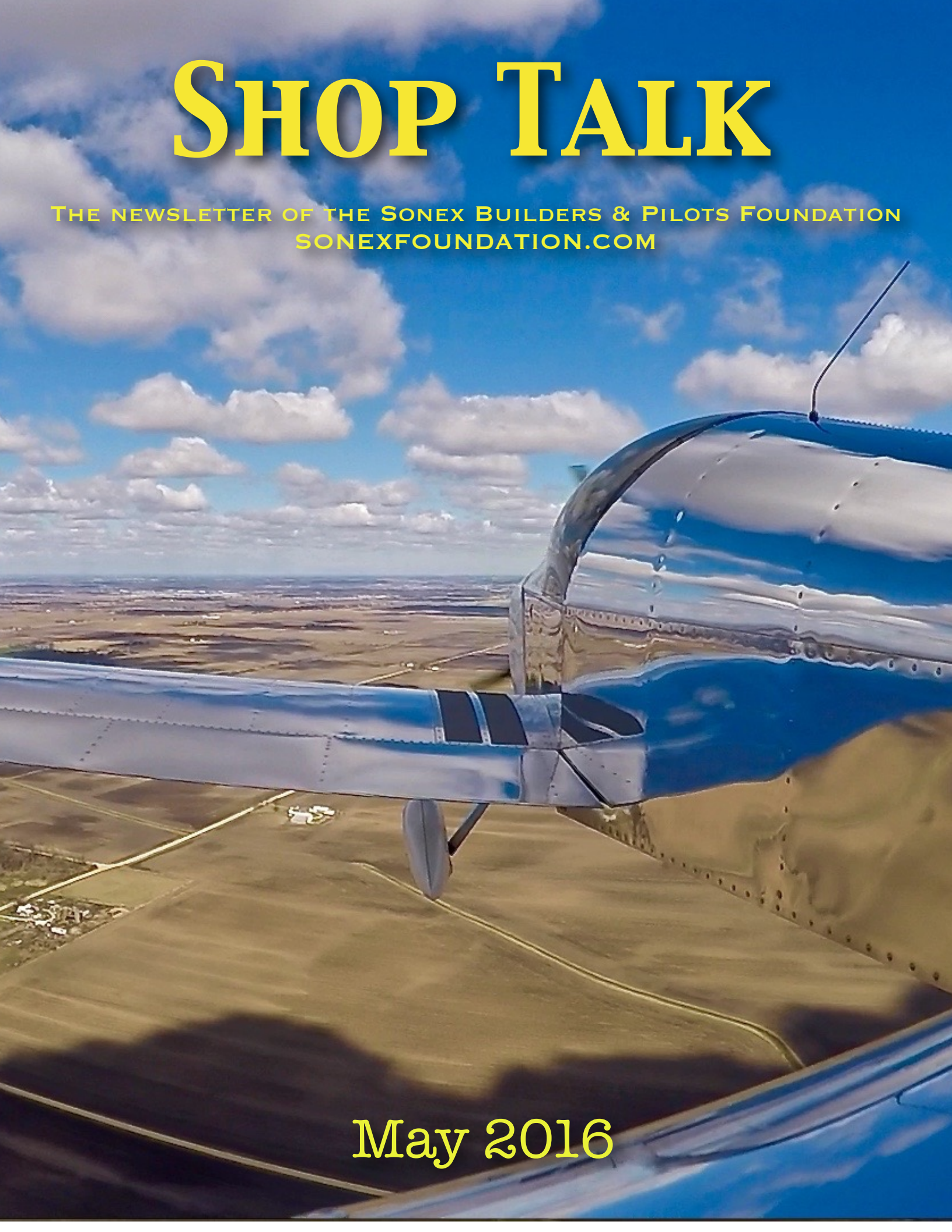
Shop Talk

The newsletter of the Sonex Builders & Pilots Foundation
sonexfoundation.com



May 2016

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President - Robbie Culver
Vice President - Mike Farley
Secretary - Dana Baker
Treasurer - Carl Orton
Membership - Dana Baker

499 Members
38 Voting members

www.sonexfoundation.com

Submissions are always welcome at robbie@sonexfoundation.org

Club membership is free, and for those who wish to participate in elections and help direct this member-run organization, a voting membership is $25 annually. Your donations help us keep the websites running, and allow us to publish this newsletter. We sincerely hope you enjoy it.

Shop Talk

Robbie Culver, President - Sonex Builders and Pilots Foundation

By the time this reaches your inbox, there will be less than two months until Oshkosh. Wow!

That's not far away, and many members are already planning their trips. Wherever your departure point is, and whatever your route, we hope you have a safe yet adventurous trip! A pre-Oshkosh event is planned for KRPJ Rochelle, IL for July 23rd and 24th - stop in if you're interested! Details are in this issue.

We are once again planning our membership meeting, held every year behind the Sonex booth on the flightline. When we are positive of the date and time it will be announced on the forum (Sonexbuilders.net) as well as our website. Proxy voting cards will be distributed to all voting members. This years member meeting includes the Board of Director elections. New BOD member Chris Balthis is up for election, and incumbent Robbie Culver is up for reelection. Look for introductions a little later in this issue.

We invite all members and interested friends to join us at our 2nd annual member picnic to be hosted at Wayne Daniels "7th Heaven" on the east side of Wittman Field. Last years picnic was a blast so we hope you will join us to make new friends, revisit good times with old friends, and watch the night airshow. This year we will be picking up members at the airport terminal to avoid the traffic jam by the museum - a shuttle is available from the AirVenture grounds to the terminal.

As always, we enjoy featuring member aircraft and this issue we include John Stewart of Goodyear, AZ, and one of our international members, Phil Bird of Mittagong, NSW Australia.

We have uploaded three new YouTube videos to our channel at https://www.youtube.com/channel/UCCnIilmVPw6sVeUp_xPO7fw -- be sure to subscribe so you'll know when we share something new! Yankin' and Bankin' is a project we worked on over the winter and spring, and it combines member video segments with some exciting SubSonex footage provided by Sonex Aircraft, LLC.

Michael Farley takes us along on his Waiex Dawn Patrol, and explores short field operations in an AeroVee Turbo powered Waiex. Look for more videos in the future!

In this edition we share Dana Baker's story of an epic 1951 statute mile cross-country trip in his scratch built Sonex. For many of us, this sort of trip is exactly the kind of flight we dream of as we build. Congratulations Dana on the achievement! Jim Hicke met Dana early in his adventure and posted a video at http://youtu.be/3yGCc-EDX0E

We continue to search for a treasurer to replace Carl Orton - Carl's dedicated work has been a key part of our success these past three years, but it's time to let him enjoy his retirement! We would prefer a voting member to take over these duties, preferably with some financial experience. There is not a lot of work involved or time required in this role. If you have an interest in helping us, please email Robbie@sonexbuilders.net for more information.

We hope you enjoy the newsletter!

Pre Oshkosh event

Robbie Culver

If you are interested in a Sonex-friendly stop-over en route to Oshkosh on Saturday July 23rd or Sunday July 24th, 2016, we have just the place for you to stop. An existing fly-in in Rochelle, IL (KRPJ) has graciously allowed us to invite Sonex pilots to stop and overnight on the way to Oshkosh.

The event is supported by the community and the skydiving center based there, Chicagoland Skydiving. This is held the Saturday and Sunday prior to AirVenture and is a perfect stop for those headed to the show.

This will be a low key event. For those flying to Oshkosh, it can be an alternative overnight or fuel stop. It is well west of the Chicago Class Bravo, south of Rockford's TRSA, and not much more than an hour from Oshkosh. Plans are to meet there on Saturday and head up to Oshkosh early Sunday morning for the Sonex Aircraft, LLC open house. If weather prevents a departure, we will be somewhere that we can camp, eat, and hang out together.

It's held at an airport with a hard surface runway, cheap fuel, places to eat and stay. The local hotels offer discounts.

There are no SBPF funds involved, and we are not involved in its organization - we picked this event because it is close enough to Oshkosh to make an hour flight there on Sunday morning.

The event is called Wingfest and all things with wings are invited. For those driving up this is literally only several miles off of Interstate 39 in north central Illinois.

From the organizers: "The Comfort Inn and Suites are the closest and if you tell them you are doing business with Chicagoland Skydiving Center, they give a deep discount. Holiday Inn Express is nicer but a bit more expensive. Tell them you are in doing business with A&M Airsports for the discount."

There is also a Super 8, a Red Roof and a couple other small ones in the area of Rochelle (no discounts).

The airport has a courtesy car. Event organizers have said they will try to help shuttle people, and there is a taxi service in town too. There are washrooms and showers on the field for people camping.

The Rochelle Comfort Inn can be reached at (815) 562-5551 and the Holiday Inn Express can be reached at (815) 562-9994. The website is http://www.airsportster.com/wingfest.html.

