

The Flying Wire



**Chapter 124
Experimental Aircraft Association**

**Volume 58 Number 6
June 5, 2019**

Board Meeting - 5:30 pm

Dinner – 6:15 pm (\$7)

General Meeting – 7:00 pm

www.EAA124.org

www.CafeFoundation.org

www.EAA.org

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--- Mail ---
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June 5, 2019 Program

Art Hayssen, self-professed Travel Nut:

Visiting seven continents over 58 years of international traveling, Art will profile his 2019 Mid-February Winter Migration of the Mongolian Eagle Hunters Expedition. Images of this distant landscape and culture document a fascinating, but disappearing way of life. Asian eagles, camels, Mongolian horses, sheep, goats, yaks and nomadic herders moving from Winter Camp to Spring Camp over 5 days and 100 miles of walking in minus 20* temperatures over snow covered terrain at an average of 7,600 ft MSL are the players in this migration.

Dinner Menu

Sumptuous Spagetti, Super Salad, toasted Garlic Bread. Top it off with home-made Chocolate Cake, and vanilla Ice Cream.... Still only \$7.

Events Calendar

Please send info about upcoming events!

Please send us information if it comes your way!

**August 24 EAA Chapter 124 Open House
Nut Tree Fly-In:** [Fourth Saturday Each Month](#)

Bob Gutteridge: bob_gutteridge@pacbell.net
Stuart Deal: aaa124newsletter@sonic.net

Skybolt News December 2012

(by Andy Werback)

For awhile it seemed like we needed a monthly update on the progress of Skybolt N528S. Every month it was something new, something weird, some progress. The airplane spent 6 months in Phase 1 Flight Testing, and I'm just now getting the "space" to work on some of the more needed changes, such as reworking the nosebowl for more cooling air.

To recap, the airplane first flew on March 7, 2012, at Hollister airport, with Robin Reid at the controls. The airplane flew just fine (yay!) but within 20 minutes was showing signs of high oil temperature. This oil temperature issue persisted over the next several short flights. We looked at the baffle, opened up the exit area on the bottom of the cowl, tried it with and without a lower cowl air deflector (works better with it on), cut away some of the front cylinder baffling for more air flow, put a couple of washers in the oil pressure regulator, but still no go.

Fortunately, Robin Reid knows several people at Hollister, in particular Steve Lamb of Antique Aero Enterprises. Steve is a pilot, has Skybolt flying time, and is an A&P IA. (and Robin is also an A&P, so there's a lot of airplane and engine knowledge right here where we need it. So Steve took on the task of figuring out what was going on and implementing some solutions. That was good, as we no longer were living in San Jose, and it's a long commute from Santa Rosa. (I know, should have done Phase 1 in Santa Rosa, in hindsight).

So the basic issues that we faced were -

- a) Low and fluctuating oil pressure
- b) High oil temp
- c) Difficulties with the electronic engine monitor

d) Miscellaneous issues with radio, flying trim, shimmy in tail wheel

Let's start with the oil pressure issue.

A) Low and erratic oil pressure.

Steve and his associate Jeff Vanderswett (an excellent welder, by the way) spent about a week going over the oil system. The engine is an AEIO-360-EXP, with 10:1 pistons, angle valves, one electronic mag (Lightspeed Plasma III), an oil system "adapted" for inverted flight, and a Christen 801 inverted oil system.

They were looking for anything that could cause an oil pressure issue, such as a bad hose, leaking fitting, something I had done, whatever. They found a galled aluminum plug I had installed in the inverted oil valve and indications that the teflon/stainless oil hoses wasn't handling suction very well. Also, the oil quick drain might have been sucking a little air. But, after fixing the aluminum plug, putting in some new rubber hoses and removing the quick drain, there was no change at all in the oil pressure. Back to square 1.

Along the way, Steve also looked into why #2 cylinder was running a little rich at idle. Compression and plugs were OK, flight CHTs were good. Steve finally measured the fuel orifices in the fuel divider (spider) and found that #2 was just slightly bigger. Steve checked with the factory, and was told that it was within spec. So maybe someday, when everything else is under control, we might rotate the spider and use a different set of 4 ports (it has 6).

