

THE LEADING EDGE

NEWSLETTER OF MUROC EAA CHAPTER 1000

Voted to Top Ten Newsletters, 1997, 1998 McKillop Award Competition

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<http://www.eaa1000.av.org>

October 2014

Chapter 1000 meets monthly on the third Tuesday of the month in the USAF Test Pilot School Scobee Auditorium, Edwards AFB, CA at 1700 or 5:00 PM, whichever you prefer. Any changes of meeting venue will be announced in the newsletter. Offer void where prohibited. Your mileage may vary. Open to military and civilian alike.

This Month's Meeting:



Avionics Update

Jeff Landon, High Desert Avionics (WJF)
Tuesday, 21 October 2014
1700 hrs (5:00 PM Civilian Time)
USAF Test Pilot School Auditorium
Edwards AFB, CA

This month's program is a presentation on the world of "beeps and squeaks" by **Jeff Landon**, owner of High Desert Avionics and preferred avioniker for the *Fightin' Skywagon*. Jeff last spoke to us in March 1997, so there's a lot to catch up on.

ADS-B In, ADS-B Out, GPS, VOR, ILS, ADF, 14 CFR Part 43 Appendix E&F 91-413, 14 CFR 91.411, Stratus, Foreflight, Garmin GDL-39, Serial, ARINC 429. Can you keep all of those straight? That's what Jeff does every day. Be sure you are ready with your questions, like what is your best option for meeting the ADS-B mandate by 2020?

As always, we will meet at the Test Pilot School for yummy snacks from the **Schmoozemistress**. Then we will proceed in an orderly fashion into the auditorium. After we've drained Jeff of sufficient avionics knowledge we'll go to the **BK Dead Cow Emporium** where you get to make up stories too! See you there.

- **Erbman**
 For the **Vice Kommandant**

Fox Annual Air Fair 2014 and Pancake Breakfast – 25 Oct 14

Fox Airport Association Members and Friends,
 We will be having our **7th Annual KWJF Airfair and Pancake Breakfast** on Saturday, October 25th, 2014. Like last year, we are again teaming up with the Lancaster Rotary Wings and Wheels event, so you will get 2 events for the price of one!



On the Air Fair side, there will be the usual static display in front of the terminal. **Bob Stambovsky** (stambo@earthlink.net or 661-816-5101) is the Air Fair Chairman for the Fox Field Association. Please contact him if you have any questions about the static display. As always, the static display will be **FREE**, and we welcome pilots from Fox and all other So Cal airports to come and put their aircraft on display. We are particularly looking for unique aircraft, but all are welcome. You do not have to sign up in advance, but Stambo would appreciate an email just so we have an idea of how many aircraft to expect for parking. As before, the Fox Association is emphasizing the educational and inspirational aspect for the local community to see the airport, see aircraft up close, talk to pilots about learning to fly, and inspire their children about aviation, math, and science. The static display officially opens at 0800, but it would help if you arrived a little earlier, as the public usually starts showing up early. We will have historical exemption display forms

available. As you know from previous years, Stambo usually arranges some "surprises", such as the Fire Service aircraft and display of unique helos last year.

We will also have free tables in the terminal for non-profit groups to use (99's, Young Marines, VFW, etc.). Please let Stambo know if you are planning to use a display table.

The famous **Fox Association Pancake Breakfast** will start at 0800, and is the best deal going for \$5.00. Please come out and support your local Association!

The Lancaster Rotary will also be having their Annual Wings and Wheels on the same day. There will be a display of beautiful classic cars on the South side of the terminal. They will also have a chili-cook off and a delicious hamburger booth for lunch, as well as some commercial community booths. The Rotary will also be holding a judging for the best cars and airplanes. It will be just like last year - so I want to avoid any confusion that some pilots had. **Entering the aircraft judging is OPTIONAL.** If you want to enter, the fee is \$30. That gets you some goodies, an entry in the judging, and a chance at the \$500 raffle (pretty good odds). The Rotary uses the money for several very worthy charities, including the VA Home, local community helping organizations, and youth programs. So, when you land, we will have entry forms available if you want to enter - otherwise, **the static display is FREE** as it has always been.

