

THE LEADING EDGE

NEWSLETTER OF MUROC EAA CHAPTER 1000

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

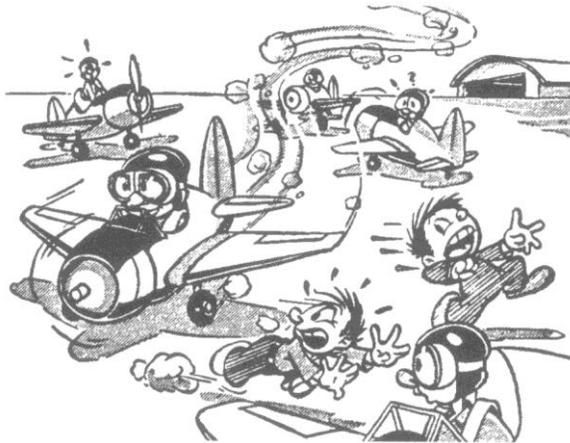
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<http://www.eaa1000.av.org>

November 2018

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 Non-Meeting:



Festivus Shopping!

Tuesday, 20 November 2018

Whenever
Wherever

November is the beginning of a busy social season. Not just for *PPOs*, but also for visiting cadets. Due to the vagaries of the calendar, the Veterans Day (observed) holiday is forcing the visiting cadets to squeeze 5 days of activities into just 4 days. Since the Vice Center Commander is one of their former instructors and the Operations Group Commander is a classmate of their Officer In Charge, we didn't make the cut on their social calendar this time.

Our usual Program Chairman, **Vice Kommandant Hellmuth Steinlin** is in Canada with a sick family member. Also due to the vagaries of the calendar, our usual meeting night falls a mere two days before Thanksgiving. As when this has happened in the past, the **Kommandant** has directed that the meeting be **CANCELLED** to allow the *PPOs* to participate as appropriate in holiday activities.

We know that many of you depend on the EAA Chapter 1000 meeting to fill that open hole on your social schedule. Therefore, in the spirit of **Al Haig, Evil Editor Zurg** has directed the *PPOs* to use this newly available free time to do their **FESTIVUS** shopping. The annual

EAA Chapter 1000 **FESTIVUS** celebration (along with all of the other appropriate winter holidays) will be held next month on 18 December at the Kommandant's Kwarters in Kwartz Hill.

If you wish to participate in the **Kommandant's Krap** gift exchange, you will need a wrapped, unmarked gift that you think someone will want. You can always feel free to include a piece of true krap that you want to get rid of. Extra points for aviation themed krap.

- **Erbman**

Subbing for the **Vice Kommandant**

Last Month's Meeting

EAA Chapter 1000

USAF Test Pilot School

Scobee Auditorium

Edwards AFB, CA

16 October 2018

Gary Aldrich, Presiding

This meeting started with the usual gathering around the schmooze table, but there were no **Tuki Kukis** and no **Schmoozemistress**, who had been recently sick and felt that being around *PPOs* or cooking for them was what we refer to a "a bad idea".

Joining our merry band of wingnuts was **Tim Scully**, who was visiting TPS from Colorado Springs for his semi-annual session of teaching the TPS students all about Modeling and Simulation.

Also joining us was **Matt McCrink**, a Research Scientist at **The Ohio State University**. This week he was visiting TPS working on an instrumentation project. The previous week he was in Savannah GA with **Erbman** at the Society of Flight Test Engineers Symposium. Matt presented a paper on a recent project of setting a high speed record with a jet powered UAV. This UAV was built on a SkyMaster Avanti XXL model airplane, with an 8 foot wing span and a gross weight of 70 pounds. At startup, the controller was completely blank. That is, it didn't know how to fly. In the first 5 seconds of flight it figured out how to fly and then went off to set a speed record. One of the challenges was that the jet engine had a ridiculously high fuel consumption, so the record had to be set before running out of fuel. The flight was done from

Kelleys Island (89D) over Lake Erie, since it is tough to find unpopulated areas in Ohio.

Our speaker for the night was **Jim Lane**, Flight Operations Manager at the Adelanto General Atomics facility. Jim was a career Navy F-14 pilot, and after leaving the Navy, he did what many pilots do—got a job flying 767s for the airlines. While sitting in a hotel room somewhere in the Middle East on layover, a fellow Navy pilot suggested that he come work for General Atomics flying Remotely Piloted Aircraft (RPA). The hook was that he still got to participate in aviation but also got to go home each night.

Of course, the company is called General Atomics because it was founded to build technology for nuclear power plants. Of course, it should be obvious to you why a company building nuclear power plants would branch out to start building “drones”. (*If it is obvious to you, please explain it to me*).

Jim started by showing us the latest sales video from General Atomics, which he clearly labeled as “propaganda”. It was rather entertaining, though you wonder what story the producers were trying to tell. Watching the video it rapidly became obvious that the solution to the Air Force’s problems would be to forget about manned aircraft and buy a zillion RPAs, which would form a locust swarm over the enemy, causing them to drop their arms in panic. It played on the age-old discussion of whether it is better to have a small number of highly capable, rather expensive aircraft, or to have a large number of relatively cheap aircraft of modest capability. The most over the top assertion was when an RPA lowered a ball turret and used it to fire a directed energy weapon (high powered laser) which burned a swath across the antenna of an enemy radar. This led me to think “Just how big is the alternator on that engine?”