Keep in mind that Chicagoland Skydiving operates out of the airport with several turbine aircraft, so do not directly overfly the airport. Listen closely to the CTAF as you approach for jumpers in the air, and if skydiving is active when you land be prepared for extra traffic.

Race to Atlanta - A Long Cross Country

Dana Baker

I have always wanted to do a long trip. I was planning to go to Oshkosh this year, but as life would have it I got a job for 6 months in Atlanta. Since I could not make it to Oshkosh 2016 and I couldn't be "grounded" that long I decided to take a week off and reposition my plane to Atlanta from California.

PRE FLIGHT

I talked to Kip Laurie about his trip and then mapped out the flight. Bob Bible helped me find a spot in the hangar where he stores his plane in Atlanta to keep the plane safe from weather. I prepared a list of supplies which included a survival kit, tent, sleeping bag, small stove, freeze dried meals, water, rain gear, tools, warm clothing, oxygen, a SPOT GPS messenger tracker with an SOS feature, and a photo of my family (key to WILL TO SURVIVE).

Since the western half of the trip is mostly in remote areas I wanted to have the best chance to survive an off airport landing. If I was not hurt and needed to self rescue, the supplies should be able to get me out or last long enough for search and rescue to find me. Since I have done a lot of long summer and winter backpacking trips in the Sierras and Mojave desert I know what to expect in the wilderness. Next I watched the weather for an opening to take the trip. I gave myself an 8-day window. The goal was to head out on day one of that window.

THE FLIGHT

The weather was looking good for departure on day one of the window - there was some weather that could have delayed me on the eastern half of the trip. I wanted to do the trip in two days and fly commercial home on day three so I could get home to have some time off before the job starts. The goal was to fly 975 miles a day. I did not make that goal due to a late start and not accounting for the time zone changes causing a loss of hours.

Day 1 Sunday February 28, 2016 KWJF-KEED-KINW-KAEG-KTCC

With a bear claw and a cup of coffee for breakfast I got a little late start and was wheels up at 6:40am. The flight to Needles was smooth at 9500 feet, and I met up with Jim Hicke at Needles to do some air-to-air video as I climbed to get out of the valley. The next stop was Winslow Arizona. The FBO was open and fueled me up gave me a bottle of water and I was back in the air in less than 20 minutes. Double Eagle Airport in Albuquerque New Mexico is the next stop.

The turbulence started half way to KAEG and did not stop until 40 miles from Tucumcari. I spent 35 minutes on the ground at Double Eagle fueling and getting a brief on weather from FSS. The altitude is high and the temperature was up so density altitude and performance was figured and it was within the capabilities of the aircraft as loaded.

The next planned stop was Trade wind airport in Amarillo Texas. The sun was going down as I forgot about the time change while planning. I had to stop at Tucumcari New Mexico, which was a planned alternant overnight stop. By the time I got there the staff was gone. The terminal was open. I called the Quality Inn and talked to a guy named Will. He told me they had a room but there was no taxi service and no courtesy cars available at the airport since the staff was gone. Will took my number and told me he would call me if he could get me a ride. I figured there was a couch in the terminal and I could sleep there if needed. I got a call back and Will told me the Manager Sally form the hotel was on the way to get me. She got me all settled in and I had the first and only meal of the day. I asked how I could get

back early (5am) in the morning. Sally told me she would get me a ride or give me the keys to her car and I could drive it and leave the keys for her at the airport. In the morning she left the keys at the desk and off I went. That was by far the best customer service I have ever received.

Day 2 Monday February 29, 2016 KTCC-KCLK-KRUE-KTUP

I was off before the sun broke over the horizon. I flew at 7500 feet in smooth air and had my two granola bars and a bottle of water for breakfast. I landed at Clinton, Oklahoma, fueled up, and got a weather brief from Flight Service. The weather was forecast to be marginal to the south, so I changed my route to stay north until further east. I picked an airport about 330 miles away - Russellville, Arkansas - and amended my flight plan. I spent 20 minutes on the ground in Clinton. I had a huge tail wind and made the 330 mile leg in two hours and fifteen minutes. I also had some turbulence enroute and more on approach. The first approach to landing was not good so I went around, and on the go around I had a close call with an eagle that came within 15 feet of hitting me.

The adrenalin was pumping and I landed the second time around. There was an 8 knot cross wind ninety degrees to the runway - I was glad to be on the ground. This was a quick stop also, then I was off to Tupelo Mississippi for fuel and then to Gwinnett County airport in Atlanta, racing a cold front that was due in the next morning.

It was getting late and I knew that Tupelo had a hangar to park my plane away from the approaching storm - I knew I could not make my final destination so I decided to stop for the day in Tupelo and see how the weather looked in the morning. When I woke up there were clouds but I could see clear sky and sun to the east. My brother called me from Atlanta and told me it was clear, however when I checked the weather there were developing thunderstorms in Alabama. I decided to stay put for one more night - I could see how people get in trouble with weather, as I had a strong urge to depart. But deep down I knew it was a bad decision so I stayed.

The weather cost me 36 hours.

Day 4 Wednesday March 2, 2016 KTUP-1M4-KLZU

On Wednesday the weather was improving and forecast to be VFR along my route. There was an AIRMET for moderate turbulence below 18,000 feet. I took off at 7:05am and planed a cruise altitude of 5500 feet. About 65 miles after I departed, I could see the weather was not clearing as expected.

I looked up an airport along the route and chose Posey Field (1M4) in Haleyville, Alabama. As I descended I found the turbulence at and below 3500 feet - it was rough all the way to the runway with a left quartering cross wind. I pulled up to the small FBO, which looked closed.

It was cold but I was enjoying the greenhouse heat the canopy was providing and called to get another weather brief. The new forecast showed clearing over the next couple of hours. I got out to stretch my legs and to investigate the FBO and I was surprised to see someone inside. I went in and had a great time talking with the gentleman inside for a couple of hours, then topped off the fuel and was on my way.

As I climbed there was turbulence up to about 4500 feet, but at 5500 feet I found smooth air and a left quartering 35 knot tailwind. There were few scattered clouds at 5000 feet ahead so I climbed to 7500 feet and found the air there was also smooth. There was only about 20 miles of the scattered layer. ATC cleared me into the ATL class Bravo airspace. I wanted to stay in the smooth air at 7500. At about 25 miles out I started my decent and found the turbulence was moderate and started at 3500 feet. The wind was 290 at 12 knots gusting to 20. I knew it was going to be a rough approach and landing. The tower cleared me for a right downwind to runway 25.

I was tossed around and found myself high on final and made an early decision to go around. The second attempt was much better I took a longer approach, and was tossed around left wing up, then right wing up by the gusting wind all the way to the flare, when the wind just seemed to stop. I got on the ground and kept it on the centerline, “flying” the tail wheel all the way to the hangar.

As I taxied I saw Bob waiting for me in his car - I followed him to the hangar and got the plane parked. We went into the FBO and got the paperwork and payment completed for the first month. I had a Southwest airlines flight scheduled for the next day - I really wanted to get home. It was almost 2pm. Bob took me to the train that goes directly to the airport, and I changed my flight to the last flight back to Burbank via Phoenix, departing at 4:55pm. The TSA was very slow and took over an hour to get through. Of course I missed a multitool in my bag and got pulled aside for a bag search. I lost that tool to TSA and made it to the gate 2 minutes before boarding.

I asked the Southwest desk agent what it would cost to upgrade to an “A” boarding pass. He looked it up and told me $40.00. I upgraded and received an “A6” boarding position. That was the best $40.00 I ever spent. I was on the plane and headed home.

As I sat there for a couple of hours I realized that the seat in my Sonex was more comfortable and had more room than the 737-700. I never got a back ache during the almost 18 hour trip in the Sonex like the one that was developing. As I sat there and looked back at the last 4 days it started to sink in what just happened. I traveled 1951 miles in 17 hours and 58 minutes for an average ground speed of 109mph. Even with the 36 hour lay over I was home Wednesday night.

Here is some of the data I collected from the trip:

From	To	Distance	Time	Avg GS
KWJF	KEED	217sm	2:17	95mph
KEED	KINW	228sm	2:18	99mph
KINW	KAEG	209sm	2:10	96mph
KAEG	KTCC	170sm	1:44	62mph

Day one totals 824sm 8:24

From	To	Distance	Time	Avg GS
KTCC	KCLK	250sm	3:00	83mph
KCLK	KRUE	330sm	2:15	132mph
KRUE	KTUP	258sm	2:05	124mph

Day two totals 838sm 7:20

From	To	Distance	Time	Avg GS
KTUP	1M4	67sm	00:52	77mph
1M4	KLZU	209sm	1:25	148mph

Total flight time	17:58
Total miles traveled	1951
Average ground speed	109 mph
Total gallons used	73.3
Total fuel cost	$313.20
Average fuel per gal.	$4.27
Oil used	1.75 quarts

Centex Sonex Group Trip to Big Bend Ranch State Park

Mike Singleton

Weather and other issues conspired to delay this trip for a couple of weeks, but Friday April 22nd finally opened for nice flights to the ranch. Originally, Robert Barber and I planned to fly there on Thursday and return on Sunday, but the Houston area floods caused us to shorten the schedule by one day. Things looked doubtful for my departure from Sport Flyers Field (27XS), since the field was totally under water on Monday. However, I went to the airport on Thursday afternoon, and, though the runway was very soggy, the runway centerline area at the north end was better than expected.