Due to county insurance requirements, the Fox Association was never able to allow commercial booths at the Air Fair. One of the reasons we teamed up with the Rotary was that they have the insurance in place for both commercial booths and the afternoon lunch booth. So, if any of you would like to have a commercial booth (selling aviation memorabilia, books, etc.) please contact **Mike Scheall** of the Rotary (mscheall@gmail.com) and he can sign you up. There is a small \$30 fee for a commercial booth. If you have a classic car you would like to sign up for the car display, please contact **Larry Rottman** at 661-816-4508.



Last year's event was a great success with around 600 people and a large display of aircraft and cars. Please plan to come out, display your aircraft, and join the pancake

breakfast. Then stay for the day and enjoy the Rotary cars and lunch. **Foxy's** will also be open all day.

Thank you for your participation and we look forward to seeing you,

- **Donna Knighton**

President, Fox Airport Association

661-816-5103

pilotdonna@earthlink.net

Kommandant's Korner

This month the Kommandant takes a break from his usual musings to give you an insight to the amazing world of the Flight Test Engineer and occasional Test Pilot...



Limited Qualitative Evaluation of the Wright 1911 Model B Flyer Simulator

On 25 September 2014 two members of the USAF TPS staff conducted a limited qualitative evaluation of the Wright 1911 Model B Flyer Simulator in Dayton, Ohio. This fixed base simulator had provisions for two crew members, sitting side-be-side, and was owned and operated by the National Park Service. It was located at the Huffman Prairie Flying Field Interpretive Center (<http://www.nps.gov/daav/index.htm>). A cursory literature search suggests that the software was developed by Birhle Applied Research, but this has not been verified.

The Simulator



Figure 1. General simulator arrangement. Right hand pitch control stick in stowed position

The simulator consisted of a fixed-base "cockpit" consisting of two seats and three control inceptors (figure 1). The center controller moved fore and aft and commanded turns. Moving the lever forward caused a left bank/turn and an aft movement commanded a right bank/turn. Since there was no rudder control, it was

assumed a rudimentary wing warping/rudder interconnect was implemented in the software as no appreciable adverse yaw was noted by either evaluation pilot during turns.

Along the outside edge of the two crew seats a lever controller was located that controlled pitch in the conventional manner, e.g. pulling aft raised the “nose” and vice versa. These levers could be stowed in a horizontal position to allow crew ingress/egress. The only other control was a push button located between the seats which allowed either pilot to initiate the simulation. The simulation could be flown from either seat, or the axes might be shared by both pilots. Control forces were light (2-5 pounds) and did not have a provision for control surface force feedback.

The simulation was hosted on a PC of unknown specification running Windows XP™. Of note, the system required a re-boot to function properly. The visual display was a large (estimated 55 inch diagonal) flat-screen monitor. The presented visuals were from the perspective of the pilot looking forward with an approximate 90-135 degree field of view. The scene was based on the terrain surrounding the Huffman Prairie Flying Field in the immediate vicinity of the Interpretive Center. It was day, VMC, with scattered cumulus clouds (a relatively rare occurrence in Dayton). The resolution of the display was sufficient for the task and representative of current-generation PC-based simulations. A slight time delay between control actuation and visual response was noticeable, on the order of 500 ms or less. It is not known if this was a simulator artifact or meant to be representative of the actual aircraft flying qualities.

The display (figure 2) had a representation of the assumed instrumentation available to the pilot in the actual aircraft. It was located in the upper right corner of the screen and consisted of an airspeed indicator and (non-sensitive) altimeter. This display was quite small and hard to interpret and both pilots found themselves referring to a textual display of speed, altitude, heading, and throttle that was available in the lower left corner of the screen.



Figure 2. Illustration of the quality of the visual display with imbedded instrumentation. Note: The FOV is not representative of the tested configuration.

The simulator provided only takeoff and “cruise” modes of flight. The landing task was not accomplished, nor was the landing mode simulated. The simulation started with a press of the button between the seats. The aircraft began a slow acceleration at maximum (100 percent throttle) power. Both control levers were maintained in a neutral position. At approximately 27 mph, the pilot commanded a pitch increase and the aircraft began a slow climb. It was very evident that the aircraft had very limited specific excess power as any pitch attitude more than 3-5 degrees nose high resulted in a noticeable and rapid airspeed decay. The simulator operator (NPS Ranger...not a pilot) briefed that the stall speed of the aircraft was 25 mph and that turns should be initiated no lower than 100 feet altitude and 35 mph. Both pilots made the slow climb to altitude and allowed the aircraft to accelerate in level flight to approximately 45 mph before attempting any maneuvering. This pilot found that a speed of 35 mph resulted in a comfortable climb rate and may be assumed to be the best rate-of-climb airspeed. The simulation was designed to run a total of 3 minutes or until the pilot “crashed”.

