestering me with the question “when will you be finished”. My stock answer became “Thursday” …….

Fast forward through a myriad of details and this past summer things came together nicely. A new pitot static system used Steinair push to connect fittings and colour coded tubing (so easy to install and visually pleasing). I installed test ports for pitot and static under the glare shield making test connections simple. The system was tested and re-certified by AME Jonathan Blais who also calibrated the legacy airspeed indicator and altimeter, replaced the battery in and re-certified the Kanad ELT. (A shout out to Jonathan, good guy to work with and fair prices).

One of the final changes I made to QIG was to the nose bowl. To remove the nose bowl on a Grumman Cheetah to access the alternator one must remove the prop first. When I purchased the aircraft, it came with an STC to split the nose bowl, effectively making it removeable with the propellor still in place. In the peak of last summer’s heat, I worked in the air-conditioned comfort of my living room to do the modifications

Fast forward to this past October and the plane was together and ready for a weight and balance check, it's first since being manufactured in 1977. On a rainy and cool day, I rolled the Cheetah into the Chapter hangar and Mark Briggs joined me to weigh the old girl using the Chapter's newly calibrated and certified scales. All went well but we were surprised that, despite all of the weight we had removed, an almost equal amount had been added so the empty weight came out close to the original 1977 value.

Next came paperwork, paperwork and more paperwork getting ready for the final inspections and signoffs, which went smoothly. We had run up the engine back in August with the result that I had a couple of small oil leaks and a rough idle. Downloading the JPI data showed a fowled plug which was quickly sorted out. More engine tests, and a full static run-up followed and the JPI monitor download showed everything was good. The oil leaks went away on their own.

With the annual inspection signed off in November, we were ready to fly. Mike Lamb agreed to accompany me as safety pilot and to do an insurance required rust remover on yours truly. The plan for the first flight was to climb to circuit altitude and then climb out of the downwind to orbit the airfield at 2300’ for testing. After that Mike would put me through my paces to knock the rust off my flying skills followed by testing the new avionics in depth. At the beginning of December, the weather gods finally cooperated, and we briefed the flight. Takeoff was normal but turning crosswind we noticed that the # 3 Cyl EGT was climbing. Just as I turned downwind and pulled the power back to cruise, the JPI EGT alarm for # 3 went off so we cut the flight short, stayed in the circuit and landed.

Analysis of the JPI monitor data showed everything normal at runup but # 3 and to a lesser extent #4 EGT's high on climb out. First suspect was possible induction air leaks causing a lean fuel mixture. Removal of the induction tubes reveals deteriorated hoses and gaskets which have now been replaced. Hopefully this takes care of the problem before I move on to more expensive items such as mags (which are due for service in a couple of hundred hours anyways).

Evaluation flights will re-commence once I've done extensive ground full static run-up tests and it's safe to have two of us in the cockpit due to covid.

Overall, despite the time it took to replace the panel and instruments, the Cheetah has been brought into the 21st century with a "hybrid" panel at a reasonable cost. I've joked over the past two years about Mark B spending my money for me but, I could not have done this project without his encouragement, sage advice, and his polite demeanor when something I did was not up to expectations. Upon spotting a transgression of some sort he would just calmly say, "you know if I was doing that….."

For everyone else, thanks for your support and encouragement. Thursday has arrived.

Messing About with Fiberglass – Nose Plugs for a Jabiru 3300 Cowl

Peter Whittaker [EAA 1350577]

Having relocated the Zenair 601 HDS from Vancouver where “winter” flying was never an issue, it rapidly became apparent that some degree of winterization for the Jabiru 3300 was needed here in Ottawa. My last flight at the end of October was carried at an ambient air temperature of +6C° and on downwind and final, cylinder head temperatures (CHT’s) dropped rapidly into the mid 200F° range and the risk of shock cooling became apparent. During the engine warm up process, both oil and CHT’s also rose noticeably slower.