THE TRIP WEST:

On Friday morning I arrived at the airport at first light, took the golf cart onto the runway and inspected the north end. I determined that above 800' was fairly solid so long as I stayed right in the middle. From there to the south things deteriorated, so I decided to attempt a takeoff and would abort if I had not lifted off after about 500'. All was successful even though I was quite heavy with full fuel and all of the food, cooking/eating utensils for the entire group and with clothes, bedding, cameras, emergency tools, water, etc. Add to that a wet, somewhat soggy runway, and you can see why I was a bit concerned. The takeoff, using my best soft field technique, required about 500' to lift off, then hold it low in ground effect for a couple of hundred more feet before climbing out and heading west. I do like the power of the Jabiru 3300!

Robert had planned to depart Coulter Field (CFD) with his grandson Logan at about the same time, and we were to switch to a preplanned air-to-air frequency after takeoff. This worked out fine as we were both off at approximately the same time.

Bob Carson was to depart Roanoke, TX (52F), stop in Temple (TPL) to pick up Sonex owner (and former Onex owner) Phil Davis , then meet us at the ranch. Neither Robert nor I had discussed actual timing with Bob or Phil. However, I got a text from Phil while enroute stating that they were headed to Sonora (SOA) for fuel. I replied that were stopping at Junction (JCT), so we decided to rendezvous there. As it turned out, we all landed there within about a ten minute span, and, after fueling and relieving, we were headed west as a group.

We had a nice flight to Alpine (E38) for fuel, followed by a very good lunch at the Reata Restaurant, then some last minute grocery shopping, and we were off to the south on our way to the Big Bend Ranch State Park airstrip (3T9).

Fuel, lunch & supply stop in Alpine
(from left: Bob Carson, Robert Barber, Logan Belt, Mike Singleton & Phil Davis)

The terrain begins to get rugged between Alpine and the ranch

AT THE RANCH:

As directed, we buzzed the ranch headquarters to let them know we had arrived then landed on the 5500' paved runway which is located about a mile from the ranch headquarters. We had hardly started tying down and unloading the planes when David Dotter, the park ranger, drove up to greet us. Robert and I had met and visited with him two years ago and found him quite friendly, hospitable and

entertaining. He is a pilot and had a Cessna 182 at the strip and an Avid Flyer (not flyable at this time) at the headquarters. Shortly after his arrival, park volunteer Jim arrived in the park Suburban to haul us to the bunkhouse.

After selecting our bunks and checking in at the headquarters building, Phil Davis went to take a short nap, since he had only had about 3 hours of sleep the night before. I should mention that the bunkhouse is set up with separate male and female sides with each side partitioned with two single beds per cubicle. The cubicles do not have doors but provide a modicum of privacy and separation. The beds have linens, pillows and comforter, so I brought my bedding unnecessarily. An inspection of the large commercial style kitchen revealed that it was not necessary that I bring all the cooking and eating utensils, either. We had ample space in the refrigerators for our stuff. In fact, we were the only ones in the bunkhouse, so we had a lot of room everywhere.

Exploring the hills behind the bunkhouse

MEALS:

A short hike around the compound and in the hills behind the bunkhouse got our appetites revved up for the planned steak dinner. We had decided early in the trip planning to not skimp on meals, so I brought plenty of food and only the best I could find. I didn't have any room left in the plane to do much about desserts, but the very large, choice ribeye steaks, ground sirloin, eggs, bacon, potatoes, etc. assured that no one went hungry. And, everyone seemed to thoroughly enjoy the meals. The cooking and cleaning chores were shared, so nobody worked too hard.

Saturday morning breakfast

LOCAL FLYING:

Logan cooked most of breakfast and served us all bacon, eggs and grilled bread to get us ready for our morning local flight. We got a ride to the airstrip from Autumn, one of the park employees, loaded up and headed east toward the Solitario where we played down low a bit before heading further east to the Christmas Mountains in the Big Bend National Park. After catching a few bumps while passing through a mountain saddle, we all headed back west with Robert heading down low to follow a valley (an excuse to twist and turn instead of flying straight and level), while Bob and Phil dropped down for a close look at the town of Terlingua.

We all met up at Presidio (PRS) on the Mexican border to top off with fuel before Robert, Logan and I headed back to the ranch. Bob and Phil decided to head home, since the weather forecast for their planned return trip the next day was somewhat marginal.

Robert & Phil ready for the morning flight

Robert & Logan, Bob & Phil off my wing on our way to the Solitario & the National Park

Passing back over the landing strip and ranch headquarters on the way to Presidio

Presidio (Mexico in the background)

Robert, Logan and I headed back to the ranch

BACK AT THE RANCH:

After lunch, park volunteers Kirsten and Jim agreed to take us on a 4-wheel drive and hiking tour of some select areas of the park including Ojito Adentro and Cueva Larga. On these hikes we explored some caves with Indian (and some cowboy) cave paintings. One of the caves was quite large but not very deep and offered a good view of the terrain, including numerous rock placements for baby goats. These were old placements, and no goats were present. We also descended into a valley grotto with crystal clear water. Climbing over and squeezing between boulders, then crawling under fallen trees made this an interesting hike.

The scenery along the 4WD and hiking trails was interesting and beautiful, and added new dimensions to the aerial views we witnessed.

Exploring with park volunteers Jim & Kirsten

Beautiful but rugged country

Taking a break at the grotto

HEADED HOME:

Sunday morning, like the rest of the time so far, was wonderful with clear to partly cloudy skies and moderate winds. Our first stop on the return was for fuel at Sonora (SOA) then on to Fredericksburg (T82) for lunch at the Airport Diner.

Time to depart for home

Wild, addictive country

The weather was mostly good heading east from Fredericksburg but became cloudy with just enough holes to allow us to stay on top at a cruising altitude of 7500'. Unfortunately, a large area of rain was moving up from the Gulf of Mexico and blocked my path home to the Houston area. I stopped and parked the plane at Robert's home field in Bryan and drove home with my wife, Connie, who detoured on her return drive from north Texas to pick me up. Robert then flew down the next afternoon and picked me up to take me back to Bryan to get my plane.

The flight home from there was uneventful except for a 30mph headwind.

CONCLUSION:

The trip was a great success though shorter than planned. The general consensus seemed to be that we will do it again next year, add a day and hope for a little cooperation from the weather gods.

Bend Big Ranch State Park, with its great scenery, nice accommodations, and absolutely helpful and friendly employees and volunteers, is a fantastic getaway, especially by air.

Nice tee shirts guys!

Board of Directors Candidates

This year we have two Board of Director members up for election. The first is Chris Balthis and the second is Robbie Culver. Each is nominated for a 3 year term. We asked each to introduce themselves to members.

My name is Chris Balthis. I am a technology and engineering teacher at a high school in Virginia. I am fortunate enough to get to teach kids about aviation as part of my class assignments in an aerospace technology course. I earned my private pilot rating in 2010 after getting the flying bug in college when a friend would take me up in a 150. I am currently a member of a flying club with Cessna 172.

I've always wanted my own plane and decided to buy a set of Sonex plans in 2011. Around that same time I read some people's discontent with the yahoo discussion format and decided to learn how to create a forum. I purchased the domain SonexBuilders.net and had the site up and running by the end of

the day. That random decision has led to an active discussion site with just over 1300 members. The success of the site is in great part thanks to the support of the Sonex Builders and Pilots Foundation as well as Sonex Aircraft.

The site turns 5 years old this June. I hope that it will continue to be a great place for people interested in the Sonex line of aircraft to gather to exchange ideas and to help each other.

Hi friends, it's Robbie Culver here - currently serving as President of the Sonex Builders and Pilots Foundation, and a founding member of this type club. Over the past three years, we have worked to build a community, partnered with the SonexBuilders.net forum, joined the Type Club Coalition to represent our aircraft, posted and published technical information and a transition training guide, and published a quarterly newsletter.

I am once again asking for your support to continue the work we have started and continue assisting builders, pilots, owners, and enthusiasts alike in the challenges faced as we build, operate and maintain various models of Sonex aircraft.

After years of being around and in the back of aircraft as an active skydiver, I completed my private pilot training in late 2001, and bought a Cessna 150F. We moved up to a Cherokee 140 before life changes forced a sale. In 2011 I bought plans and a tail kit for a Sonex and attended the builders workshop.

In October 2015 I completed a 4 1/2 year project building Sonex 1517, a conventional gear, AeroVee turbo powered legacy model. I currently am nearing the completion of phase 1 testing and am looking forward to flying it to Oshkosh this summer to fulfill a lifelong dream.

