

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>

August 2016

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:



BASEBALL NIGHT!

Tuesday, 23 August 2016

1800 hrs (6:00 PM Civilian Time)

Jethawk Stadium (45116 Valley Central Way)
Lancaster, CA



This month's meeting will be held in Skybox 301 at The Hangar, better known as Jethawk Stadium, home of the Lancaster Jethawks, Class A Affiliate of the Houston Astro's.

Come and cheer for the home team as we battle the High Desert Mavericks of Adelanto, Class A Affiliate of the Texas Rangers. There seems to be some weird

connection between the Antelope Valley and Texas. Maybe **Opie** didn't really need to move to be in Texas. Hmm.

Parking is \$5 per car, or free if you park in the Cinema parking lot across the street and walk in.

Minister of Propaganda Kent Troxel will be under the F-18-on-a-stick outside the main gate at 1800 and will distribute the 25 tickets on a first-come, first-served basis, so line up if you arrive before he does. To receive your free ticket, say to Kent in a hushed voice "**Nuclear is spelled with 2 r's**". Don't try that cliché passphrase "Swordfish" as it has been overdone. As any chef will tell you, any fish that is overdone will taste nasty. After **Knife** gives you a knowing nod, Kent will slip you your ticket. Act like nothing is unusual and proceed to the gate and then up the elevator.

Kent will enter the stadium shortly after 1800, so be on time. If you're late, you can call him at **661-886-3740**, but you will have to wait until he is darn good and ready to come down at give you a ticket (which will irritate him).

Guests arriving after all tickets are distributed will be told to buy your own damn ticket and then someone (depending upon the bribe offered) may try to get you past Stadium Security into the Skybox, but no guarantee is made nor implied.

Opie and **Gail** won't be there, as they are finally moving into **Low Cay** about two time zones too far east. Maybe **Tuki** will FaceTime® him to see how many beers he has been through at the kickoff first pitch.

TAKE NOTE: This meeting is one week later than our usual third Tuesday gathering. If you come on 16 Aug you'll get a great parking spot, 'cause no one else will be there.



- Erbman
Subbing for the Vice Kommandant

Last Month's Meeting

EAA Chapter 1000 individually

Your Workshop
Your Location
19 July 2016
You, Presiding

Last month you were tasked to do something aviation oriented during our normal meeting time while the **Vice Kommandant, Joe Ford** and **Opie** were representing us at the big **AirVenture 2016** show. I would remind you in this space about what you did, but **you failed to submit a report** to tell me about what you did. How typical. Can't get anything out of you. People are starting to talk.

- Russ Erb

Emergency Backup Minister of Propaganda
Chapter 1000 of the Experimental Aircraft Association of these United States of America and Occupied Territories
"We have more zeroes in our chapter than any other!"

Kommandant's Korner

AirVenture

2016 is in the history books and, by all (interweb) accounts was a resounding success. Hopefully, you will receive an appropriate intelligence briefing submitted to these pages by **PPTAF** operatives who infiltrated the Wisconsin event. Yep, that's you, **Hellmuth!** Or, maybe **Opie/Houdu/Doug** will submit the requisite briefing to satisfy the requirements of establishing the newest Texas detachment of the venerated **Project Police!** It will be interesting to hear what the "buzz" was on the newly passed **"Third Class Medical Reform"** legislation. About all I could glean from AvWeb and other internet sources was that the community was "excited" and that the FAA is "working on it". There are a couple of potentially thorny issues (pointed out in previous editions of this column) in the law that could affect the benefit to some or all of the pilots looking to take advantage of the new rules.



The **Fightin' Skywagon** stretched her wings at the end of last month by transporting **Mrs. Kommandant** and me to **Pagosa Springs, Colorado** (KPSO).

The purpose of the excursion was to link up with **Rachel** and **Greg** and their puppies who were spending an extended vacation in the Durango, Pagosa, Chama area. **Greg**, as you may know has "train-fever" (specifically the "narrow gauge strain") about as bad as many of the readers of this newsletter have "plane-fever". He is a volunteer worker for the **"Friends of the Cumbres and Toltec Railway"** association and spends a couple of weeks each year helping to refurbish steam locomotives and period rolling stock for the Chama-based organization. Anyway,

the VC-180 launched about 0745L on Friday, 22 July in hopes of avoiding the "monsoonal moisture" in northern Arizona and southern Colorado with its attendant convective turbulence and pesky thunderstorms.



