



The Flyer



Volume 45, Issue 1

Experimental Aircraft Association Chapter 44

January 2013

2nd HOLIDAY PARTY

by Gail Isaac & Bob Nelligan-Barrett

A volunteer setup group arrived at the SAC early on a cold December morning to decorate only to find the heater motor was INOP. Handy Jerry Isaac tore the motor apart to find the damaged part, called around to see if it was available in town (of course it wasn't and had to be overnighted), got it Monday, and installed it. Did you notice how comfortably warm you were at the party? **Be sure to thank Jerry. He saved the party.**

And thank you to the set up crew of Kevin Arganbright, Carl Ayers, Darryl Byers, Fran Phillips, Jerry Isaac, and Jim Weinkauf.

This year we decided to have our dinner catered by the Salmon Creek Country Club. They served a delicious meal of hors d'oeuvres, salads, sides, hot entrees, cheese/veggie/and fruit trays, and dessert. We received many favorable comments on the meal.

President Rob Williams welcomed everyone and thanked them for coming, especially our guests from EAA Chapter 46 in Buffalo. Rob also thanked and distributed Chapter Service Awards and small gifts to members who have provided outstanding service to the Chapter this year. **Thank you to all who were there and those that will receive their award later.**

Of course we had a "special guest speaker" whose visit is shown on page 3. **Thanks to Jeff Peters for dressing like an elf, ears and all, and for arranging Santa's visit on his busy schedule.**

PRESIDENT'S MESSAGE

by Rob Williams

Well, that frigid air has finally moved in, making it miserable to be standing out on a windy ramp while preflighting that frozen aircraft with frozen battery. I seem to be less tolerant of winter these days, but it is still not enough to keep me grounded, so I grit my teeth, grunt and do what I have to do to finish the drill. However, once that ritual is complete and I can crawl into the cockpit of my trusty Colt, I begin to relax as I am blocked from the biting wind and am rewarded with a good engine start. Once warmed up, I always reflect on the designer at Piper who thought of putting very short tubes from the muffler shroud to the cockpit. To this day, I don't think I have flown an aircraft with a better heater for winter flying. It cooks my right foot in minutes. After about fifteen minutes I can even take my jacket off.

Now that I have successfully removed myself from the immediate threat to my normothermia (*Norm-othermia? No, nor-mothermia. Look it up. I had to. Ed.*), I can comfortably enter that magical scene of winter weather flying. I like the way the earth looks in winter, particularly at night. The air is so clear and crisp on a winter night that I can see forever and it all looks like Christmas. I think about all the people shut in tight in their homes, unaware of the beauty from above.

Continued on next page.

DUES ARE DUE! Please send a check for \$30 to Treasurer Dave Hurd to continue receiving the benefits of EAA 44 membership.

His address is 1681 Oak Opening Rd., Avon NY 14414.

MEMBERS RECEIVE CHAPTER SERVICE AWARDS

President Rob Williams handed out Chapter Service Awards to members who have made a significant contribution to our goals and activities. Thank you to all.



Tech Counselor Jim Martin



Tech Counselor Bob Northrup



Webmaster & Young Eagle Coordinator
Phil Hazen

President's Message con't

If I'm lucky I might catch a night with the northern lights blazing and hear all the chatter among the airline pilots reflecting on the spectacle with controllers. I spot a gaggle of snowmobile lights making their way through the woods, and follow a bit to see where they are going, oblivious to my observation. So I play for a while, forgetting about the start of the flight and just enjoying the freedom few risk.

Upon return, the runway lights illuminate, and once down I quickly tuck the Colt back into its hangar. I relish the warm feelings of content spawned from the last hour and immediately begin to think about the next time I will be able pull the best out of winter. CAVU!



Treasurer Dave Hurd being...Dave Hurd.



VP Norm Isler & Pres. Rob Williams
congratulate each other.

OLD GOAT DROPPINGS

by Art Thieme

“Resiliency can be a predictor of healthy aging.” Democrat and Chronicle headline 26 Dec. 2012

The article goes on to state “studies have shown that the biggest predictor of overall happiness and independence is not genetics, diet or other behavior modifications; it is the ability to adopt to change, according to Dr. Louis Papa.”

Perhaps. But I have a cartoon showing an elderly lady relaxing in a chair, feet up and snacking. She says: ”Now that I’m older I thought it was great that I seemed to have more patience. Turns out, I just don’t give a \$#!&.” Exactly.

OOPS. All my stuff disappeared. I’m sure that it is hidden somewhere but have no idea how to retrieve it.