Builders Updates

John Stewart - Sonex SN 1462 - N462SX - Favorite Lady (Named in Honor of my Father-in-Law's WWII B-17)

What is your Sonex's (Waiex/Onex/Xenos) Serial number

1462

What gear configuration do you have?

Tri-Gear

Any modifications to the stock setup?

Dual Controls, Center Sport Trainer Controls, Hydraulic Brakes, Sonex Interior finish kit

When did you start building and when was the first flight?

I received my Kit on November 11, 2010. First Flight was on March 30, 2016

What do you have installed? Please be specific – Engine, electronics, etc. A full list please

Aerovee 2.1 (non turbo), Dual MGL Xtreme EFIS, MGL V6 radio, Sandia transponder

What modifications and customization did you do?

none

What else do you have planned for the airplane?

nothing at this point – just started flight testing

Where are you based?

Phoenix Goodyear (KGYR) (Goodyear, AZ)

What made you choose Sonex?

Cost and simple construction

What did you find most challenging about this build?

The electrical, fuel system and firewall forward. They took a lot more time than I imagined. The Canopy and Cowling required a lot of trimming and fitting. They also required more time than I thought they would.

What would you do differently looking back?

At this point nothing.

What advice could you offer to someone currently building a Sonex?

Have fun. Keep going. That first flight is well worth all the work

Do you have an online build log or web site?

http://stewartaircraft.net

What can you tell us about the first flight? How did it feel? Did anything surprise you about the airplane?

The first flight was great. The plane flew exactly as I expected. I did have two unexpected items that caused me to cut the first flight short. Oil pressure indicator would spike to 200 - 500 psi for a moment and then return to normal. (This was the reason I terminated the first flight.) It turned out to be a lose wire going to the RDAC unit. Transmission in flight to the Tower were garbled. Turned out to be the Mic Gain setting on the V6 radio. Also the #3 cylinder CHT was higher than expected. But I was able to keep it with in limits by step climbing. The initial max RPMs at take off was only 2950. But was adequate for climb out. I was at a light gross weight of 915 lbs.

The second flight was much better.The #3 cylinder temp was high again. On this flight I was able to check the timing. The secondary was too advanced. There was an increase of 200 RPMs with the secondary off.

The third flight was great. I had adjusted the timing. Initial max RPMs at take off was 3400.The #3 CHT was a lot lower. Did not need to step climb to keep the temps with in limits.

How did you prepare for that first flight?

I did the Sonex T-Flight 5 hour program. But I did it way too soon. It was over 1 1/2 years between the training and my first flight. It took a lot more time to finish my build than I had planned. I flew another light sport plane (Remos GX) in the months leading up to my first flight. Not quite the same flight characteristics but did have the same light controls.

I met with the Tower manager to discuss when and how they would prefer I did my first flight. This really helped. Goodyear has two airline training schools. He suggested I do it at sunrise when the schools were not active yet. This worked out great. This allowed me to do a slow step climb in the pattern above the airport. They were also great in working through my initial garbled transmissions. It could have been a real problem if they were busy with the airline students. I highly recommend taking the time to meet with the tower staff!!

What goals do you have now? (Trips? Completing the 40 hours? Going to Oshkosh?)

Completing the 40 hours! But that will have to wait until this fall. The Arizona summer heat is not a good time for the flight testing.

Name - Sonex number

Philip Bird 19-8706

What is your Sonex's (Waiex/Onex/Xenos) Serial number

759

What gear configuration do you have?

Tail Wheel

Any modifications to the stock setup?

NO

When did you start building and when was the first flight?

Started November 2014. First flight March 2016

What do you have installed? Please be specific - Engine, electronics, etc. A full list please

Jabiru 2200 solid lifter engine. Sensenich 60X46 prop. Jabiru ram air ducts. MGL Ultra Horizon EFIS with a LED alarm indicator. Rdac XF monitoring 4X CHT, 4X EGT, oil pressure, oil temperature, carb temperature, RPM, and OAT. Funke A600 Radio with built in intercom. Mobile one antenna, UMA 2 1/4" backup ASI. Belite slip indicator. Flight data systems GT50 "G" meter. Belite fuel level sender. AeroConversion trim wheel. Falcon compass. Sonex brake drums. Odyssey battery. United voltage spike capacitor. Duck works landing lights, Aveo flash strobe lights. Merit power supply socket. Vans NACA ducts for fresh air, airliner type air outlets. A800 throttle control, "T" levers for choke and carb heat.

What modifications and customization did you do?

Extended prop hub so oil cooler could be fitted at the front of the engine. Cowling extended 50mm to suit. Extensions on bottom of cowling to fair in gear leg fairings. Canopy "hold open" arm and piece of bungee fitted to canopy cable for safer canopy openings. 50mm extension to bottom of instrument panel. Extra flap position. Heat/noise shield on inside of firewall. Anson flap stops. Brake cable adjuster on brake lever. Canopy glued in place with Sikaflex and screws, no rivets.

What else do you have planned for the airplane?

Different prop. Baggage holder and plans holder.

Where are you based?

Mittagong NSW Australia

What made you choose Sonex?

Looks, Price, fitted in the Australian recreational category.

What did you find most challenging about this build?

Canopy, scared I was going to break it. All I could see was $$$ signs. The cowling was very time consuming because of the modifications I made.

What would you do differently looking back?

Perhaps learn to use a rivet gun for the solid spar rivets, my arm took a while to recover.

What advice could you offer to someone currently building a Sonex?

Attention to detail is important but don't stress out over mistakes we all make mistakes. Think ahead.

Do you have an online build log or web site?

Yes http://www.mykitlog.com/corby202/

What can you tell us about the first flight? How did it feel? Did anything surprise you about the airplane?

No real surprises all went smoothly. Force required on flap lever perhaps biggest surprise. Very happy with the way the plane flew. Needed a small trim tab on the rudder.

How did you prepare for that first flight?

Perhaps an hour or so taxying slow to 20knots to get familiar with rudder pedal force and forward visibility. A couple of(pilot) friends on the ground with a radio, plan of what I was going to do if the engine quit on takeoff.

What goals do you have now? (Trips? Completing the 40 hours? Going to Oshkosh?)

Only needed 25 hrs in my category which I completed recently. Trips yes

Modifications

Editor's note - As always, this modification is not a recommendation or intended as instructions on how to modify your aircraft.The Sonex Builders and Pilots Foundation neither endorses such modifications nor encourages builders to make them. Any modifications to the design of the aircraft must be carefully considered.

Baggage Compartment
Jim Hicke

Sonex prides itself on simple practical aircraft and has a minimalist view when it comes to the creature comforts in an aircraft. The baggage area is a perfect example. People use baggage slings or some sort of basket to hold things. I wanted a permanently installed baggage compartment that would keep the baggage from interfering with the control rods and cables that run through that area. My solution, while not minimalist, is easy enough to make and gives me a lot of options for cross country flying.

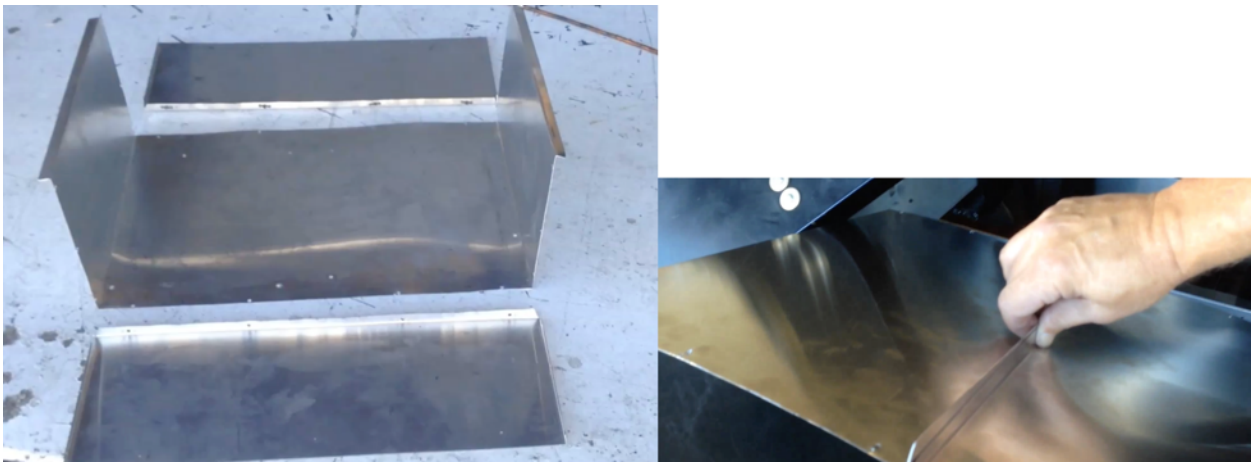
The concept that I settled on was to have a hidden area behind the seat where I could store things that I might always want with me. I ended up using it for a tent and sleeping bag which leaves the main baggage area available for my oxygen, backpack, and canopy cover. It has the side-effect of giving me more cross-country options, reducing the 'get-there-itis' tendency, because I always have a place to sleep if I'm shut down by weather or mechanical issues. I have stopped at many small airports without a soul in sight, but most of them have either a nice pilot lounge and/or a grassy area for when there are no hotels or room availability.

