



The Flyer

Volume 43, Issue 1

Experimental Aircraft Association Chapter 44

January 2011

SPORT AVIATION CENTER UPDATE

by Norm Isler



Earl Luce and Ray Johnson hooking up our furnaces.
Soon we will have HEAT!

Happy New Year to all, and good news continues to come out of our new home. In November, the big news was light inside our building. Now, with the continuing efforts of Larry "Sparks" MacDonald and others we have working outlets and switches throughout much of the building. With the temps up in the 50's over the New Year weekend, it was too much for me to resist going outside and installing some more fixtures, so we now have most of our exterior lights in place and in operation. Coming down the road to the building at night, it is now easy to see where we are!

Tuesday January 4 saw Ray Johnson and Earl Luce fitting (rather tightly!) into the utility room to further the installation of the furnaces. One furnace is now fully installed to the ductwork, and the second is nearing completion. The gas line has been run from outside, up the north wall and across the attic to where it drops into the utility room. Once both furnaces are in their final position, hook up to gas and electric will be a

Continued on next page.

GREETINGS FROM THE PRESIDENT

by Tom Bowdler

You're probably asking yourselves who is this Tom Bowdler? I live in Clarendon, NY in my wife's childhood home across the road from her brother's air strip on which I had my first airplane ride at age 19. Look for Maxon airfield on the Detroit sectional just west of Ledgesdale. We have enjoyed over 40 years of happy marriage and have two grown sons. My daily bread for over 38 years has been earned practicing general dentistry in Brockport. I earned my pilot's license in August of 1989 and an instrument rating a couple of years later. A Piper Warrior carried me and my family to Ohio, Wisconsin, Florida and many local flights for a number of years. I now enjoy my Cessna 150. I am also a home builder with a Pietenpol Air Camper project about 80% complete.

I joined EAA in 1979 and Chapter 44 a few years later. This is my second opportunity to preside over our Chapter and I thank the Board for their confidence in me. Today's Chapter 44 is a very different organization from that of my last term. Many new faces and a new direction as a corporation dictate our way of doing business. We are well along toward our goal of constructing a purpose built Sport Aviation Center from which to launch a new history of programs and activities to benefit both our members and the community at large.

It is my fortune to inherit the can do spirit evidenced by President Norm Isler and the past and current Board of Directors who are familiar faces to you. You will be pleased to know that most are staying on in active roles, Norm and Mike Clayton

Continued on next page.

SAC Update con't

quick job, followed by extending their vents out through the roof. Install a tank of propane, and suddenly we have heat throughout the building!

Just before the end of the year, we sent our check to the Monroe County Water Authority, and any day now they will be hooking up our water line to their underground main. It will still be a few weeks until we have them "Turn Us On" though. Before turning on the water, we need to install a main shut off in the building, install the backflow preventer and possibly a pressure reducing valve. Of course, we also need to install the meter so they can charge us accurately! We also need to provide continuous heat in the area that has water to prevent freezing. Soon we'll be on to installing the flush toilets!

Most of the crew took off for the New Year weekend, but we will be getting back to the regular work crews, first and third Saturday each month. Come on out and join us!

See you at the SAC!

Greetings con't: spearheading the completion of the building, Dave Hurd watching over our purse strings, Steve North keeping our paper work on the straight and narrow, Gail Issac, the "bottle queen", helping to fund our projects and keeping us well fed, Mike Stoddard managing the financial campaigns for our building, Phil Hazen keeping the Young Eagles program strong, and the rest of you who support and encourage their efforts.

Where do I see Chapter 44 heading in the next two years with me at the helm? Our Sport Aviation Center will be completed allowing us to have a consistent meeting location and launching pad for many other activities. It's no secret that youth programs are a favorite of mine as an active Young Eagle pilot (214 and counting) and the originator of Aerocamp, a partnership program with boy and girl scouting. The YE program will grow even stronger with the SAC as a base of

operations, and as soon as the grounds are sufficiently developed, Aerocamp sessions will resume. Our partnership with School 34 will continue and be expanded first to Spencerport with plans already in the works, then to other local communities. We may even be able to sponsor ground school classes for both private and instrument students.