Our intrepid aviator pilots his mighty steed in search of even older transportation technology

Well, that plan worked until we launched from **Kingman, Arizona** (KIGM) after our breakfast and potty stop. By that time of the mid-morning, the bumps had commenced and baby thunder-bumpers were beginning to float around the desert. We climbed to 11,500 feet MSL to escape the jostling but the remaining 2.5 hours of the trip into KPSO was a bit unpleasant, albeit extremely scenic. Check out the Grand Canyon shots! Landing on Pagosa's 8,000 foot-plus runway around 1430 MST was a welcome end to the journey. The reported 10,000 foot density altitude and gusty/variable winds conspired to put my landing more in the "arrival" category.



Grand Canyon from outside the SFRA



More Grand Canyon



Chimney Rock

After tying down next to the well-appointed terminal building we were picked up by **Rachel** and commenced a great weekend of beer-tasting, hiking, and generally relaxing at a beautiful B&B called "**Elkwood Manor**" (<http://www.elkwoodmanor.com/>). We, of course, also availed ourselves of an evening ride on the **Cumbres and Toltec** (<http://cumbrestoltec.com>). We were ensconced in the Parlor car, sipping wine and cocktails and gazing at the magnificent Rocky Mountain Scenery. We were served a sumptuous prime rib dinner at the summit of the Cumbres Pass and returned to Chama as the sun set over the mountains...a perfect end to the day.



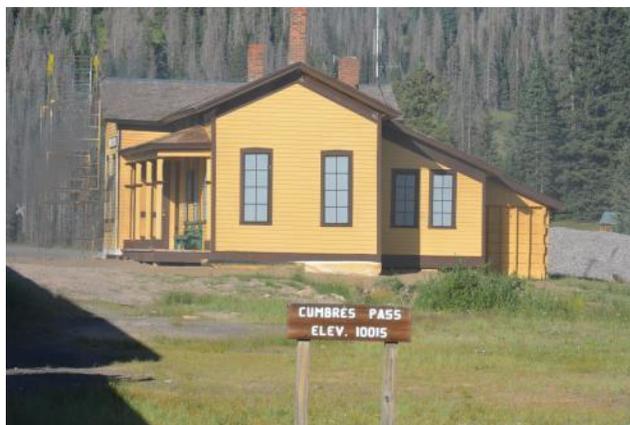
Elkwood Manor



Ol' Number 463, your prime mover this evening



Chugging up the hill



Cumbres Pass, elevation 10015



Sunset in the Rockies—time to go home



Hiking to Treasure Falls



Morning on the deck



View from the deck

On Monday morning we again strove to get airborne before the weather gods woke up. The departure roll was impressive...even in the cool temperatures, but the new motor in N2705K was up to the task. On departure we passed by some folks enjoying the calm winds and pleasant temperatures in another form of sport aviation. The return trip, including the fuel stop in Kingman was smooth and pleasant with a slight tailwind to boot. We tucked the Skywagon into her hangar around 1130L and returned to our terrestrial lives.



This looks like an FAA right-of-way question...

See you at the ballgame this month!
Fly Safe and Check 6!

- **Gary Aldrich**
Kommanding

Demons and Angels in the Air

“There was a demon that lived in the air. They said whoever challenged him would die. Their controls would freeze up, their planes would buffet wildly, and they would disintegrate. The demon lived at Mach 1 on the meter, 750 miles an hour, where the air could no longer move out of the way. He lived behind a barrier through which they said no man could ever pass.” Chuck Yeager, narration in the lead-in to *“The Right Stuff”*.

The demons are not alone out there in the air. In the prologue of Ernest K. Gann’s autobiography *“Fate is the Hunter”*, he describes a “high cruise speed” flight in a commercial aircraft where he makes an altitude change during flight that an aerospace engineer later informs him probably saved his life, as they blasted through a sliver in the flight envelope that it turns out was at the right “q” to host a catastrophic flight control flutter. Gann’s tales imply the role of fate in aviation, namely that if an accident is going to happen, it happens, and if it isn’t, then it doesn’t. Maybe a better similar assertion is that we aviators have Guardian Angels who sometimes look out for us when we (or somebody else) errs. Whether you believe such stuff or not, we all seem to have examples of situations that for no