Detail of hidden compartment walls

The picture above shows the hidden compartment which is formed by four walls and the floor of the baggage box. The Waiex rudder cables take a sharper angle into the baggage area than in a straight tail Sonex necessitating the angle on the outer walls. The bottom of the walls are riveted to the bottom skin while the tops have nut-plates for the floor of the baggage box. This area holds my sleeping bag and tent and is accessed by removing the top pins of the seat and pushing it forward to reveal the openings. The openings behind the seat ended up being smaller than I wanted. If I had made those walls taller, the opening would have been bigger. As it is, I have to finagle the backpacking tent and sleeping bag to fit through but once inside they stay put. The nice thing is that anything I put in there is guaranteed to not interfere with the control system.

The next thing I had to figure out was how to get a rectangular box through a triangle hole. I could have constructed the box in place from five pieces and joggled it all together but I came up with a three

piece box that can fit through the triangular opening. I used one piece of aluminum for the left, bottom, and right of the box. I used two separate pieces for the front and back.



Basic shape of the baggage box – Folded to fit through baggage opening

The front and back wall have nut-plates along their edges which are used to form the basic box structure once everything is moved into the baggage area. By bringing the left and right walls together, the bottom bows and becomes a shape that will fit through the baggage opening triangle. The front and back walls are then metal screwed into the seat back cross member and rear baggage bulkhead. Once the bottom is screwed into the four hidden compartment walls the whole thing becomes very rigid.

I don't worry about baggage and interference with the control system. I can put all sorts of bulky stuff back there as long as I watch out for the weight. When my wife and I travel, we each get a day pack that fits nicely and I stuff in the canopy cover over the top of them. When I travel alone, I have my tent, sleeping bag, oxygen, backpack, camera equipment, and canopy cover with me. I now have over 400 hours on the aircraft and this was one of the additions I made before my first trip to Oshkosh. It isn't lightweight or minimalistic but I love having it as part of the aircraft.

Panel mounted fuel shut off.
David A

I wanted to be able to reach fuel shut off with shoulder belts tightened in case of an emergency landing. I also wanted to be able to see the position of that shut off.

With this, plus toe operated brakes, and electric flaps, there are no controls needed in flight that cannot be reached with the shoulder straps tight.

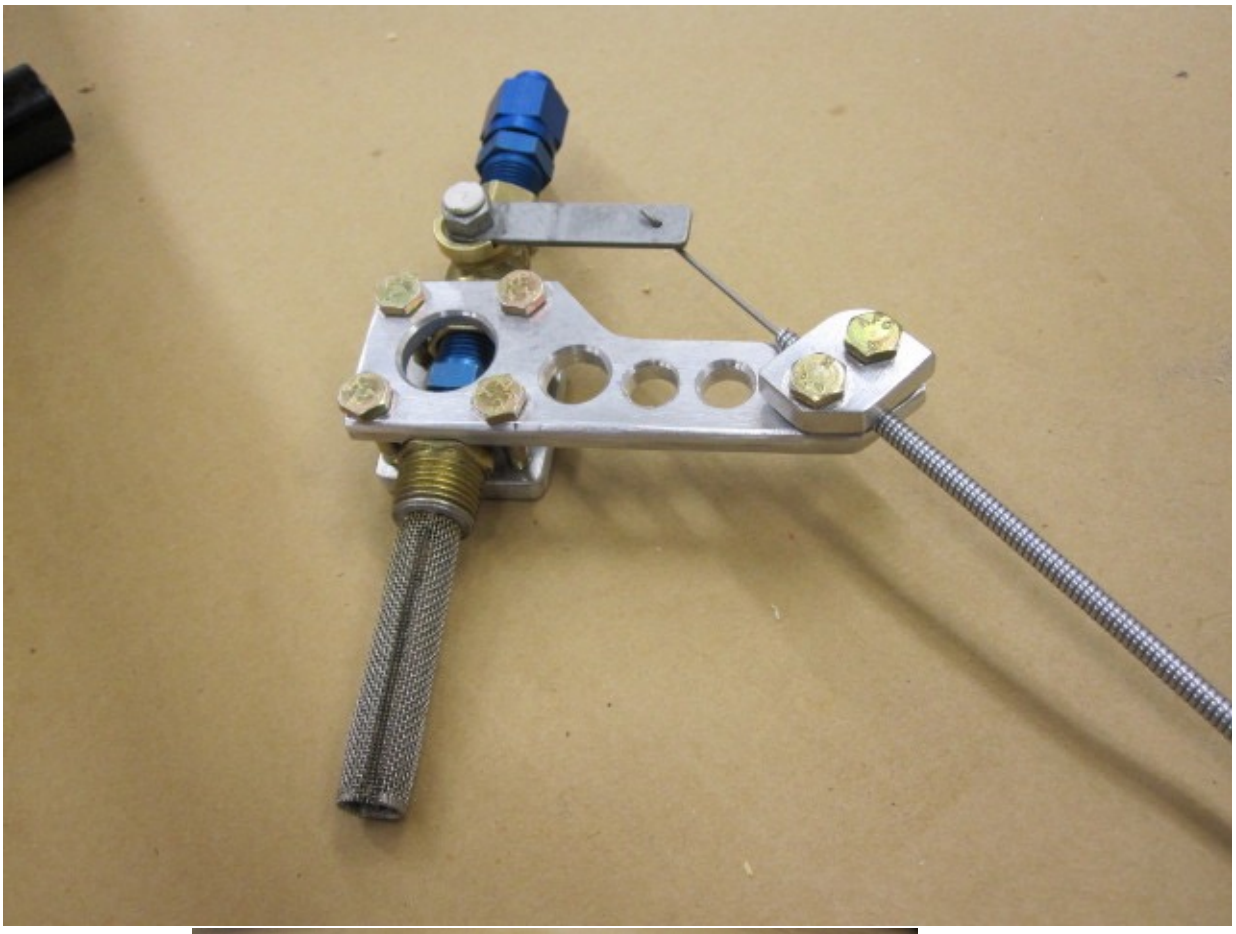
The push-pull operator used is Aircraft Spruce model A-740, ratchet type to hold position, ACS part number 05-14172.

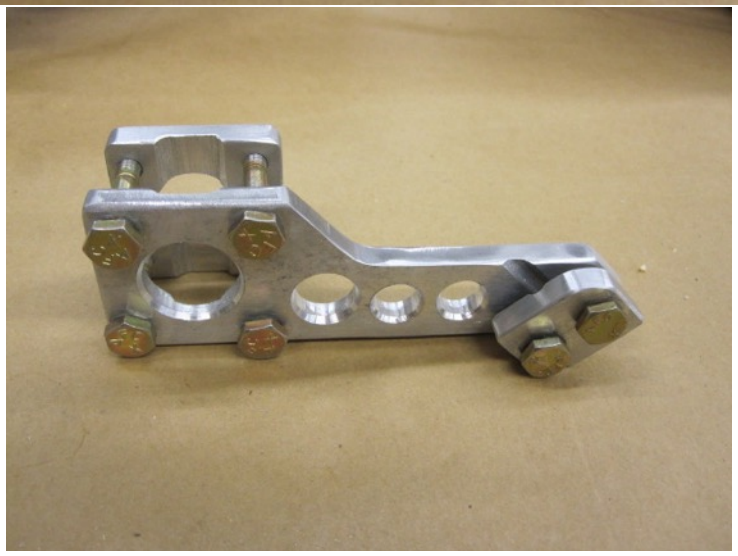
The photos show the first version. I decided that the operating arm on the valve could be shorter and the could be bracket scaled down to suit. When I installed the infamous "oops" fitting in fuel tank, the shut-off valve moved about 1/2" farther from the panel and the cable no longer reached.