I have a large print dictionary. To keep the book a reasonable size they have apparently left out many words. At least those I look up. Or perhaps I am looking up words that I made up.

Old habits die hard. In the old cars you had to depress the gas pedal once or twice before starting the car to set the choke or something. I find that I do that sometimes now. Old goat, indeed.

Remember: Everything in life need not be perfect, to be perfect.

Old Goat, out.



Newsletter Editor Bob Nelligan-Barrett

LAST MONTH’S GUEST SPEAKER



Elf Jeff Peters and Santa welcome everyone to EAA Chapter 44’s Annual Holiday Party.



Santa asking Angela MacDonald & Lorraine Meyers if Larry & Dwight have been naughty or nice.



Santa took time to offer everyone a small Holiday gift and to pose for pictures, here with Marsha Hazen.

NUTS & BOLTS

(This is a new, and monthly, column suggested by Mike Clayton. He wanted to see more "building airplane" articles in the newsletter. So, HE WROTE ONE! Actually this is the conclusion of a four-part series he started in the March & May 2010 and January 2011 issues of The Flyer. If you have a technical topic you would like to write about, please do so. The newsletter is yours. Ed.)

SELECTING AN ENGINE FOR MY HOMEBUILT AIRPLANE

by Mike Clayton
Part IV

I apologize for taking so long to finish this series. I hope you are still interested in the progress of selecting the engine for my Kitfox. As you may remember, I am in the process of rebuilding a KitFox II after it suffered a serious accident. Further, this is my first attempt at homebuilding. I undertook this project shortly after I retired from a 43 year career as an aerospace engineer. I felt that my years of experience working on designing and building a variety of airborne and spaceborne systems would stand me in good stead, and that the project would keep me occupied with things I love to do. It has turned out to be more rewarding than I could have imagined, and I am already thinking about the next aircraft I want to build!

Here were the initial constraints that I had to live with:

Aircraft gross weight:..... 950 lbs
Aircraft empty weight:Originally 461 lbs
New aircraft empty weight:TBD lbs
Fuel Capacity: 12 gal

Since three of these were pretty much fixed, that left only the new aircraft empty weight as a variable. Other factors such as useful payload, range, top speed, rate of climb, and fuel consumption would be whatever they were for the engine being used, and would figure into the final selection, based on their impact on the overall requirements that must be met. In examining these factors, I verified that increased engine power primarily affected rate of

climb and fuel consumption, as well as aircraft empty weight, with only a small effect on top speed. Speed during cruise, and top speed will be affected mostly by parasitic drag. Reduction of this drag is a separate issue.

With a fixed amount of fuel capacity, I needed to set some minimum acceptable value for the payload I needed to carry with full fuel. In effect, I decided to base the comparison on the weight and balance data, coupled with some issues around how the useful payload of the aircraft was to be allocated. At a minimum, I wanted to be able to fly solo for at least several hours with appropriate reserves at the end of that time. More preferable would be the ability to fly for the same amount of time with a passenger, and/or cargo of reasonable size.

I began the final selection process by creating a spread sheet which incorporated basic weight data for the aircraft, as well as the necessary moment arms to compute weight and balance. The idea here was to construct an aircraft with a given engine option, the design changes I had incorporated, the engine under evaluation, and then calculate weight and balance for a range of mission parameters such as pilot and passenger weights, the amount of fuel, and any cargo. The selection of the correct engine was then straightforward.

The first thing I did was to create an itemized list of all the weights and the balance data I had available. *(The spreadsheet and tables have been edited from this article for space. Ask Mike if you'd like to see them. Ed.)*

I plan on using a Lithium-Iron Phosphate battery in place of the old battery. It weighs only 2.5 pounds, compared to the old battery weight of about 20 pounds! This gives me a bit more flexibility in adding modifications which would have increased the original weight.

I included the weight of a GSC prop in the calculation, even though I did not want to use that in the final configuration. As I included it in all calculations, it won't affect the comparisons, but inclusion will give me a more realistic idea of aircraft payload. Using this data as appropriate, the original Weight and Balance data could be computed. The original ECG is well within the limits specified by the manufacturer of 10.2" to 14.28".

In order to examine the effect of the different engine options, I estimated the weights for them and again created a spreadsheet for easy comparisons. I constructed similar tables for the VW with Nikasil cylinders, and for the HKS Turbo.