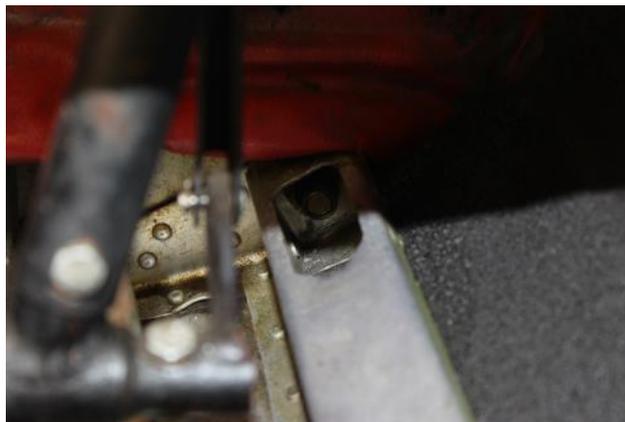
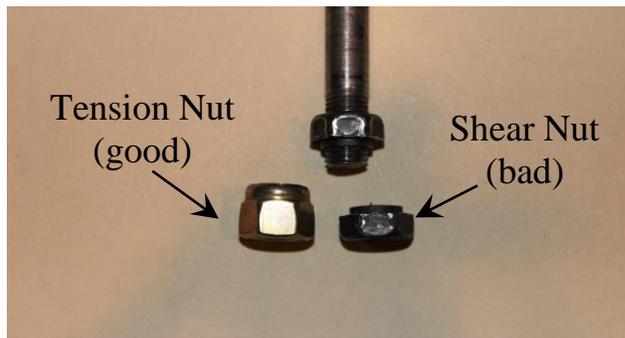
apparent reason turned out right, when they probably shouldn't have.

Well, we ran into one of those mysterious situations during the last annual of our Cessna Skylane, N182MP. Those of you regularly associate with me and "Ms Lois (Skylane)" are aware Lois needed a full engine rebuild a couple years ago after her prop governor "went South", taking the rest of Lois's engine with her. (That's another story.) The shop that did the rebuild did a good job from what I could see, and Lois runs "like a top", but the cabin heat exchanger on the exhaust manifold just barely touched the carburetor air duct on the bottom of the nose cowling.

Over several years, the steel heat exchanger significantly wore into the aluminum duct, requiring me to rebuild the top of the duct two annuals ago. During the initial inspection this annual I pointed out the wear on the repaired ducting to Lois's IA, **Bill Irvine**. We discussed options to build a "sacrificial gasket" for the duct, then Bill suggested adding an additional washer on the bottom engine mount attachments to raise the bottom of the engine a fraction of an inch. That seemed like a reasonable idea, so after borrowing **Russ Erb's** engine hoist to support the engine and mount, we pulled the AN6 bolts out of the bottom of the mounts, put an additional AN washer between the mount and firewall, and reattached the nuts. One of the new partners insisted we retorque the nuts. It was kind of late and I'd have rather called it a night, but figured "how much time will it take to torque a couple bolts?" Being tired, and realizing I was holding a 9/16 socket wrench in my hand after snugging the bolt, I opened up Lois's maintenance manual to the recommended torques section and went down the side of the table to the 9/16 row (*note: AN6 = 3/8 ≠ 9/16*) and read off a torque range in inch-lbs, and pulled out a calculator to divide by 12 to convert to ft-lbs. It was something over 50ft-lbs, which I dialed into the torque wrench and started to turn the first bolt. After about half a turn on the first bolt, there was a loud "bang" and the bolt then turned freely. *Crap!!!* I reversed the ratchet direction, but to no avail, as the bolt continued to spin, but the original lock-nut stayed on. I declared a "stop" for the night after we removed the other lock-nut so I'd have something to show Bill and ask if we had any replacements in stock.

The next day I went over to ask Bill if he had any of the nuts we could borrow. As usual, Bill had the appropriate lock nuts in his parts bin, but after looking at the lock-nut we had removed again, he noted "**That's a shear nut – that shouldn't be securing your engine mount bolts**"---BING!! Suddenly it hit me – we'd been flying at least three years with an engine mount secured with locknuts stressed to hold shear bolts versus tension bolts. (Creepy music playing in the background.)