Both pilots “crashed” on their first solo flight attempt during their first attempt at a turn. The delay in the aircraft (or simulator) response, coupled with the counter-intuitive bank/turn inceptor resulted in an increasingly steep spiral followed with collision with the terrain. Both turns were initiated to the right, requiring an aft input on the center controller. It was suspected that the aircraft had a strongly unstable spiral mode as the bank angle increased rapidly (double amplitude in 2-3 seconds). Due to the marginally effective powerplant, an immediate loss of lift and increase in drag required a decrease in pitch to maintain flying speed. As the nose lowered for airspeed control, the natural reaction of both pilots was to pull aft on the center controller which resulted in an increase in right bank/turn and a loss of control. In this case, having extensive experience with modern center and side stick pitch/roll controllers worked to the disadvantage of the pilots in this limited evaluation.



Figure 3. Shortly after takeoff showing field of view.

A second solo flight (figure 3) by each pilot was attempted with successful results...3 minutes of sustained flight and award of a cool certificate (figure 4). Gentle

turns left and right were completed and altitude/airspeed was generally maintained in the acceptable range. Of course, extensive pilot compensation was required to accommodate the split control philosophy and workload was moderate to high. It is estimated that this control method could be mastered by an experienced pilot (or an eight-year-old gamer) with only a few more attempts. After all, there are helicopter pilots. On a side note, the Ranger noted that she had never seen such successful maneuvering flight on a second flight...a testament to the highly trained and experienced evaluation pilots.



Figure 4. Proud evaluation pilots

A third “dual” flight was attempted with both pilots at the controls. Pitch and bank/turn responsibilities were divided between the crew members with only verbal coordination between them. The flight ended in disaster and an argument in the car on the way to the hotel. This type of shared control methodology cannot be recommended.



The aircraft

The Model B (figure 5) was produced from approximately 1908 to 1914. It was the first Wright aircraft produced in any quantity and was the model purchased by the Aeronautical Division of the Army Signal Corps as the first military aircraft. Unlike its predecessors, the Model B sported an aft-mounted elevator

and rudder as the brothers apparently realized the error of the canard design vis-à-vis stability and control. The power of the engine was increased, as well as weight and drag due to more robust structural reinforcement. Another drag contributor was the upright seating position of the two crew members. At some point, a separate rudder control was implemented, replacing the early wing-warping/rudder interconnect. Examples of original Model B Flyers are on display at the National Museum of the Air Force and at the Stephen F. Udvar-Hazy Center of the Smithsonian Air and Space Museum.



Figure 5. Wright Model B Three-view Drawing and Specifications

Summary

Assuming a reasonably high level of fidelity of this simulator, it appears that the flying/handling qualities of the Model B Flyer were a significant improvement over the preceding Wright designs...which were highly regarded as unflyable by anyone but Orville and Wilbur. The talented brothers went a long way, in a short time, toward a mass-produced aircraft that could be flown by pilots with a modicum of training. Once the control scheme coalesced into the modern three-axis, two control (stick and rudder) system, the major hurdles to a successful air machine were surmounted.

Fly Safe and Check 6!

- Gary Aldrich
Kommanding



Young Eagles Rally 18 Oct 14 at KTSP

There will be a Young Eagles Rally at Tehachapi Municipal Airport on 18 Oct 14. If you wish to participate, contact Tom “Duke” Wayne at tom.wayne@ngc.com.

Last Month's Meeting

EAA Chapter 1000

USAF Test Pilot School

Scobee Auditorium

Edwards AFB, CA

21 January 2014

Doug Dodson, Presiding

The September meeting was held back at the USAF TPS for the first time since last March. The subject was the traditional September fare, namely the annual Oshkosh Report. Tens of members sat in rapt fascination as **Erbman** and **Opie** wove tales of adventure so amazing and exciting as to make listeners wonder just how much of it was true!