Back to oil pressure. A couple more short flights, and Steve notices that aircraft attitude has a lot to do with the fluctuating pressure, and some research into Lycoming service bulletins provides more info. A flight with 9 qts of oil shows that more oil makes a difference. In addition, a flight with the Christen system bypassed, and finally, a flight with the complete original oil system (factory sump) showed good oil pressure. Well, that's a clue.

So we decide that it's time to take off the oil pan and look for maybe a leak in the oil pan gasket or a hole in the sump pickup. Note that on this engine, the normal oil sump has been plugged and a new pickup installed so that the oil from the pan goes out to the inverted oil valve before going back into the fitting where the oil screen goes to the suction inlet of the oil pump. (Easier shown with a picture!). What we found was:



In the above picture, the normal oil pickup in the center of the sump (which works just fine) is disabled, and the oil comes from the aft pickup port. The problem is that there is a possibility that that port is generating a vortex and sucking air, as there is a Lot of oil being pumped through the engine.

Steve's solution was to create a suction tube with distributed holes to minimize the chance for generating a vortex. This is a lot like the normal way of installing the Christen inverted system, except that it's off to the side instead of in the middle of the sump. According to Steve's research (a Lycoming bulletin and some other sources) this particular IO-360 model is problematic in the oil sump area. Oops. Steve also discovered that the old style oil pressure regulator (with internal washers used to control the pressure relief limit) was a poor choice for an aerobatic engine with external oil system - it wouldn't regulate very well. The solution was to install the new model with the external screw adjustment.



Between the oil pickup and oil regulator changes, and running with at least 7 qts of oil, the oil pressure issue was resolved. But it was a difficult path. Lots of help from other people, such as the folks at Lycon, was also helpful.

B) Oil Temperature.

Oil temperature was and is another root canal. After about 20-25 minutes, it would just climb on up to 240 deg and stay there, regardless of engine power or pitch attitude. Not very much fun. We started by trying to make sure we had enough cooling air, and get as much more as we could. As mentioned earlier, we opened up the cowling and cut away some baffling that might have been restricting air, but no change. CHTs, strangely, were all good, around 330-360 deg, for an engine that wasn't broken in.

After some research, we determined that there probably wasn't enough capacity in the oil cooler I had installed. It was more appropriate for an IO-320. But since it came with the boxes of parts for the airplane, I assumed it was the correct size. But it's a little hard to tell, because I could only give it a 3" SCAT tube from the back of the #3 cylinder baffle, so maybe it's just not getting enough air. In any event, Steve installed a second oil cooler on the left side of the engine, and removed the cabin heat (who need it) so he could install a second 3" SCAT air supply.

The second cooler helped a lot, at least it got us to where we could fly the airplane for more than 25 minutes. We were able to fly continuously at moderate power, but we still have limitations on climb and continuous high power.

So the next big thing is to put an airspeed indicator to show the differential pressure between the upper and lower cowling. I suspect that there isn't a lot of pressure differential, which means not enough air is getting in though the nose bowl inlets (they're sort of small and tight).

Along the way, Steve also looked into the vernatherm, the oil temperature regulator, and found that it was operating correctly, but we still tried a test vernatherm that was rigged to always be open. It didn't help, so the vernatherm is doing what it's supposed to be doing.

Another suspect in the oil temperature problem was the electronic ignition. Some sources said that with the 10:1 pistons, it might be using some ignition timing that could cause high CHTs and thus high oil temperatures. Steve disabled the electronic system and installed a regular magneto, but we could detect no

change in operation.