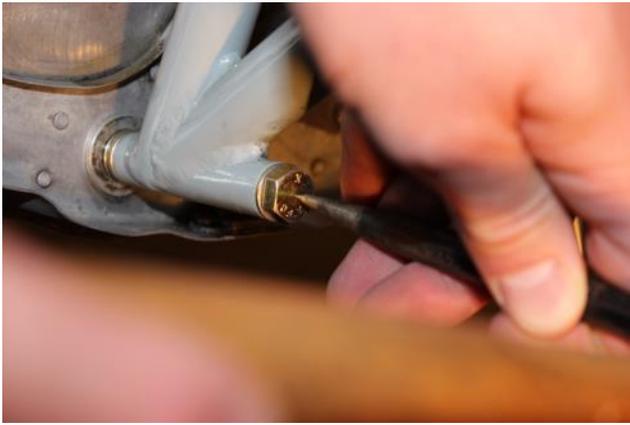
Bill gave me new tension locknuts, but shook his head when I noted that we had a nut that was stuck on a bolt in a "niche" that's **really really hard** to get to. (Cessna engineers have a knack for putting parts in places you can't get to.)



Here's that nut hiding down in the bowels of the floor – which is why we never noticed it was the wrong nut.

Bill suggested either grabbing hold of the bolt head with vise grips and turning while pulling the bolt out, or drilling the bolt head. The next day I tried the vice grip suggestion with no success. I really hated the idea of drilling a bolt stuck into my welded tube steel engine mount because if we weren't extremely careful and precise we could end up damaging the face of the engine mount. I tried "staking" the nut to see if that would grab a thread but that didn't work either. I hit up a couple other A&Ps for ideas during the 99's Poker Run the next weekend, and came up with several ideas of Loctite-ing the nut or welding the nut to another nut so you could turn two of them at the same time. No way was I hooking up an electric welder to a bolt going through an engine mount, lest I end up welding the bolt to the mount instead of welding the nuts! I came up with what seemed like a brilliant idea of putting on another nut and bracing the socket against the airframe so the one good nut would force the bolt into the bad nut. The principal was sound, but unfortunately after several attempts we discovered that Lois's aluminum frame was softer than steel nuts (**Duh!**) and that idea wouldn't work without bending sheet metal somewhere. So after a couple hours of frustrating failures, we decided that drilling the head off the offending bolt and punching it through the engine mount was the best idea, even if there was a possibility of drilling into part of the engine mount.

So here's what we did. First we carefully used a center punch to punch a starting spot as close to dead center of the bolt as we could.



Center punching the bolt head

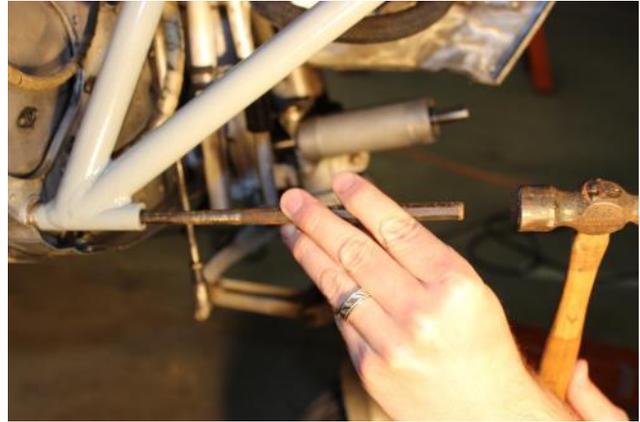
Next, we drilled a pilot hole through the head and into the shank using a small 1/8th inch drill bit. A good technique when drilling something hard like a steel bolt is having a co-worker ready with some spray lubricant to occasionally hit the drill bit with some oil (we used LPS-1) to keep the drill cool and help it cut. Next we carefully enlarged the pilot hole with a 1/4 inch drill, making sure we were centered in the pilot hole. Finally we pulled out the 3/8 carbide drill bit (same size as the shank in an AN-6 bolt, and carefully drilled to the depth of the head. When we thought we were close, we grabbed the bolt head with some vice grips and tugged, but it held firm. After two more iterations of this technique, drilling a fraction of a millimeter each time, it looked like we were seeing the metal of the washer at the edge of the drill hole. We grabbed the head of the bolt with the vice grips, at which point the head essentially fell off. We used a small bastard file to smooth off the edges of the bolt so it wouldn't score the engine mount, then tapped it through using a long drift.