Using the data from these tables, I constructed new aircraft configurations, which had the new battery located behind the seat, along with the header tank. The new landing gear weight was included, and the old weight eliminated. I also reduced the weight of the instrument panel by using modern, lightweight instruments, although this may change as the revised design develops. I was then able to use these data to calculate the aircraft weight and balance for different engines with or without a Ballistic Recovery System (ECG is empty center of gravity). In both cases, the ECG was well within limits, although it had moved rearward significantly. I did the same calculation for the HKS 700T, and the AeroVee VW conversion.

Note that for the VW conversion, the CG location significantly violates the most forward location allowed for the aircraft of 10.28". This result is obtained even when the battery is moved aft of the seat. In order to move the CG further aft, either ballast or weight needs to be added aft of the aircraft datum. When I examined these, neither was particularly attractive, as adding ballast would waste useful payload, and moving the battery would put it in a location difficult to get at for service. Adding a BRS installation would move the CG to 9.81" for the VW with Nikasil Cylinders. Even that does not place the CG where it needs to be. The VW conversion was looking less and less attractive for this application.

To explore further, I recalculated the weight and balance for the HKS 700E and a BRS parachute, along with remaining useful load by considering a pilot (me), and a full load of fuel (fuel is 13 gal, including header tank, useable fuel is 12 gal) in calculating the weight. By doing this, I could then see the useful payload under these conditions, while remaining within gross weight limitations.

In this case, the flight duration turns out to be 4 hr (no reserve), and with me on board, there is the capability to carry 126 lbs of cargo. However, the C.G. violates the aircraft aft requirement of 14.28". This could possibly be remedied by moving the battery forward to the firewall. This is just about the performance I would want for cross country solo flying. If I were going to carry a passenger, then this would not work out, unless the person were very small, such as a child. This calculation also includes the weight of the BRS system.

By eliminating the BRS system, I added 24 lbs to the remaining useful load with full fuel, which would come to 150 lbs. remaining useful payload. The C.G. would also move forward. Fuel weighs 6.1

lbs per gallon, and my full fuel load will be 12 gallons, for a full fuel weight of 73 lbs. Reducing the fuel will add some to the remaining useful load. For example, if I cut the fuel by one third, or to 8 gallons, I could add about 24 lbs to the useful load, bringing it to 174 lbs. Better, but less than optimum for cross-country, and enough to carry a reasonable size adult passenger (particularly if I lose weight!). Flight duration would be 3.2 hrs (no reserve), which is barely adequate for any serious cross country work.

So, for this option, I can fly cross-country solo, and make relatively short local flights locally, carrying passengers, and still remain within gross weight limits. I concluded that the best option was to eliminate the BRS, to get adequate range for solo cross country, and to carry passenger and cargo.

Since the other engine choices weigh more, they will reduce the ability to carry full fuel, and people or cargo even more. In evaluating the value of these, increased horsepower would be the only offsetting advantage, but again, that primarily increases fuel consumption and weight, with somewhat improved climb performance and very small improvement in speed. I concluded that none of the other options would satisfy my requirements.



HKS-700E- Photo taken from the Internet.

The final selection seems pretty obvious at this point – the HKS 700E. The only potential issue is the power of the engine, which is rated at 60 HP. However, everyone I talked with who had made this conversion indicated either the same performance as with the original 65 HP engine, or somewhat better performance. I suspect that may be due to the flat torque curve of the 700E, compared to the Rotax.

**EAA Chapter 44
Board of Directors' Meeting
11 Dec 2012**

Board Members Present: Williams, Hurd, Byers, Nelligan-Barrett, North, Clayton, Isler, Hazen, and Stoddard.

Other Members Present: Myers, Isaac.

Reports:

- President (Rob Williams):
 - No items.
- Vice President (Norm Isler):
 - Scout projects –
 - Ben Hare scheduled to present a summary of his project (No show).
 - Nick Gennerino – completed work on pilot's lounge, very nice job.
- Treasurer (Dave Hurd):
 - Report read and approved.
- Secretary (Stephen North):
 - Report read and approved.

Business:

- Capital Campaign (Open)
 - Still looking for a replacement Capital Campaign chair.
- Building Committee (Darryl Byers / Mike Clayton)
 - The pilot lounge interior work is complete – painting, chair rail and flooring. The room looks great. The next push is to finish the bathrooms
 - An electronic keypad lock has been installed; now need to assign access codes to Chapter members.
 - External storage shed – The Chapter needs extra space to store low use items such as the Plane Train, grills, and the lawn mower. Approached Finger Lakes but their cost was prohibitively high. Mike Clayton worked up an estimate for a 12' x 24' freestanding prefabricated building. Norm moved that the

Chapter purchase a prefabricated shed per Mike Clayton's estimate. Darryl seconded. Passed unanimously.