There are no blanking plates for reducing air flow through the cylinder air intakes nor is there one for the oil cooler air intake. The plan then was to fabricate fiberglass “nose plugs” for each air intake and then incrementally drill holes in them to allow for air flow at a volume that would permit both comfortable cruise and descent temperatures. This article is about fabricating the air intake plugs by someone with virtually no experience in fibreglass work, so here goes:

The first step was to review the numerous fiberglass homebuilding videos on the EAA members website, a very valuable resource. West Systems epoxy (Fig.1) is used in these videos and with the pump metering of resin and hardener, it is easy to see why. So far, all mixes from the metering pumps have cured properly and given good solid plugs.

Figure 1. West Systems epoxy was used and purchased from The Chandlery in Ottawa along with 8 oz. fiberglass cloth, the metering pumps and stir sticks.

Where to start - that seems to be a common question! Forms were needed so these started as cardboard cut outs using corrugated cardboard from an old box. The rough shape was traced out and then trimmed to fit just inside each intake with about 3mm of clearance all around to allow for the eventual buildup of fiberglass cloth. Trimming was done with surgical precision using tin snips, they cut cardboard really well! The cardboard outlines were transferred to 1” thick blue Styrofoam insulation board (Fig.2) and these were trimmed to shape with a utility knife. The duct tape tabs on each cardboard template allowed for extraction of the templates from within the intakes on the cowl.

Figure 2. Cardboard templates (left) and Styrofoam forms trimmed to shape (right).

The Styrofoam plugs were wrapped in kitchen plastic wrap which stretched around and conformed to the shapes, the epoxy resin did not affect the plastic wrap and it peeled away without sticking.

The plugs were formed in two stages. The first stage produced a plug with straight walls, and these were formed from two layers of 8 oz cloth. Enough time was allowed after the first epoxy application to allow it to become firm but, still flexible and tacky. The second layer of cloth was pressed onto the tacky surface and then the next coat of epoxy was painted on using inexpensive 2" paint brushes cut in half. The bisected paint brushes can just be seen in the upper part of the right photo in Figure 2.

Stage two involved fitting the plugs into the intakes then laying up fiberglass cloth, two layers again, over the cowl to create a rounded lip around each plug. In preparation for this, the cowl was protected with a double of layer plastic wrap (Fig.3). This produced a set of ragged looking fiberglass plugs.

Figure 3. The cowling was protected with plastic wrap and the initial straight walled plugs were inserted. Fiberglass cloth was wrapped around the inside of each plug and overlapped the intake opening to create a rounded lip (left). The ragged plugs were removed after the second layer of cloth and resin had set (right).

The remaining steps involved further trimming, trial fitting, filling some bubbled cavities between layers of cloth with Bondo, sanding and fitting again (Fig.4).

Figure 4. Roughly trimmed lips around each plug (left) and trial fit of the plugs into the cylinder head and oil cooler air intakes (right).

Each plug was painted and secured with two nut plates and associated washer head screws. The next step is test flying with an increasing number of ½" diameter holes to provide sufficient cooling air to keep temperatures in range for winter conditions (Fig.5).

For the Jabiru 3300 engine the continuous operating temperature range at cruise for the cylinder heads and oil are:

Cylinder Heads (°F)

212 (before engine run up) to 356 (maximum continuous)

Oil (°F)

122 (minimum before full takeoff power) to 212 (maximum continuous)

Figure 5. Air intake plugs installed and ready for first taxi tests with initial sets of air holes.

Peter Whittaker – Zenith 750 Cruzer Project Update

The Cruzer project has slowed down for Christmas and New Year's. In addition, most of the airframe work is completed with the exception of installing windows and seats which will be in the final stages in any case. The engine and instrument panel are the two major components to be decided upon.

The instrument panel has received a major boost from Mark Briggs, our VP. Mark had purchased the panel from the crashed 601 from which the Jabiru engine came. Mark has generously donated the panel and this will give the panel subproject a good start. Thanks go to Mark from all involved in the Cruzer project.