Drilling out the bolt head

Reassembly wasn't nearly as stressful (no pun intended), but it had its moments too! We reordered new bolts and locknuts from Aircraft Spruce using the part number callouts in the Cessna parts manual. The engine was supported on a hoist, but a tubular engine mount with an engine bolted to it is not exactly the same shape as one without, so it took some "jockeying" with Russ's hoist and muscle power to get the bolts to line up exactly with the holes. We decided not to retorque everything until we had all of the bolts replaced, which was good, because when

we replaced the upper mount bolts we made a discovery. Not only had the engine rebuilder used shear nuts in all the positions, they had also used small washers (same size as the nuts) on the lower bolts instead of oversize washers specified by Cessna to spread out the shear force on the firewall. That meant we had to pull the lower nuts **AGAIN** and replace the small washers with one inch OD washers too.



Punching the bolt back through the firewall



Here's the bolt that was drilled and punched through. See those nice neat holes in the bolt head on the right and the slightly drilled washer?

After that, it was a simple matter to retorque all the bolts **TO THE CORRECT TORQUE** for a 3/8 bolt instead of a 9/16 bolt. Bill double-checked our work and torques, and all is well again, plus I'll sleep a lot better knowing the possibility of our engine taking off down the runway without us has been greatly reduced. (Now as soon as Bill finishes fabricating the cams for the seat recliner mechanisms, we will be all done with this annual.)

- Randy "Kanard" Kelly

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.



Rotary Club of Lancaster
Presents



Local Vendors

Fantastic Rotary Burger Lunch \$7

Vote for your Favorite Chili

Rain or Shine

Awesome Street Rods

Fun for the Whole Family



Saturday, October 29, 2016 - 10:00 a.m. to 2:00 p.m.
General William J. Fox Airfield, Lancaster (Ave. G + 50th St. West)
Awards Presentation at 2:00 pm

Registration: \$30.00. Registrations will be accepted up to and during the event. Register early (before October 20, 2016) to earn a free nifty event hat (otherwise sold at the event for \$10) and one drawing ticket for a chance to win a \$500.00 cash prize.

This registration is for: Car Motorcycle Plane Chili Contest

Name: _____ Phone: _____

Address: _____ City: _____

Email: _____

Year: _____ Make: _____ Model: _____

Please make your check payable to: **Rotary Club of Lancaster**

Please mail the registration forms & funds to: **Rotary Club of Lancaster - PO Box 2124, Lancaster, CA 93539**

For more information, contact:

Car Show: **Larry Rottman (661) 816-4508 or (661) 943-5108 or lkrottman@yahoo.com**

Aircraft: **Robert Stambovsky (661) 816-5101 or stambo@earthlink.net**

Chili Contest: **Celia Gray celia.a.gray@gmail.com All Proceeds Support Rotary Charities.**

Chapter 1000 Calendar

Aug 9: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942
Aug 23: EAA Chapter 1000 Baseball Meeting, 6:00 p.m., The Hangar, Lancaster CA. (661) 609-0942
 Sep 13: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942
Sep 20: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (661) 609-0942
 Oct 11: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942
Oct 18: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (661) 609-0942
 Nov 8: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942
Nov TBA: EAA Chapter 1000 Monthly Meeting, 6:30 p.m., Flying Dog Ranch, 4400 Knox Ave, Rosamond CA. (661) 609-0942
 Dec 13: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942
Dec 20: EAA Chapter 1000 Festivus Etc Celebration, 6:00 p.m., Kommandant's Kwarters, 42370 61st Street West, Quartz Hill CA. (661) 609-0942
 Jan 10: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942
Jan 17: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (661) 609-0942
 Feb 14: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942
Feb 21: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (661) 609-0942

To join Chapter 1000, send your name, address, EAA number, and \$20 dues to: EAA Chapter 1000, George Gennuso, 3119 Lennox Ct, Palmdale CA 93551. 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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<http://www.eaa1000.av.org>

ADDRESS SERVICE REQUESTED

THIS MONTH'S HIGHLIGHTS:

JETHAWKS BASEBALL 23 AUG 16

KOMMANDANT RIDES THE TRAIN

DEMONS AND ANGELS IN THE AIR

WINGS 'N' WHEELS ANNOUNCEMENT