C) Electronic Engine Monitor

Another thing we had issues with was the electronic oil temp/pressure indicator, an AIM-3000. This item fits my panel space, but I highly do not recommend it. We checked transducer calibration and tried a couple different transducers, and found that oil temp was close but behaved poorly around 235 deg (where we really wanted good data), and the oil pressure was indicating about 10 psi different from an external round gauge. So we also installed a couple new gauges for better data, and a separate electronic tach as we weren't getting any tach display from the (now disabled) electronic ignition system. Electronics International makes a nice box (well documented, has good factory support) that has just numeric displays, and is about the same size. Something to consider for later on. (Note – less than a year later, flying out of Santa Rosa, the AIM-3000 went T.U. and died. Probably the best thing that could have happened. Put in a new EI EIS box, mucho better).

D) Miscellaneous Issues

Well, good news is that the airplane flies well. Small issues with trim, but considering all the things that could go wrong or are hard to change once you get the structure welded up, holes drilled to mount the wings, fabric over everything, it's not easy to make a significant change. Not that the engine issues were easy, and there's still more to be done, but at least the basic airplane is in good shape.

Robin identified the tailwheel spring length as being a source of trouble, especially for a guy without much experience in tail draggers. So Jeff shortened it a couple inches, we flew it, and I managed to get some shimmy a couple of times. Another easy fix, we tightened up the mounting bolts just a bit (the leather pad needed some break-in time) along with the Scott main bolt, added a little grease, and it was all good.

For the trim issues, we added a rudder trim tab (duh), but we still have some flying wire adjustments to make, and a couple of

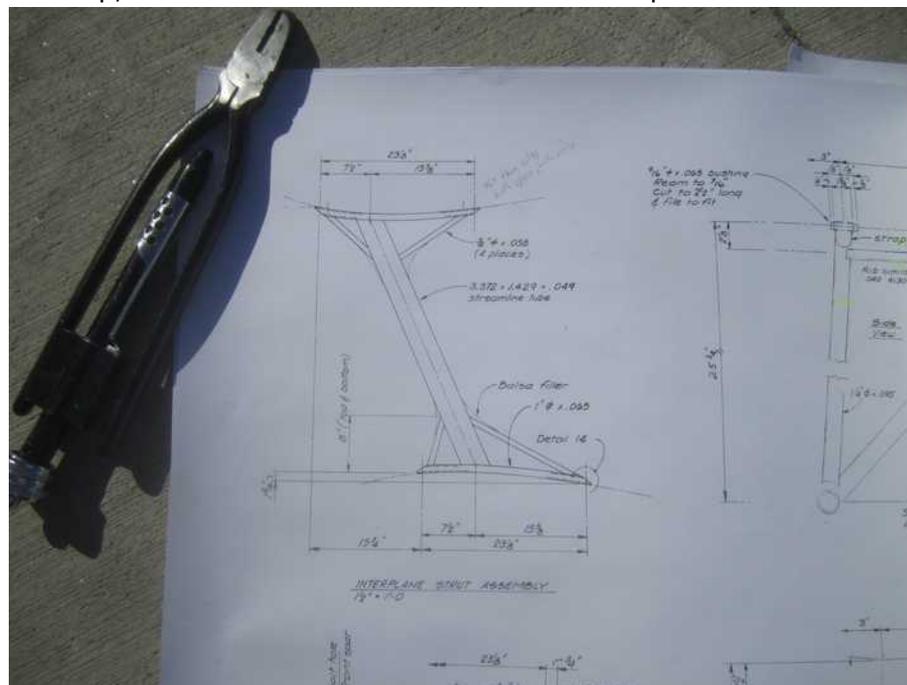
washers adjust in the I-Strut mountings to correct a slight right roll.

Finally, we have a small radio problem. The KY-196 is a 28v radio that sort of works on 14v (maybe better on other airplanes), but on the Skybolt it receives fine, but the transmitter output can barely be heard beyond a couple of miles. So I'm installing a KY-197 at some additional cost. Oh, well.

To wrap up, we had an intense week of flying with Robin, getting checked out, flying off a bunch of the 40 hours, and getting the Phase 2 (permanent) Airworthiness Certificate. Yay!