Defects that were noted in the camshaft were examined by magnetic particle inspection (Magnaflux) and neither surficial nor sub-surface cracks were detected. The conclusion was that the camshaft would be useable and that the surface defects were not new. If the exhaust system and oil cooler are to be re-used, both will have to be straightened and in the case of the exhaust system, a substantial amount of repair welding will be required. Any members with exhaust system building or repairing experience could make a great contribution to the project, even if it is an assessment of whether the exhaust is repairable.

Wing wiring has been completed with wires from the LED wingtip navigation, strobe and position lights extended into the cabin. Wires from the wing tank fuel level senders have also been brought into the cabin and all wires were connected to a terminal block affixed to the ceiling cross member just behind the seats (Figure 1 - Left). All wires leaving the terminal block were pulled through conduit to exit at the center console position beside the control column. Sufficient extra wire was included to allow for routing up to and behind the instrument panel (Figure 1 – Right).

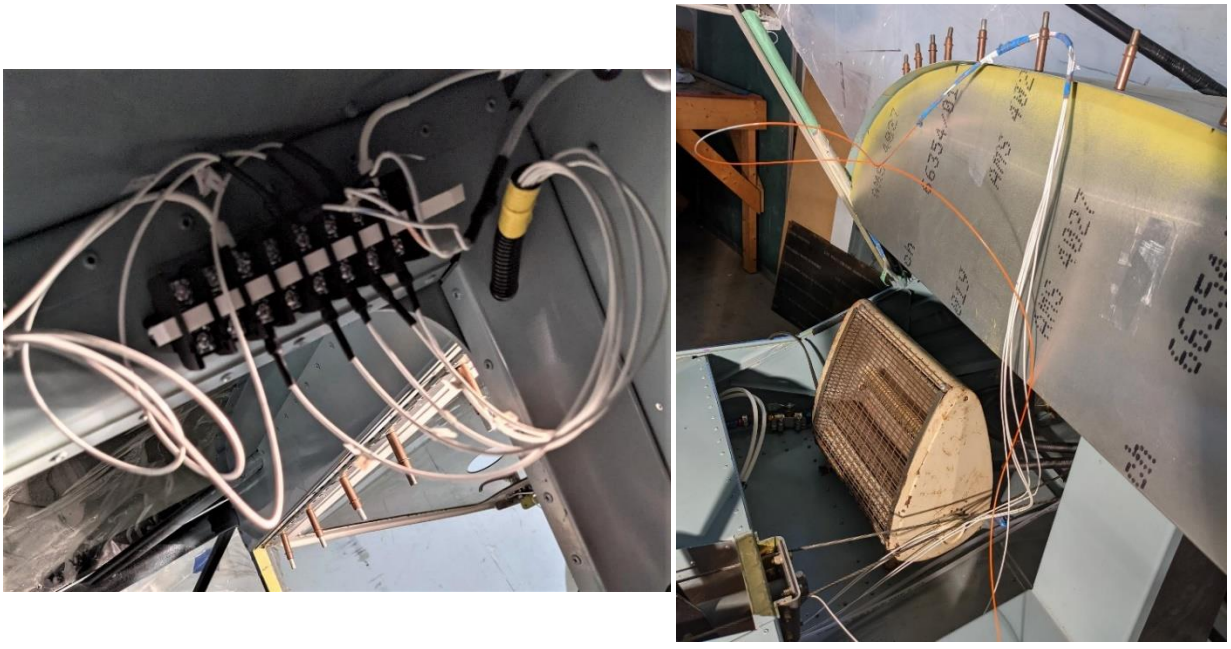


Figure 1. Wires from both sets of wingtip lights and from the fuel tank level sender connect at the top of the terminal block and common wires extend from the bottom side of the terminal block (Left). Common wires destined for the instrument panel were pulled through conduit and exit beside the control column and center console (Right).