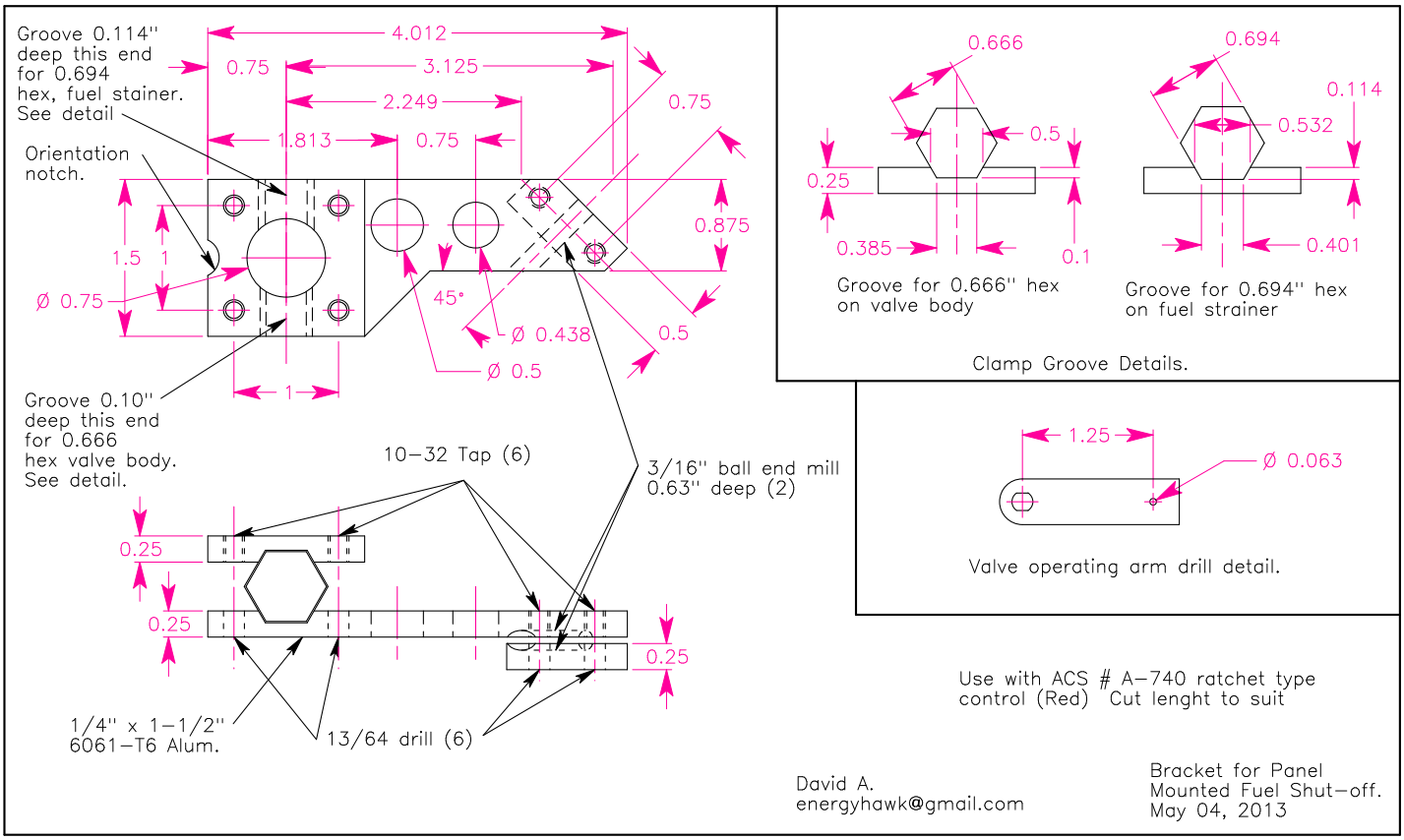
To solve that, I made a new attach bracket designed for the shorter valve operating arm, and that is the one for which the drawing is provided.

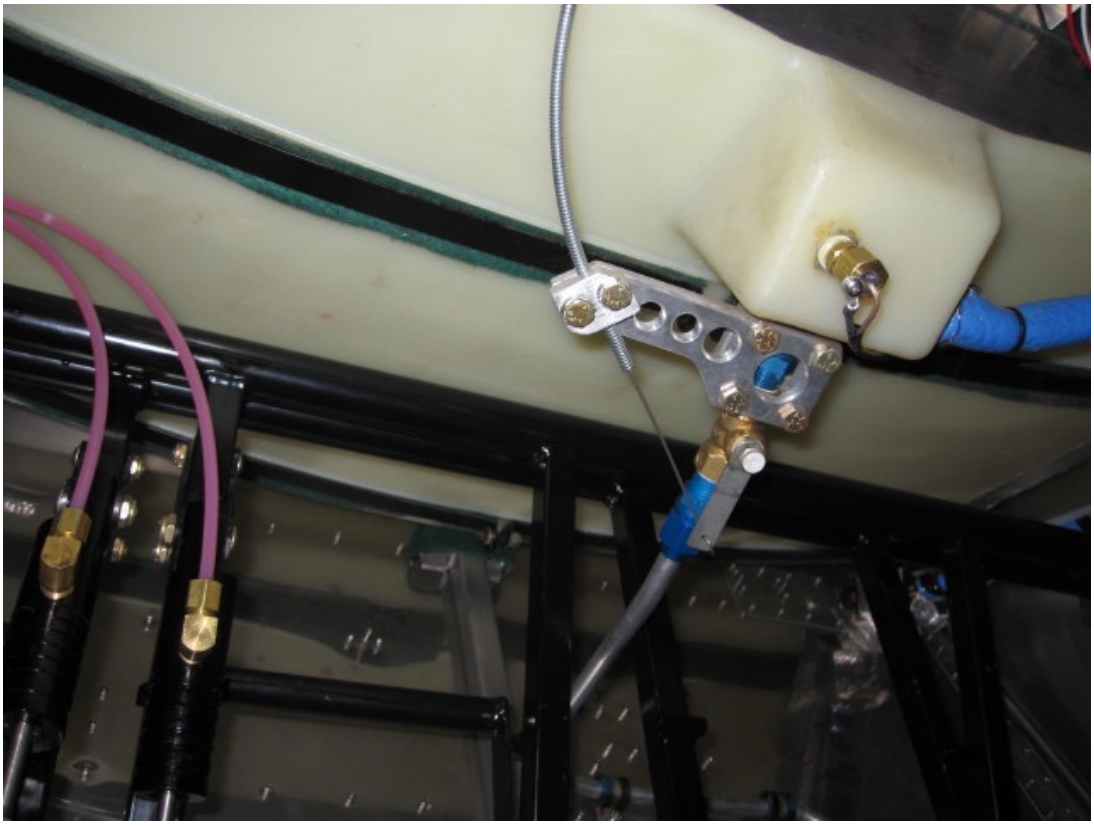
Note: My fuel shut-off ball valve had the flats of the hex exactly oriented to axis of valve stem. This may not be true of all valves, which may require altering the design of the clamp grooves to suit. Also, the size of the hex on the valve and fuel strainer may vary.

NOTE: This design is has not been reviewed or approved by anyone. Use at your own risk






Groove 0.114" deep this end for 0.694 hex, fuel stainer. See detail
Orientation notch.
Groove 0.10" deep this end for 0.666 hex valve body. See detail.
4.012
0.75
3.125
2.249
1.813
0.75
0.75
0.875
1.5
1
Ø 0.75
45°
Ø 0.438
0.5
Ø 0.5
1
10–32 Tap (6)
3/16" ball end mill 0.63" deep (2)
0.25
0.25
0.25
1/4" x 1–1/2" 6061–T6 Alum.
13/64 drill (6)
0.666
0.5
0.25
0.385
0.1
Groove for 0.666" hex on valve body
0.694
0.114
0.532
0.401
Groove for 0.694" hex on fuel strainer
Clamp Groove Details.
1.25
Ø 0.063
Valve operating arm drill detail.
Use with ACS # A–740 ratchet type control (Red) Cut lenght to suit
David A.
energyhawk@gmail.com
Bracket for Panel Mounted Fuel Shut–off.
May 04, 2013



AeroVee Engine Parameters

In recent months, several members of the Sonex Builders and Pilots Foundation have been fortunate enough to participate in several excellent conversations with the Sonex Aircraft, LLC. factory employees with regards to proper AeroVee engine operating specifications and maintenance practices. As each AeroVee is individually assembled by the customer, small variances are inevitable, so we wanted to establish a series of guidelines to let owners know what temperature and pressure parameters are acceptable as they operate their engine.

Please follow along as we discuss the different items to watch for when determining your engine's health!

Oil Pressure

Let's begin our discussion by reviewing the most important of all pressures to watch: of all the pressures to monitor, paying attention to the engine oil pressure is the most critical parameter when ensuring your engine will continue to operate properly. Proper engine oil and oil pressure is vital when running our engines, and as long as you have sufficient oil pressure, your engine should not be in imminent danger of failure. Remember that, in addition to absorbing engine heat which serves as an internal engine cooling device, oil lubricates the core engine components to prevent internal engine metal to metal wear.

This is one main reason why, immediately after engine startup, it's vital that you monitor oil pressure readings to confirm you are obtaining sufficient minimum oil pressures. Running your engine without oil pressure for even very short durations can be very destructive to your engine!

Now that we understand why oil pressure is so important, let's take a few moments to discuss what proper oil pressure should be. According to the AeroVee assembly manual, when running the engine at approximately cruise power (3200 RPM +/- 200 RPM) your oil pressure should be between 40-50 PSI. This is assuming the oil is at the proper quantity and at the proper operating temperature. If you reduce power to a lower level, during descent and landing for instance, you can expect your oil pressure to drop accordingly. (When taxiing after landing and the engine is at an idle speed of 1000 RPM, your engine should indicate an oil pressure of at least 10 PSI.)