After the video, Jim went on to tell the story of how the original Predator was relatively small aircraft, powered by a Rotax 912. Originally a reconnaissance platform, the Air Force turned it into a weapons platform by mounting Hellfire missiles. The Predator B was larger with a turboprop engine. Later variations continued to grow in size and capability.

Originally the RPAs were flown through takeoff and landing by a nearby station using a pilot with a stick and throttle communicating through a line-of-sight radio link. In between, the mission was flown by a mission pilot through a satellite link. The large delay of the satellite link was acceptable for the primary mission, but much too long for controlling it during takeoff and landing. Later developments created the ability for automatic landing. Having accomplished that, the next upgrade was to demonstrate a takeoff, mission, and landing all controlled by satellite link. The biggest demonstration was to launch a Predator B from North Dakota with a landing at an airshow in England, all under satellite control. Just to emphasize the range and endurance of the RPA, upon arriving in England, the aircraft had enough fuel to divert all the way back to North Dakota.

After everyone finished filling out the provided forms to order their own Predator, we retired to the BK Dead Kow Emporium for dinner.

- **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!”

The Month Before That’s Meeting

EAA Chapter 1000

Bushman’s Hangar
Mountain Valley Airport
Tehachapi, CA
18 September 2018

Hellmuth Steinlin, Presiding

This meeting started early, with **PPOs JDIII** and **Erbman** arriving at Mountain Valley Airport that morning. They filled their time by towing and glider flying with many a Test Management Short Course student. After having enough of that and participating in changing a tow plane tail wheel, they made their way over to **Bushman’s** hangar.

Bushman, however, had started the morning in Idaho, arriving at Mountain Valley Airport around 1530 by Cessna 310. **Bushman** started the festivities by showing **JDIII** and **Erbman** around his hangar apartment and around the Cessna 310.

After some schmooze snacks, we got around to the point of the meeting, which was to hear about **Bushman’s** Cessna 170 project. We did this while sitting around a Cessna 170 fuselage that was gutted, to the point of missing a firewall.

The goal is to turn the airplane into a fully certified but highly modified back country airplane. Unlike some others, **Bushman** is doing this on the up and up, with appropriate STCs for all of the modifications.

Bushman explained how the 170 came to be. Cessna was having success with its 120 and 140 models, but they only had two seats. Cessna wanted to stretch the 140 to make a four seat airplane. In order to have a reasonable cg range, the airplane needed an increased tail volume. Rather than design a new tail, Cessna extended the tail cone back and mounted the tail feathers of the Cessna 195. The engine was upgraded to the 6 cylinder Continental C145 of, you guessed it, 145 horsepower.

One modification that **Bushman** is installing is an STC to mount a Lycoming O-360. Though it only has four cylinders, it will produce at least 180 horsepower, and possibly more depending on which model he installs.

The fuselage was purchased with its original wings, which were not attached and were also damaged. The original wings only had one fuel tank on one side. **Bushman** has acquired a pair of Cessna 175 wings (also

slightly damaged) which he plans to install, which will have a fuel tank in each wing.

Bushman is also redesigning the instrument panel to his liking. It will include an Aspen glass cockpit display and center stack radios. The latter is a significant change, because it requires installing a different control yoke (also STCed). The new yoke behind the panel is a U-shape. The original yoke was T-shaped and would interfere with radios if installed in the typical center stack layout.

I'm sure there are other modifications that **Bushman** talked about, but I don't remember them at this late date. **Bushman** is invited to submit an article to list all of the modifications I forgot about and to correct anything I remembered incorrectly.

Within a week after this meeting, **Bushman** left to move with his wife to their new house in Colorado. He will be renting the hangar apartment to EAA Chapter 1000 Charter Member **Norm Howell**, who will be in the Antelope Valley for about a year with Boeing's KC-46 project. Maybe **Norm** can finally dry out after all those years in Seattle.

The 170 project hasn't moved. Part of the agreement is that **Bushman** will come back out here for a week at a time until the 170 project is complete.

- **Russ Erb**

Emergency Backup Minister of Propaganda
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Kommandant's Korner

(Thanx to **Erbman's** crazy schedule through September and October, as well as **Evil Editor Zurg's** on-going fascination with planning a hostile takeover of AirVenture, it has been tough to maintain our usual highly efficient production schedule. Now that **Erbman** is back on task, it seems that the **Kommandant** has taken extreme measures to avoid his writing obligations for this publication. He has gone so far as to take a two week cruise with **Mrs. Kommandant**, claiming that the president asked him to make an inspection tour of the Atlantic and Pacific Oceans, as well as the Panama Canal. Who are we to get in the way of national security?