Tuki poses for the traditional title slide photo



Like Stormy before them, Russ and Tuki drove the Fisk arrival. They saw many landmarks, including this water tower which is advertised by EAA as a way to identify the initial approach fix of the town of Ripon



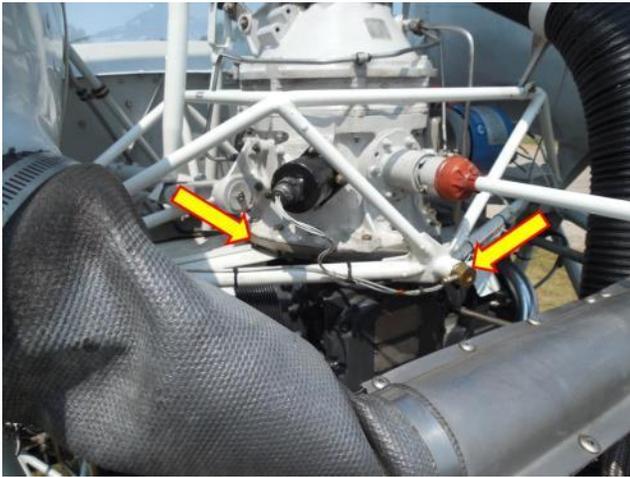
On Sunday Russ checked off another square of his Oshkosh list by flying a 0.1 in the Bell 47G-2



Can you see our campsite? Look inside the ellipse



On approach to the Pioneer Field runway



The Bell 47G-2 has *Project Police* roots. The plate called out by the arrows has the engine attached to the bottom, the transmission attached to the top, and connects both of them to the fuselage frame. That is, the whole fuselage hangs from this plate. This plate was designed by *PPO* Lee Erb many years ago



Opie joined with five other aircraft in a group called "MoVenture". This group departed KMHV at O-dark-thirty on Monday morning, flying non-stop to KOSH. Their arrival was a featured act in the Monday afternoon airshow.



Opie was the first of the MoVenture group to land. Here he is rolling out on runway 36



Taxiing in to show center



You just flew more than halfway across the country, and already you're in trouble...



Our Hometown Hero



The MoVenture group on display in Boeing Plaza



Later in the week the MoVenture crowd took off again for an EAA photo shoot over Lake Winnebago



Jared Yates of Hickory NC finished his Bearhawk and flew it to Oshkosh. Russ visited this airplane under construction in 2011



Tuki showed great interest in how Jared and Tabitha Yates solved the problems of flying with a small child



Russ visited the Bearhawk aircraft construction facility of Caleb Ihrig and Brady Lane in Caleb's basement. Here he points to the "Wall o' Lessons Learned" where he has two entries



It always rains at least once at Oshkosh, but this year it seems like it rained once a day. On Tuesday, the rain was timed just right to wash out the Bearhawk BBQ



Russ and Tuki represented the *Project Police* at the annual Swinefest on Thursday night. This year's theme was "OshVegas"



The menu included fresh pulled-pork sandwich, baked beans, dressing, potato salad, cole slaw, and roasted corn on the cob



In honor of Jimmy Doolittle III



Rains came to harass Swinefest also, driving Russ and Tuki away just as they finished eating. Another interesting development—everytime rain threatened, everyone around pulled out their smartphone to check their favorite weather radar app



The other problem with rain—solar drying of your towels doesn't work so well



Just a little reminder of what Jimmy Doolittle III flew well before his life as a Test Pilot



Just a little reminder of what Erbman does NOT fly, even though people keep claiming he does



A Pulsar on display that claims to have over 3000 flight hours. Powered by the Rotax 582 2-stroke, Knife guesses that he has had more than 5 and less than 20 engine failures based on Knife's experience. He also had a trim tab on the right aileron to deal with the roll tendency that all Pulsars (except Knife's) have



Jim Payne was on Boeing Plaza talking up the Perlan project that is trying to set a new world record for glider altitude by using a pressurized glider cockpit. Here JP tries Erbman for size



Just about all of the aviation press has gone over and over the One Week Wonder project. Vice Kommandant Steinlin announced before the event that he would be spending most of his time at Oshkosh on this project. If you can find Hellmuth in this picture, you're doing better than we did, as we never saw him all week



Down at the Seaplane Base on the Pontoon Boat tour. Tuki is to your left, and on your right is Kaylee (correct spelling not verified). Kaylee is a student at Indiana State University who was staying in our communal campsite. She is earning 3 hours of college credit by attending AirVenture and submitting a report. Where was that kind of class when I was in school?!