- Bob N-B noted that some accent color in the main meeting room might reduce the bright white sterility of the current interior finish.
- Old Business:
 - Building sign – The Board previously approved an earmark for a south-facing building sign. No activity on this item yet.
 - Sufficient funds have been collected for a Hugh Jones memorial plaque to be installed at EAA National headquarters.
- New Business:
 - Officer appointments – All existing officers have volunteered to continue in their posts. Darryl Byers moved to accept the officers slate as presented, Norm Isler seconded, passed unanimously.
 - Mike Stoddard shared a proposal for a membership coordinator to mentor new members and contact old, inactive members to re-kindle their interest.



As Secretary Steve North would say to himself,
"You're doing a fine job."

CONTACT EAA 44



The Flyer is published monthly. For an electronic copy, go to <eaa44.org> and enter your email address where requested. For a mailed hard copy (\$10), contact Treasurer Dave Hurd. For membership info, contact Treasurer Dave Hurd.

Stories and photos by the editor unless otherwise noted. Article deadline is 1st Tuesday of the month. Send submissions to Editor Bob Nelligan-Barrett.

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EAA 44 is a 501(c)3 organization.
Gifts of cash, securities or other property to the Chapter for the benefit of the Sport Aviation Center are welcome and fully tax deductible.
Contact Treasurer Dave Hurd for details.



Sport Aviation Center of Western New York

REGIONAL CALENDAR

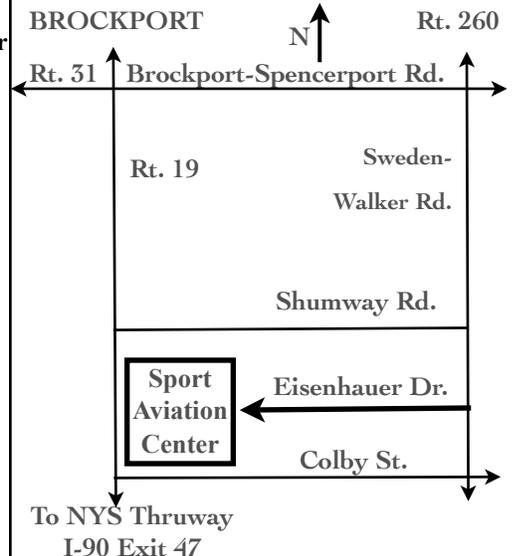
Earl Luce is again offering his **Gas Welding Two-day Workshop** on Feb 8 & 9 at the Rochester Arc & Flame Center. Cost is \$350 with an EAA discount available upon online registration. Use code <EAAMEMBER123>.



Members who took this class before spoke highly of the introduction to gas welding and Earl's teaching technique.

The location is 125 FedEx Way, Rochester, NY 14624 (Rt. 531, Manitou Rd. exit, turn south, first left, building on right, Mahany Welding Supply)

Info can be found at:
<<http://www.rocafc.com/products/gas-welding-2-day-workshop>>



EAA 44 Calendar



NEXT GENERAL MEETING

Bob Nelligan-Barrett will be showing a photographic tour of our past year, both of the SAC construction and EAA 44 activities. No one signed up to coordinate dinner so it will be pizza and wings. Ahem.

Please bring a dish to pass to complement our dinner.

Jan. 12 SAC Work Day
Jan. 15 General Meeting
Jan. 26 SAC Work Day

Feb. 9 SAC Work Day
Feb. 12 Board Meeting
Feb. 19 General Meeting
Feb. 23 SAC Work Day

Mar. 9 SAC Work Day
Mar. 12 Board Meeting
Mar. 19 General Meeting
Mar. 23 SAC Work Day

Apr. 9 Board Meeting
Apr. 13 SAC Work Day
Apr. 16 General Meeting
Apr. 27 SAC Work Day

All activities take place at the Sport Aviation Center unless otherwise noted.

Sport Aviation Center

44 Eisenhower Dr. 14420
Brockport Airport/
Ledgedale Airpark (7G0)

Board Meetings-

2nd Tuesday of the month, 7 PM

General Meetings-

3rd Tuesday of the month

Dinner 6:30, Meeting 7:30

SAC Saturday Work Days-

2nd & 4th Saturdays, 10 AM

Bob Nelligan-Barrett
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