I will prioritize aviation fun by pairing active pilots among our members with non-pilots who have the desire to be mentored toward aviation training or just boring holes in the sky on a beautiful day in search of that expensive hamburger. I propose that Saturdays when building work sessions are not being planned be designated Fly Out days with cost sharing divided among the participants. Clinics on skills required for airplane building could be organized utilizing local talent and take place in our wonderful new facility. You can see what Norm has been saying all along that our building will be the springboard and center for sport aviation activities in western New York State!

I can promise you that I will not be able to do much of this without your help. In high school I had the opportunity to chair the science component of our annual arts, crafts and science show. Meeting with the faculty advisor we were told it would be easy to see who the best chairman was by the amount of work they did. After the groans subsided he explained that the best chairs did the least work by delegating tasks to others. This is how I intend to operate for the next two years empowering the members of Chapter 44 to take ownership of our organization and pitch in together like many of you have done with our building. I will listen to your ideas and we will make a plan and go forward together. I look forward to your cooperation and support.

OLD GOAT'S NEW YEAR RAMBLINGS

BY ART THIEME

As this is a new year I thought that it might be right to check my emails. You know that I do this religiously once a week (First fib of the new year), I only had 137 to check. I was going to record the number of times I got mail from the same source. It became too much of a job. Unofficially Borders, Barnes and Noble, and This Old House, lead the pack. And I never buy anything from them. Incidentally, I only opened one e-mail.

Dave Hurd and his elves deserve kudos (thanks will do nicely) for the excellent job they do acknowledging the donation to the chapter building fund. I know that my children found it easier to give to this cause than trying to figure what to give to the old goat.

Dan Branstrom, Kitplanes Feb 2011, said it all: "The quality of a landing is inversely proportional to the size of the audience,;

Recently the 7000th RV flew, the 1000 RV-8s among them, This represents a new RV into the air every 5th day since the design was introduced in 1996. Kitplanes Jan 2011

I don't know about you, but I think I know how the serfs felt in the old days as I pass the first class passengers in their comfortable seats enjoying a beverage as the poor people wander back to coach.

Most people have nicknames. These are usually listed in the death notices. I wonder why our parents didn't just give us these names. Of course, this wouldn't work for the Old Goat.

Pants too tight? asks the ad. How appropriate after the doctor suggests that I lose a few pounds. I don't have to diet as the Waistband Extender is only \$9.95 with free shipping if you buy two. How does that work with the zipper?

With more that 43,000 delivered since production began in 1955, Cessna Model 172 Skyhawk will be fitted with an electric motor powered by a lithium ion battery system. The conversion is expected to be completed by early 2011 with the first flight early in the spring. The plane will have solar panels on the wings. They expect the two-seat 172 will have an endurance of 2 hours, suitable for a training aircraft. Aviation Week, Dec. 6 2010

I now have to check my emails (fib #2). Happy flying!

Old Goat, out.

LAST MONTHS MEETING

Building the Buttercup by Earl Luce

As our first guest speaker in the Sport Aviation Center, member Earl Luce gave us a recap of his EAA webinar about designing and building a replica of Steve Wittman's Buttercup.



Earl Luce, the Buttercup, and a Young Eagle at the EAA 44/46 Young Eagle Day in Batavia last Summer.

First, some background on Earl. The Buttercup is the 5th plane that Earl has designed and built. He has been a member of EAA 44 for over 30 years. He is a national welding instructor for the EAA SportAir Workshop series, and is one of the creators of the "Homebuilder's Tips" column in Sport Aviation.

Earl first became aware of the Buttercup from a Sport Aviation article in 1989. In 1991, he built a Wittman Tailwind, and eventually found that there were many similarities in design between the two, making the building process more familiar for him. Earl built the Buttercup because he actually wanted a LESS high-performance plane compared to the Tailwind that wouldn't allow him to land at grass fields.

In 1993, Earl had an opportunity to meet Steve Wittman at Sun' N Fun and to talk with him about some of the design features, such as the unique leading edge flaps. Wittman tested his flap design by installing it on only ONE wing of his Buttercup and found that it provided 100% more lift compared to a normal wing. Must have made for an interesting hop around the pattern! The original aircraft had a speed range of 40-150 MPH on an 85 HP engine.

There were no plans for this aircraft so Earl had to reverse engineer it from period photographs, from measurements taken on the original at the EAA

Continued on Page 7.