Once that was done, Don Barnes flew it up to Santa Rosa, but he couldn't contact the tower (the radio problem), so we met at Petaluma, flew formation into Santa Rosa, and taxied to the Skid Row shaded parking. Whew. Can now work on the airplane myself. But I sure appreciate all the expertise and knowledge that Robin and Steve brought to the task. Something about plans built being different from kit built?

Yup, that's all there is to it. Just follow the plans!





Robin and Jeff doing surgery on the Baffle

First Flight!



Photo by Don Barnes (below) Having fun!



Photo by Andy Werback (yes, I have flown it!)



Fly Mart

Please send changes to ea124newsletter@sonic.net

Cleaning out the Hangar: (4-19)

TIG Welder Miller diversion 180 AC/DC, new never used with extra electrodes and ceramic cups w/Argon full tank and regulator. Includes Miller 500E electronic helmet also new and unused. Total cost was over \$2,000; asking \$1,300 or best offer.

36 inch metal brake w/stand; new \$239; \$100 or best offer
1 ton shop crane (engine hoist) \$139 new; \$75 or best offer
2 Flightcom Classic ANR Headsets very good condition, \$339 new; \$100 each or best offer

Call Jim Boyer at 707-571-8001, or see at 3504 Banyan St. Santa Rosa

CAFE Hangar Spot: (9-18)

CAFE hangar space available at STS. Space for one or two light singles depending on fit. \$200 monthly each. EAA Chapter 124 Members, flyable aircraft only, please.

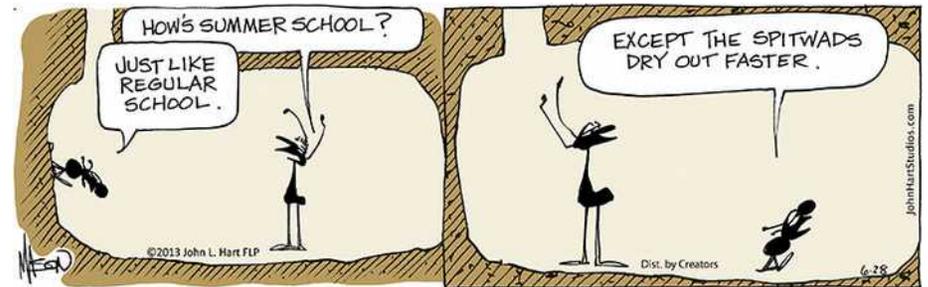
Contact Mike Fenn (707) 481-5791

EAA Hangar Spot: (9-18)

Eaa Ch 124 has one Hangar spot available for a RV size airplane, \$110 per month, plus \$200 deposit.

Must be Local & National Member.

Call Larry 707-575-0331 or Marlon 707-479-9994



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News / Notes From the Editor

(Thanks to Larry Rengstorf)

Here's the schedule for the new docu-movie about WWII B-17 raids over Germany.

Wm Wyler - famed photog of WWII era filmed them during the raids and they have been recently found and colorized and sound added - WOW - we went and saw it last nite in Cloverdale (one time showing) It is really worth seeing, all the crews -

working, playing and flying, being shot down - all in this movie. Try to see it on HBO.

Well worth it. Larry

Subject: Code blue

Here's the t.v. schedule.

HBO-E Comcast ch 550: June 6 @ 5 pm and 11:30 pm

HBO-W " ch 551: June 6 @ 8 pm and 2:30 am

Don't know about other providers like Direct TV, etc

Interesting Aviation Links

(Thanks to Larry Rengstorf and David Heal)

Betty Deuser Budde Letters, 1943-1944 [Click Here](#)

Gear Up Video [Click Here](#)

Arresting Video [Click Here](#)

Transition [Click Here](#)

The Impossible Turn [Click Here](#)

Flying Low [Click Here](#)

EAA Chapter 124 Board Meeting Minutes

May 1, 2019

Meeting called to order by President Marlon Young at 5:30 PM

Present - Marlon Young, Andy Werback, John Whitehouse, Larry Rengstorf, David Franco, Bob Gutteridge, Ben Barker ... Brien Seeley ...