The final bit of work in the cockpit this fall involved installation of the fuel shutoff valve and the gascolator (Fig.2). Fuel lines from the wing tanks join at a “T” fitting behind the pilot seat and a single line exits at the seat bulkhead just below the pilot side door sill. This dictated the positioning of the shutoff valve and the gascolator.

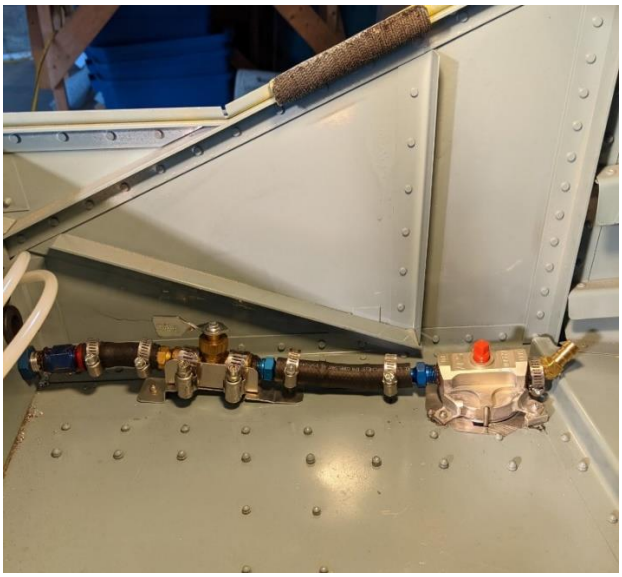


Figure 2. Fuel line at the pilot side and below the door sill with the shutoff valve and gascolator in place. A protective sheet metal cover will eventually be fabricated to cover this assembly.

The remaining activity for the Cruzer project was to clean up engine parts (Jabiru 3300A) and closely examine them to assess what was useable (Fig.3). A list of parts to be replaced because of wear and tear is being compiled and this will accompany a parts list designated by Jabiru Australia as mandatory replacement parts at the time of a bulk strip and full overhaul.

Figure 3. A warm workday at the Chapter 245 hangar in late October meant engine cleaning could be done outside (left), a shiny pair of crankcase halves after cleaning (right).

UPCOMING EVENTS

Hang in there – as our province and neighbouring provinces emerge from COVID lockdowns, this area of Carb Heat will once again be populated with places to go, events to attend and other good aviation happenings.

CLASSIFIEDS

Does anyone have anything aviation related to list? Drop me a line at newsletter@eaa245.org or pwhittaker@bell.net to let me know and I will add your treasure to the classifieds listing. For now, it is empty!

WHO WE ARE - Website: https://chapters.eaa.org/EAA245

Experimental Aircraft Association Chapter 245 Ottawa. We are a group of Amateur Aircraft Builders, Owners, and Enthusiasts with a hangar, lounge and workshop facility located at the Carp Airport (CYRP & 122.8), just west of Ottawa.

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Membership Application and Renewal Form

We have a "Google Group" for the EAA Chapter. If you are not familiar with Google Groups, it is a service from Google that provides discussion groups for people sharing common interests. If you would prefer NOT to be a member of the group, please tick the box in the membership application form when you renew your membership.

Application Date: _____

New: ☐ Renewal: ☐

Name: _____

Street: _____

City/Town: _____

Province: _____

Post Code: _____

Email Address _____

Home Phone: ( ) _____

Mobile Phone: ( ) _____

EAA Number: _____

EAA Expiry Date: _____

I do **NOT** wish to be part of the EAA Google Group ☐

Annual Dues: run from January 1st to December 31st.

Associate Member: **$50**

Full Member: **$100***

- Newsletter, hangar, workshop, tie-downs.

Note 1: Members must also be members of EAA's parent body.

Note 2: On-Line E-Transfers to Treasurer@eaa245.org are the preferred method of payment.