When discussing maximum oil pressure levels, when first starting up a cold AeroVee engine, you may find oil pressures to be unusually high until the engine has warmed up properly. If the oil pressure is too high, damage to oil lines, oil seals, and/or the oil cooler is possible. For this reason, if oil pressure levels exceed 100 PSI after engine start, engine RPM should be reduced to keep the pressure at or under the 100 PSI maximum level. This is also why it's highly advised that, prior to engine start on extremely cold days, a sufficient engine preheat is utilized.

Once the engine is running, a good rule of thumb is that a takeoff should not be attempted until the engine oil temperature has reached, at a minimum, 100° F. If your oil is still cold and you apply takeoff engine power, you could quite easily exceed the maximum recommended oil pressure. Once in cruise flight, acceptable oil pressures can be as high as 50-75 PSI without need for concern.

On the other hand, when reviewing minimum acceptable oil pressures during cruise flight, while the AeroVee manual lists approximately 40 PSI as a minimum acceptable oil pressure, several other aircraft VW-based engine conversion builders list minimum oil pressures as low as 23 PSI (Great Plains), or 10 PSI/per 1000 RPM (Revmaster).

With this in mind, what is then an acceptable oil pressure? Ultimately, an acceptable minimum or maximum oil pressure limit will be up to the engine builder/operator, and it's worth mentioning that monitoring oil pressure trends may also be an important item to consider. For example, if you operate an AeroVee that routinely indicates 45 PSI but over time the pressure begins to trend lower, this could indicate an internal engine wear issue. If your engine holds a consistent oil pressure over a long duration, this is a very positive sign that you have a healthy engine.

Oil Temperature

Oil temperature is also an important parameter to monitor, but not to the same degree as oil pressure. There is quite often a correlation between oil pressure and temperature though, so let's spend a few moments to review the significance of oil temperature readings.

In general, once the airplane is in cruise the oil temperature should be hot enough that any water in the oil is removed (caused by sufficient heating which essentially "boils" the water out of the oil), yet not so hot as to break down the lubrication properties in the oil which could lead to excessive engine wear. In general, having your oil above 160° F but under 240° F is an ideal temperature range for an AeroVee engine.

Any oil temperature cooler than this range and water won't be removed from the oil (water is a by-product of internal combustion so it's basically unavoidable), and any oil temperature hotter than this range will potentially begin to break down the chemical lubrication properties of the oil. With the technology of today's modern oils however, if you find your engine routinely runs high oil temperatures, a simple remedy is to simply change the oil more often than the recommended oil change intervals.

As we stated earlier, there is a correlation between pressure and temperature, so let's review. Oil is a viscous fluid so it's very common to see oil pressure drop as the oil temperature rises. This is normal, but oil pressure must be monitored and kept at a safe level. As such, if you see your oil temperature rising which causes your oil pressure to drop out of a minimum acceptable range, it's time to get the airplane on the ground!

Cylinder Head Temperature

In order to prevent cylinder head valve damage, it is important to monitor cylinder head temperatures (often abbreviated 'CHTs') and strive to keep these temperatures as low as practical. Given the design of the internal combustion engine, cylinder heads are traditionally some of the hottest external parts of the engine. This is why proper airflow is essential for adequate cylinder head cooling.

Unfortunately, the designer of this engine technology, Volkswagen, never published any actual technical data on what an acceptable cylinder head temperature is for their air cooled engine applications. None of the old VW Beetles have cylinder head temperature monitoring equipment, so we have no useful information and can only guess what temperature ranges are seen in automotive applications and thus, what is acceptable for aviation applications.

For us AeroVee operators, we have to use our best judgement on suitable temperature levels. During cruise flight, the engine manual recommends cylinder head temperatures to be kept around 350°F – 375° F. When considering how high of a temperature is tolerable, in most cases keeping the cylinder heads at or under 400° F is an excellent way to keep from running the risk of potentially harming the valves. There usually isn't undue concern until the heads reach 425° F or so, and if at all possible it's

best to keep the ultimate head temperatures below 450° F. Any higher than that and you begin to run the risk of impending valve damage!

Exhaust Gas Temperature

Last on our list, Exhaust Gas Temperature reading (often abbreviated 'EGTs') is the last engine parameter in terms of importance on monitoring. In general, exhaust gas temperature monitoring serves as a broad guideline only, as the actual information being presented is very incomplete. Exhaust gas temperature readings can be useful for basic carburetor adjustment and in flight mixture adjustments, but in most cases, running high or low EGT levels is not the end of the world.

Most VW-based aircraft engine builders recommend a maximum EGT reading of approximately 1400° F. Great Plains recommends a cruise EGT of around 1150° F, while Revmaster recommends a cruise temperature range of 1250° F – 1400° F.

Ultimately, as long as your engine is running well and all other temperatures and pressures are kept in normal operating ranges, EGTs are best used as basic reference guidelines only.

Final Thoughts

Hopefully, this report has helped eliminate some of the possible confusing parameters on acceptable AeroVee engine operating temperatures and pressures. While our discussion hasn't covered every possible aspect on engine monitoring, we've covered many of the basics in an effort to help everyone gain comfort and familiarity when flying behind their AeroVee engine.

If anyone has any additional thoughts and questions, we would love to discuss this subject further in future newsletters or on the online forum boards. Please let us know your thoughts!

We've also copied the AeroVee engine guidelines given by Sonex as a reference source for those who may be interested.

The AeroVee manual states the following:

Idle RPM –	700-900 RPM
Cruise RPM –	3200 +/- 200 RPM
Maximum RPM –	4000 RPM
Oil Temp (Min) –	160°F
Oil Temp (Max) –	230°F
Oil Press (Min) –	10 PSI (hot oil, idle RPM)
Oil Press (Max) –	100 PSI
Oil Pressure (Cruise) –	40-50 PSI
CHT @ Cruise –	350° - 375° F
CHT @ Climb (5 min) –	420° F
CHT Max –	450° F
EGT Max –	1400° F

Thank you and fly safely!

Robbie Culver, SBPF President
Mike Farley, SBPF Vice-President
Special thanks to Joe Norris of Sonex Aircraft LLC. for his technical insights and advice!

Condition Inspection Criteria

As we all know, in order to keep any flying Sonex in an airworthy condition, a yearly Condition Inspection must be completed and signed off in the aircraft maintenance records. According to the aircraft's Operating Limitations, this inspection can be completed and signed off by either the original aircraft builder who has obtained their Repairman's Certificate for that particular airplane, or by a qualified A&P mechanic.

This is all well and good, but for the original builder who wants to construct a list of items that need checked when accomplishing the Condition Inspection, where do we look? The answer to this question lies in the verbiage of the Operating Limitations. There you will find the actual maintenance record sign off which will read similar to: "No person may operate this aircraft unless within the preceding 12 calendar months it has had a condition inspection performed in accordance with the scope and detail to FAR 43 Appendix D, or other FAA-approved programs, and was found to be in a condition for safe operation."

Armed with this information, let's take a look at FAR 43, Appendix D so we can determine what actually needs to be checked on our airplanes to complete a Condition Inspection!

FAR 43 - Appendix D: Scope and Detail of Items to be Included in Annual and 100 Hour Inspections

If we start by looking at the bigger picture, FAR Part 43 covers "Maintenance, Preventative Maintenance, Rebuilding and Alteration" on aircraft. Needless to say, this is a huge section filled with tons of regulations, so let's narrow our focus to Appendix D which outlines the "Scope and Detail of Items to be Included in Annual and 100 Hour Inspections." Here we will find a list of items that must be checked during any aircraft's Annual Inspection, 100 Hour Inspection, and now for us, a yearly Condition Inspection.

Here is the list of inspection items that are applicable to our Sonex line of aircraft:

(a) Each person performing an annual or 100-hour inspection shall, before that inspection, remove or open all necessary inspection plates, access doors, fairing, and cowling. He shall thoroughly clean the aircraft and aircraft engine.

(b) Each person performing an annual or 100-hour inspection shall inspect (where applicable) the following components of the fuselage and hull group:
(1) Fabric and skin—for deterioration, distortion, other evidence of failure, and defective or insecure attachment of fittings.
(2) Systems and components—for improper installation, apparent defects, and unsatisfactory operation.
(3) Envelope, gas bags, ballast tanks, and related parts—for poor condition.

(c) Each person performing an annual or 100-hour inspection shall inspect (where applicable) the following components of the cabin and cockpit group:
(1) Generally—for uncleanliness and loose equipment that might foul the controls.
(2) Seats and safety belts—for poor condition and apparent defects.
(3) Windows and windshields—for deterioration and breakage.
(4) Instruments—for poor condition, mounting, marking, and (where practicable) improper operation.
(5) Flight and engine controls—for improper installation and improper operation.
(6) Batteries—for improper installation and improper charge.