Absent - Josh Hochberg, Dan Steinhof, Terry Freitas

Also attending - John Swanstrom

Old Business

Minutes - April - Motion to Approve by Bob, second by Dave, passed

Marlon - Request to eMail a Note to Everyone - July 3rd meeting is confirmed, Potluck, favorite stories, no program, possible movie.

Open house Aug 24 - Plan for 3-4 emails. Marlon and Dave will work on content, Andy will send. Bill Conklin will do paella, suggest \$10 donation for food and drink. Thinking of 100 attending. Dave F. has a prototype flyer... Dave will check with Duane regarding availability of scales.

Terry F. planning on moving soon, Larry will check with Mike Fenn as possible replacement.

New Business

Ben B - VP report - Rosters for 2019 are in. Andy has the June program - Art Hayssen "Mongolian Eagle Hunters Expedition".

John W - Treasury report is in the green. Airport rates hearing before the Board of Supes coming up, expect a 1.5% increase. Marlon - Issue with county corporate yard and sheriff's facility on airport property and their rent ... might be resolved someday.

Larry - Property mowed. Discussion - Artstart program has been getting a lease for county property at \$1 per year.. how about airport lease? Marlon - Issue is the FAA - requires the airport to charge fair rent (less for non profits) at airports that get federal funds. Comment - New roster - needs a little formatting, lost one aircraft entry.

Hangar Space - still have one available (sharing with VariEze).

Young Eagles - John S. reports a great event, went smoothly. 48 Young Eagles. May 11 coming up very soon - Cloverdale.

Meeting adjourned at 6:13 PM

Respectfully Submitted,

Andy Werback

Secretary

EAA Chapter 124 General Meeting Minutes

May 1, 2019

Meeting called to order by President Marlon Young at 7:05 PM.

Marlon thanked the cooks – Sam thanks her crew - Jim, Arlene, Geri, Andy, Duane, Dan and Howard.

Visitors – Welcome! Jim Bond, new pilot, mechanical engineer, electric cars, looking at maybe building an RV-12, ... Vince Harper – flew in from Petaluma, looking at Lancair 360 ... Kevin Glenney - worked on various commercial jets – air data systems; was working for Terafugia in Petaluma, now with Arcturus in Rohnert Park. Pilot since 1992... Michael Foster – Just starting aviation, looking for flight lessons. Ty West – young man interested in building and flying, new Young Eagle... Dennis Colthurst –new member, retired and working at Sonoma Jet Center... Stan Cooper – earned pilot license at Vandenburg AFB in 1964.

April Minutes – Motion to approve, passed.

Darrel Shumard – Long time Santa Rosa pilot and resident, WWII P-47 pilot in Europe. Passed away 7 April 2019.

Note to ALL – The July 3 EAA Meeting (yes, the evening before July 4) will be potluck, maybe a movie, watch fireworks.

PCAM – Airshow includes the Snowbirds. Will be looking for EAA members to participate and do static displays. Sign up for info emails – WingsOverWineCountry.org.

Newsletter – Thank you Stuart.

CAFE – John Palmerlee – The annual Electric Aircraft Symposium, is scheduled for July 20 and 21, just before AirVenture, on the University of Wisconsin-Oshkosh grounds. Will have a good program on electric aircraft. Cafefoundation.org

Sustainable Aviation – Brien and Wayne – With Dr. Rakas of UC Berkeley, had a guided tour of the Institute for Transportation Studies at UC Berkeley. The Institute will host the next Sustainable Aviation Symposium August 7, 8. Focusing on air mobility at the neighborhood level. Sustainableaviation.org

Treasurer –John reports that the last month was in the black, hangar back rent situation improved at the moment.

Facilities – Larry says we might have a new hangar tenant!

Plus we have some outside spots.

Young Eagles – John Swanstrom - Good event, 48 Young Eagles last weekend. Next event is 11 May in Cloverdale – Need your help! Please volunteer! Don't be shy.

Open House – August 24, in conjunction with YE date. Dave Franco will lead the charge, should be fun.