Selecting the Engine for My Homebuilt Aircraft

by Mike Clayton

Part III

(Parts I & II were published in the March and May 2010 issues of The Flyer.)



Mike is smiling because the light at the end of the SAC tunnel is getting bigger and he'll be able to get back to his Kitfox.

In the previous articles, I showed how the characteristics of the candidate engines eliminated some, when compared on the basis of meeting my basic characteristics, which I set forth in the first installment. Now we begin the final comparisons and end up with a selection, which should be compatible with all requirements.

I continued to compile more detailed data about all the engines that were in the final running. This involved looking at the following parameters: Weight, Power, Fuel Consumption, TBO, Cost. As mentioned above, I had also talked to other Kitfox owners who might have had experience with a particular engine/aircraft combination, to get some first hand information on the success of the combination. Here are some observations on these parameters:

Weight-I found that the weights listed in articles were those given by the manufacturer, and caution is advised if you are going to use

these to help in engine selection. Every engine needs some combination of accessories such as a speed reduction unit, starter, exhaust pipe, muffler, oil cooler, radiator, propellers, spinners, fuel pump, miscellaneous hoses and wires, and an engine mount. The weights quoted by the manufacturer generally don't include all of these. Some will include portions, others will not include any. In other words a bit of research is needed in order to really pin down the weight of any engine option that you might use in your application, in order to make sure that the weight you use in selecting it reflects what is required, in total, for your aircraft.

Power-Horsepower is important, and you have to know at what engine RPM the horsepower is quoted. This will tell you if the engine needs a speed reduction unit, as typical propeller RPM is around 2500 +/-, so you need to know top engine RPM, which is where HP is usually quoted. Torque vs RPM is another important factor, and has a lot to do with propeller selection as well as performance of the engine in your application. Unfortunately, many manufacturers don't provide all this data. Without it, you will have a lot of uncertainty about engine performance in your aircraft, with a given set-up (prop diameter, pitch). Clearly the 700E provides the lowest horsepower. However, in discussions with people who have made the conversion of a Kitfox 2 to this engine, they are completely satisfied with the performance of the aircraft vis-à-vis the original 532 or 582 engine. The other engine options clearly supply more than enough power for the Kitfox.

Fuel Consumption-Fuel consumption is another critical factor. You might find what appears to be a very good engine for your application, but the fuel consumption might be too high, given the amount that your aircraft can carry, and the range you desire. You need to understand the fuel consumption vs RPM

Continued on next page.

Selecting con't

characteristics to get some idea of how the engine will perform over a variety of situations.

I had earlier found this parameter to be one of the big negatives for 2-stroke engines, as they tended to use more fuel in comparison with many 4-strokes under similar operating conditions. In general, I found that good 4-stroke engine designs tended to have about half to three-quarters the fuel consumption of 2-strokes. So even though the 2-stroke engines have a better hp/lb ratio than 4-strokes, the higher fuel consumption means more fuel must be carried for a given range requirement, and this will tend to offset the lighter engine weight. The reported fuel consumption for the 700E varies between 2.5 to 3.5 gallons per hour, depending on how the engine is treated (RPM primarily). The 700T has no fuel consumption number given by the manufacturer, as it is too new. The AeroVee numbers are about 3.0 to 4.0+ gallons per hour, depending on engine speed. The 700E seems to be the winner in this comparison.

TBO-The manufacturers recommended TBO is another important item. You need to understand whether or not this is backed up by adequate field experience, or whether it is someone's guess at what they think it should be. Reputable manufacturers will base their TBO recommendations on actual experience in the field. Generally, the rated TBO assumes that all the manufacturers recommendations/requirements have been followed for things like oil and filter changes, regular inspections, preventive maintenance, and so on. I tended to use TBO as a surrogate for engine reliability. I reasoned that the higher the TBO, all other things being equal, the more rugged and reliable the engine would be in use. The HKS 700E reported a TBO of 1000 hrs, based on field experience. This was consistent with the reputation of the engine for reliability. The 700T has a 500 hr TBO quoted by the manufacturer, but this is not based on direct field experience with users, as the engine is too new. I

would call it an educated guess. The AeroVee does not provide a TBO, but rather states that people have flown the engines for many hours. On this basis the 700E comes out in first place.