(7) All systems—for improper installation, poor general condition, apparent and obvious defects, and insecurity of attachment.

(d) Each person performing an annual or 100-hour inspection shall inspect (where applicable) components of the engine and nacelle group as follows:
(1) Engine section—for visual evidence of excessive oil, fuel, or hydraulic leaks, and sources of such leaks.
(2) Studs and nuts—for improper torquing and obvious defects.
(3) Internal engine—for cylinder compression and for metal particles or foreign matter on screens and sump drain plugs. If there is weak cylinder compression, for improper internal condition and improper internal tolerances.
(4) Engine mount—for cracks, looseness of mounting, and looseness of engine to mount.
(5) Flexible vibration dampeners—for poor condition and deterioration.
(6) Engine controls—for defects, improper travel, and improper safetying.
(7) Lines, hoses, and clamps—for leaks, improper condition and looseness.
(8) Exhaust stacks—for cracks, defects, and improper attachment.
(9) Accessories—for apparent defects in security of mounting.
(10) All systems—for improper installation, poor general condition, defects, and insecure attachment.
(11) Cowling—for cracks, and defects.

(e) Each person performing an annual or 100-hour inspection shall inspect (where applicable) the following components of the landing gear group:
(1) All units—for poor condition and insecurity of attachment.
(2) Shock absorbing devices—for improper oleo fluid level.
(3) Linkages, trusses, and members—for undue or excessive wear fatigue, and distortion.
(4) Retracting and locking mechanism—for improper operation.
(5) Hydraulic lines—for leakage.
(6) Electrical system—for chafing and improper operation of switches.
(7) Wheels—for cracks, defects, and condition of bearings.
(8) Tires—for wear and cuts.
(9) Brakes—for improper adjustment.
(10) Floats and skis—for insecure attachment and obvious or apparent defects.

(f) Each person performing an annual or 100-hour inspection shall inspect (where applicable) all components of the wing and center section assembly for poor general condition, fabric or skin deterioration, distortion, evidence of failure, and insecurity of attachment.

(g) Each person performing an annual or 100-hour inspection shall inspect (where applicable) all components and systems that make up the complete empennage assembly for poor general condition, fabric or skin deterioration, distortion, evidence of failure, insecure attachment, improper component installation, and improper component operation.

(h) Each person performing an annual or 100-hour inspection shall inspect (where applicable) the following components of the propeller group:
(1) Propeller assembly—for cracks, nicks, binds, and oil leakage.
(2) Bolts—for improper torquing and lack of safetying.
(3) Anti-icing devices—for improper operations and obvious defects.
(4) Control mechanisms—for improper operation, insecure mounting, and restricted travel.

(i) Each person performing an annual or 100-hour inspection shall inspect (where applicable) the following components of the radio group:
(1) Radio and electronic equipment—for improper installation and insecure mounting.
(2) Wiring and conduits—for improper routing, insecure mounting, and obvious defects.
(3) Bonding and shielding—for improper installation and poor condition.
(4) Antenna including trailing antenna—for poor condition, insecure mounting, and improper operation.

(j) Each person performing an annual or 100-hour inspection shall inspect (where applicable) each installed miscellaneous item that is not otherwise covered by this listing for improper installation and improper operation.

That's a lot of items to cover! Note that there is no guidance on how long the inspection should take; a timeframe will ultimately be up to whomever completes the inspection.

For those of you still building, this list could easily be modified into a spreadsheet in order to create a yearly Condition Inspection checklist for your own personal use.

Now that we've looked at the complete work scope for a Condition Inspection, stay tuned for the next Sonex Builders and Pilots Foundation newsletter where we will discuss some specific tricks, suggestions, and gotcha's on how to complete your inspection quickly and thoroughly!

Regional Events

Regional events are the heart and soul of the Sonex community - please support your local Sonex event!

The 4th annual Great Lakes Sonex fly in is scheduled for June 25th at Bolingbrook's Clow International Airport (1C5).

See http://www.greatlakessonex.com for details.

This is in Chicagoland and we invite all midwest builders, pilots, and enthusiasts to attend!

You can see photos from past events at http://sonexbuildersandpilotsfoundation.zenfolio.com/p42155647 and http://sonexbuildersandpilotsfoundation.zenfolio.com/p320942895

Experimental Fatal Accident Dashboard

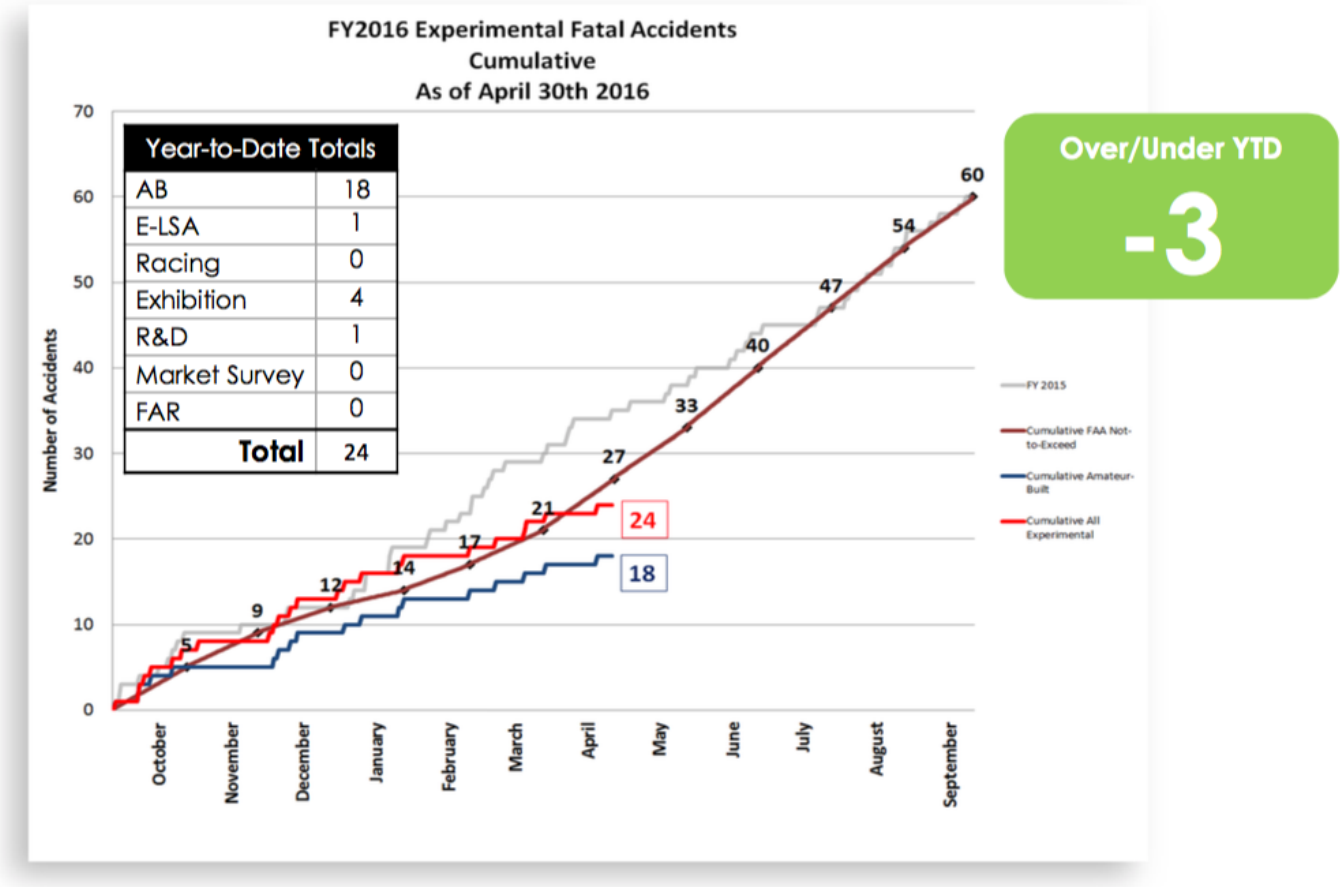
Type Club Coalition

Mackenzie "Mack" Dickson, EAA Government Advocacy Specialist, complies the Experimental Fatal Accident Dashboard for each month. Part of the Sonex Builders and Pilots Foundation core mission is to work to reduce the accident rate of Sonex type aircraft, and experimental aircraft as a whole.

The FAA has established "not to exceed" accident rates that our community continues to be measured against. It is critical that we continue to operate our aircraft safely and focus on ensuring we do not add to the problem. With the new focus of the NTSB on Loss of Control accidents (LOC) we can expect continued focus on our community in an ongoing effort to reduce the accident rate.

In the graphs below, Experimental Amateur Built are represented as AB. These statistics are for fiscal year 2016, which starts on October 1st, 2015. Currently, the rate has dropped below the not to exceed threshold by 3.

Experimental Fatal Accident Dashboard



Experimental Fatal Accident Dashboard