Waco cabin biplane on floats



These airplane mailboxes were at every food vendor. The idea was to sign your receipt and put it in here to enter a drawing. I think it was really someone's clever way to gather data on what everyone was buying. Here at the Seaplane Base they added pontoons to the mailbox



Tuki also tried the sheet metal workshop, drilling holes and driving rivets



Tuki tried out the gas welding workshop and used fire to make one piece of metal out of two



Tuki's first attempt at welding



Tuki with her latest project, while also showing the flag for the family airplane



Test Pilots keep getting younger and younger. Opie is shown here with Kennedy, granddaughter of Greg and Dora Richardson. Kennedy's shirt says "TPS Math Star". They claimed that meant "Taylor Primary School" but we know better!



The last known Lockheed Vega still flying. This is one of the last models produced. Most Vegas had a wooden fuselage, but near the end of production Lockheed started experimenting with sheet metal while designing the upcoming Lockheed 10 Electra



"The Lark of Duluth" is a replica of a Benoist flying boat. The original was flown from Duluth MN to Tampa FL where it started the first scheduled airline service, shuttling passengers one at a time between Tampa and St. Petersburg. An unusual feature is the chain-driven propeller



The Gee Bee QED was present as promised and did fly during the air show, but it seems that it wasn't there all week. Either that or they hid it from me



This guy wants to be really sure that you don't step on his flap. Makes you think it's been a problem before



Fairey "Janet the" Gannett with its unusual wing fold system



What's the checklist for smoke and fumes?

Web Site Update



Just a reminder that the EAA Chapter 1000 Web Site is hosted courtesy of Quantum Networking Solutions, Inc.

You can find out more about Qnet at <http://www.qnet.com> or at 661-538-2028.

Chapter 1000 Calendar

Oct 14: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., High Cay, 4431 Knox Ave, Rosamond CA. (661) 609-0942

Oct 21: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (661) 609-0942

Nov 11: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., High Cay, 4431 Knox Ave, Rosamond CA. (661) 609-0942

Nov 18: EAA Chapter 1000 Monthly Meeting, 6:30 p.m., Location TBD, Rosamond CA. (661) 609-0942

Dec 9: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., High Cay, 4431 Knox Ave, Rosamond CA. (661) 609-0942

Dec 16: EAA Chapter 1000 Festivus Etc Celebration, 6:00 p.m., Kommandant's Kwarters, 42370 61st Street West, Quartz Hill CA. (661) 609-0942

Jan 13: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., High Cay, 4431 Knox Ave, Rosamond CA. (661) 609-0942

Jan 20: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (661) 609-0942

Feb 10: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., High Cay, 4431 Knox Ave, Rosamond CA. (661) 609-0942

Feb 17: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (661) 609-0942

Mar 10: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., High Cay, 4431 Knox Ave, Rosamond CA. (661) 609-0942

Mar 17: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (661) 609-0942

Apr 14: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., High Cay, 4431 Knox Ave, Rosamond CA. (661) 609-0942

Apr 21: EAA Chapter 1000 Monthly Meeting, 6:30 p.m., Location TBD, Rosamond CA. (661) 609-0942

To join Chapter 1000, send your name, address, EAA number, and \$20 dues to: EAA Chapter 1000, Doug Dodson, 4431 Knox Ave, Rosamond CA 93560-6428. Membership in National EAA (\$40, 1-800-843-3612) is required.

Contact our officers by e-mail:

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Inputs for the newsletter or any comments can be sent to Russ Erb, 661-256-3806, by e-mail to erbman@pobox.com

From the Project Police legal section: As you probably suspected, contents of The Leading Edge are the viewpoints of the authors. No claim is made and no liability is assumed, expressed or implied as to the technical accuracy or safety of the material presented. The viewpoints expressed are not necessarily those of Chapter 1000 or the Experimental Aircraft Association. Project Police reports are printed as they are received, with no attempt made to determine if they contain the minimum daily allowance of truth. So there!

THE LEADING EDGE

MUROC EAA CHAPTER 1000 NEWSLETTER

C/O Russ Erb

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ADDRESS SERVICE REQUESTED

THIS MONTH'S HIGHLIGHTS:

REGULAR MEETING 21 OCT @ TPS

FOX AIR FAIR/TSP YOUNG EAGLES

WRIGHT MODEL B FLIGHT REPORT

OSHKOSH REPORT