We could say a lot more on reliability, particularly infant mortality, but this is not the subject of this article. Perhaps a future discussion could go into this, if anyone is interested.

Cost-Finally, cost must be considered. This is not as simple as it sounds. I like to think of something called life cycle cost. This includes the initial cost of acquisition, the operating cost per hour (including fuel and oil), and factors in known maintenance costs such as overhauls, top overhauls, and finally the resale value if you decide to dispose of the engine. I found some engines whose initial cost was very attractive, but when the other factors were considered, had a life cycle cost that was 2x-3x higher than some with higher upfront costs.

This turns out to be one of the differences between 2-stroke and 4-stroke engines, with the 4-stroke the winner. The two primary factors that make this outcome are the relatively shorter TBO for 2-strokes, and their higher use of consumables.

As I considered all of these things, I found that, in general terms, my choice of a 4-stroke engine was reinforced, and my desire for relatively low fuel consumption also confirmed that decision. At this point, I had one really good contender: the HKS 700E. All others were out of bounds on one or more parameters used for evaluation. I had started by looking for more horsepower with no penalties, but found that it came with increased weight, and increased fuel consumption, all of which would impact my useful payload.

I realized that overall weight and balance, together with the other requirements I had laid out would determine the final selection. All options would need to be evaluated further.

**EAA Chapter 44
Board of Directors' Meeting
16 Dec 2010**

Board Members Present: Hurd, Isler, Isaac, Clayton, Hazen, Stoddard, Williams, North

Non Board Member Officers Present: Bowdler

General Members Present: Byers

Reports:

- President (Norm Isler):
 - Norm thanked the Board for all of their help over the past two busy years. In return the Board members expressed appreciation for Norm's leadership.
 - Program ideas are needed for 2011
 - The Jan / Feb General Membership meetings will be at Brockport Presbyterian Church
- Treasurer (Dave Hurd):
 - Report read and approved
- Secretary (Stephen North):
 - Report read and approved

Business:

- Sport Aviation Center (SAC)
 - The electric is on; work parties continue to finish off the interior.
- Capital Campaign (Mike Stoddard)
 - Mike reported that the capital campaign receipts to date total 87% of the pledged amount.
 - For 2011 the capital campaign needs to set specific goals similar to the recent You Light Up My Life program.
 - As adjunct to the main fund raising efforts, smaller mini-goals may be an effective way to meet short term needs (e.g. "Buy a Sheet of Sheetrock")
 - Mike will send contributors an e-mail reminder about the end of pledge period with a suggestion about continuing their donation.
- General
 - The Board confirmed that in November of 2009 the Chapter Membership had approved a bylaw change making the Chapter's official address 44 Eisenhauer Drive, Brockport, NY 14420.

- Norm Isler and Mike Clayton attended an initial Wings 2011 planning meeting. The scope of the Chapter's involvement at Wings 2011 is under review and will be based on lessons learned and current Chapter goals.
- Phil Hazen and Darryl Byers volunteered for the Building Committee. They noted a need to improve work crew communication (group e-mail list?).
- Dave Hurd will investigate options for renting a safety deposit box for storing important Chapter documents.

December Dinner a Hearty Success

Seventeen members and their guests enjoyed a delicious meal at the Stoneyard Bar & Grill in Brockport in December. This is our annual "Un-Meeting" where no business is discussed, and camaraderie is the order of the day.



El Presidente Norm Isler, in his last official act as President, welcomed everyone, and then proceeded to hold court at his end of the table with Treasurer Dave Hurd. We were surprised by the appearance of former VP Steve Zigelstein and his wife Rose. Steve returned from his new job in Nebraska to spend the holidays here in Rochester with his family who have not yet moved to join him. We were also joined by several new members (sorry the Editor didn't get their names) and a smattering of regulars who always show up for food.

An enjoyable time was had by all.

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.

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

For membership info, contact Treasurer Dave Hurd.