VP Report – New rosters are in, available. Thank you Mike Tovani for editing! The Ercoupe Owners Club has arranged for discounted group purchase of the uAvionix ADS-B Out units. The EOC invites non-Ercoupe owners to take advantage of a discount that amounts to about \$400. The wingtip SkyBeacons have already been delivered, but there is still time to get in on the TailBeacon purchase while the TSO is pending. For more information contact Ben Barker.

Builder's Reports – Doug Lumgair - 6th annual Red Hills is coming up. Casual event, back country, camping available. Not on the map!! Between Columbia and Modesto. Memorial Weekend. Marlon - Sutter Airport – this Saturday, Philly Cheesestake and YE event. John S – RV-12s - has the avionics on order and on May 21 getting the keys to his new house! Dave F – Airwatch – tail replacement being coordinated with DER, looks like it will work with some oversize rivets. Set of blueprints available for Pazmany Storch (Feisler). Otis H – The new panel (last month was a blank panel) is nearly complete. Using dry transfer labels for the fancy lettering, looks great! Adobe Illustrator was used to fine-tune the layout. A five-step paint process was used to make sure the lacquer inks came out cleanly with a nice matt finish. By the way, nice Garmin G3X / GTN 750 panel!

Presentation – John Whitehouse presented his program on the Lockheed Constellation – “I Love Connie” – A history of Lockheed aircraft, followed by the Constellation's early development and history, involvement with Howard Hughes and TWA, and his personal experiences with the C-121 and EC-121 military versions.

Meeting Adjourned at 8:45 PM.

Respectfully Submitted,

Andy Werback

Secretary



**AUG. 24 EAA
CHAPTER 124 OPEN
HOUSE/YOUNG
EAGLES EVENT**

YOUNG EAGLES IS A PROGRAM FOUNDED IN 1993 DEDICATED TO INSPIRE ENTHUSIASM FOR AVIATION, BY OFFERING FREE FLIGHTS FOR YOUTHS 8-17 AUG. 24 9:00-1:00 P.M.

PAELLA AND TACO BAR
LUNCH WILL BE SERVED 12:00-1:30
\$10.00 SUGGESTED DONATION

**FLY IN, AND HAVE
YOUR PLANE WEIGHED ON OUR
PURPOSE BUILT CAFE
FOUNDATION SCALES!**
LOCATION: EAA FACILITY
WEST END OF TAXIWAY CHARLIE.

PRIOR REGISTRATION
IS REQUIRED FOR YOUNG EAGLES
PARTICIPATION SIGN-UP AT: WWW.EAA124.ORG

COURTESY OF THE FAA
SAFETY TEAM,
THE EVENT WILL HAVE A
SAFETY RELATED PRESENTATION.
SANTA ROSA EAA
CHAPTER 124 INVITES
EVERYONE TO CELEBRATE
THE SPIRIT OF AVIATION
ON AUG. 24, 2019
LOCATION: EAA FACILITY
SANTA ROSA
CA. 5550 WINDSOR RD. 95492
PHONE 707 494-4259
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Librarian:

Walt Ferris	(415) 482-8331
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EAA Chapter 124
5550 Windsor Road
Windsor, CA 95492

Chapter meetings are held on the first Wednesday of each month at 7:00 pm. FOOD (\$7 sometimes \$10) AND SOCIALIZING (free) from 6:15 to 7:00 pm. EVERYONE IS WELCOME!

Directions: The site is located on the west side of Sonoma County Airport. Take the Shiloh Road exit from Highway 101 in northern Santa Rosa. Turn left at the stop light (west) and continue to a "T" intersection. Turn left again and follow the road to the EAA sign on the left.

Members are invited to submit articles of interest. You will be notified whether or not an article will appear in the current issue.

Please email articles to: eaa124newsletter@sonic.net
 or mail to: Stuart Deal
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 Santa Rosa, CA 95401

Deadline for newsletter submissions is the 20th of each month. Articles submitted after that date will be included in the newsletter at the discretion of the editor. All articles are copyrighted. To reproduce any article, please contact the editor.

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