OFFICERS

President: Tom Bowdler
16685 Hinds Rd.
Holley, NY 14470
585-638-2416 bowdler@juno.com

Vice-President: Norm Isler
585-638-8098 normisler@aol.com

Secretary: Steve North
585-723-5794
snorth59@rochester.rr.com

Treasurer: Dave Hurd
585-226-2402 dbhurd@att.net
1681 Oak Opening Rd.,
Avon NY 14414

DIRECTORS

Mike Clayton: 585-352-1763
mclayton@rochester.rr.com

Phil Hazen: 585-227-9811
phil1948@frontiernet.net

Gail Issac
585-352-1205
gisaac@rochester.rr.com

Bob Nelligan-Barrett:
585-754-7263
trailbossbob@mac.com

Mike Stoddard; 585-586-2102
mstod1@frontiernet.net

Rob Williams: 585-589-9435
rwilli3@rochester.rr.com

CAPITAL CAMPAIGN

Mike Stoddard; 585-586-2102
mstod1@frontiernet.net

LIBRARIANS

Jarrel Battaglia: 315-333-5381
jarrellbattaglia@hotmail.com

Bob Nelligan-Barrett:
585-754-7263
trailbossbob@mac.com

NEWSLETTER EDITOR

Bob Nelligan-Barrett:
146 Worthington Rd.
Rochester, NY 14622

OSHKOSH AIRLIFT

Steve North; 585-723-5794
snorth59@rochester.rr.com

**SPORT AVIATION CENTER
CONSTRUCTION MANAGER**

Mike Clayton; 585-352-1763
mclayton@rochester.rr.com

TECHNICAL COUNSELORS

Earl Luce: 585-637-5768
earl@luceair.com

Jim Martin: 585-368-9333,
jettester@frontiernet.net

Jeff Paris: 585-750-5333
jeffrey-j-paris@excite.com

**WEBMASTER & YOUNG EAGLE
COORDINATOR**

Phil Hazen: 585-227-9811
phil1948@frontiernet.net

EDITORS EMERITUS

Hugh Jones: 585-663-1489
Paul Pakusch: 585-746-4514
Art Thieme: 585-663-1875

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



**EAA 44
SPORT AVIATION CENTER**

REGIONAL CALENDAR**ESL International Airshow**

featuring US Navy Blue Angels
Celebrating 100 Years of Naval Aviation
Greater Rochester Int'l Airport (ROC)
July 16 & 17, <rochesterairshow.com>

Thunder Over Niagara Airshow

featuring US Air Force Thunderbirds
Niagara Falls Air Reserve Station
Sept 10 & 11, <niagaraairshow.com>

Buttercup con't

Museum, and his Tailwind experience. Earl built the Buttercup by laying out the fuselage first, and then building off of that. The tools needed are just basic hand tools, a belt sander, a lathe, and of course, welding and cutting torches. So far, Earl has sold 170 sets of his CAD-drawn plans. No Buttercups are yet flying, though two are very close and should make an appearance at AirVenture this summer. Earl is working with one builder on a tricycle-gear model too.

Earl is rightfully proud of his airplane and has offered rides to anyone who is interested. Give him a call if you'd like to experience this unique, classic aircraft.

EAA 44 CALENDAR

Next Meeting

January 18 Tuesday

6:30 Dinner by Gail

7:30 Program: "9/11 From the Air" Photos & Video- Bob N-B

Bob recently visited the WTC site in NYC and brought back two items to share with us. One is a book of photos taken from NYPD helicopters and a DVD about the national airspace system shutdown within 3 hours of the attacks.

Brockport 1st Presbyterian Church, 35 State St. behind the Fire House

Future Chapter Activities

Feb. 5 SAC Work Day

Feb. 8 Board Mtg.

Feb. 15 General Mtg.

1st Pres. Church

35 State St. Brockport

Feb. 19 SAC Work Day

Mar. 5 SAC Work Day

Mar. 8 Board Mtg.

Mar. 15 General Mtg.

Mar. 19 SAC Work Day

Apr. 2 SAC Work Day

Apr. 12 Board Mtg.

Recurring Activities

Board Meetings-

2nd Tuesday of the month

Norm and Elises' Home 7 PM
3631 Orleans-Monroe County
Line Rd., 14420

General Meetings-

3rd Tuesday of the month

Location TBA at <eaa44.org>

Sport Aviation Center Work Day-

1st & 3rd Saturdays of the month

10 AM-3 PM

SAC

44 Eisenhower Dr.

Brockport NY

Ledgedale Airpark 7G0

Bob Nelligan-Barrett

EAA 44 Newsletter Editor

146 Worthington Rd.

Rochester, NY 14622