Once again, we are called upon to try to guess what the **Kommandant** would say to us. Besides encouraging us to prepare for Festivus next month, he would probably review some important aspect of Operational Risk Management (ORM). A common theme in recent Glider Practical Tests lately has been determining fitness to fly. While glider pilots are self-certifying, even pilots with a medical certificate have to determine if they are fit to fly



"today". The FAA's answer to this is the IMSAFE mnemonic. The FAA loves its mnemonics. From Wikipedia:

- **Illness** - Is the pilot suffering from any [illness](#) or symptom of an illness which might affect them in flight?
- **Medication** - Is the pilot currently taking any [drugs](#) (prescription or over-the-counter)?
- **Stress** - Is the pilot overly worried about other factors in his life? The psychological pressures of everyday living can be a powerful distraction and consequently affect a pilot's performance.
- **Alcohol** - Although [legal limits](#) vary by jurisdiction (0.04 BAC, any consumption in the past 8 hours or current impairment in the USA^[2]), the pilot should consider their alcohol consumption within the last 8 to 24 hours.
- **Fatigue** - Has the pilot had sufficient [sleep](#) and adequate nutrition?
- **Emotion** - Has the pilot fully recovered from any extremely upsetting events such as the loss of a family member?

Finally, the **Kommandant** would probably say) Fly Safe and Check 6!

- **Gary Aldrich**
Kommanding

Bearhawk No-Flap Landing Flight Test

One of the challenges of taking instrument flight training in a less than ubiquitous homebuilt is that there is no tribal knowledge of instrument procedures to draw from. You're forced to work them out yourself.

From what I understand, the typical guidance is to have the aircraft in the landing configuration prior to reaching the Final Approach Fix (FAF). Then you proceed down the final approach, break out, and land.

My concern was that for VFR approaches, I put down three notches of flaps at the perch and proceed down to landing. The limit airspeed with three notches of flaps is 65 KIAS, which is pretty slow to be flying the approach. Additionally, three notches of flaps is a lot of drag to be carrying in level flight approaching the FAF, requiring a fairly high power setting.

One alternative was to fly the final approach with flaps up, which would have no airspeed restrictions. At minimums (as low as 200 feet), simply try to slow down and get the flaps out before the flare and landing. This felt like driving at full speed toward a red light until the point where maximum braking was required. That is, not a good idea.

What we tend to forget is that on final approach (especially in higher performance aircraft) the ability to maintain the desired glideslope and the desired speed is not just a function of being able to reduce thrust but also sometimes being able to increase drag.

With all of this in mind, the **Kommandant** suggested I try some VFR patterns with alternate flap extensions to see if I could find something that would work.

The Flight Test

On Friday, 5 November 2018, the winds were forecast to be light for most of the day, and since I had finished my preparations for TDY, I left work early to go fly VFR. Of course, when winds are light and variable and the sky is clear, the afternoon brings thermal activity. This day was no different.

I decided to investigate the Performance and Flying Qualities of a no flap landing. Looking at my previous work on stall speeds and approach speeds, I had calculated approach speeds ($1.2 V_{\text{stall}}$) for no flap as 66 KIAS (2700 lbs) to 57 KIAS (2000 lbs). I was flying at about 2150 lbs for the test.

I started out at altitude by slowing to 60-65 KIAS with flaps up. The flying qualities were still acceptable. Further reduction of the throttle allowed a descent of around 500 fpm, but the throttle was essentially at idle.

The test landing was planned at KWJF, figuring a wider runway and clear approaches would improve safety. The runway length (twice as long as L00) improved safety if there would be problems with floating or getting the aircraft to descend.

The approach was a straight-in to KWJF Runway 24. I slowed to 65 KIAS and intercepted the visual glide slope (PAPI). Staying on the visual glide slope and maintaining speed was troublesome. With the throttle pulled to idle, the airspeed climbed as high as 80 KIAS while staying on the glide slope. This was my first indication that there was not enough drag to maintain a 3 degree glide slope at the desired approach speed.

The flare for landing resulted in a nose attitude higher than usual (expected for no-flap configuration), which increased the workload with an unfamiliar sight picture. At this point the aircraft floated uncomfortably long without seeming to descend. Suspected causes were

1. Excessive approach speed, even at idle power (insufficient drag)
2. Insufficient drag to prevent floating
3. Possible tailwind component (winds were variable at 7)

While trying to descend to the runway, the speed was as low as 60 KIAS and the audible stall warning was activated, even though the actual stall speed was about 50 KIAS. When finally on the runway and stopped, I was at Taxiway F, which meant I had used the equivalent of the full length of Rosamond's runway just to get stopped. Good safety planning works again.

CONCLUSION 1: No Flap landings are not suitable for completing instrument approaches.

Having made landings in the past with only two notches of flap, the next landing was made at L00 with two notches of flap. Keeping the same sight picture as a

normal three notch approach resulted in a more comfortable approach, but tended to an approach speed about 5 KIAS higher than usual.

Manifold pressure was a little lower, but not near idle. The flare and touchdown felt more normal, although the touchdown was faster and rollout longer.

CONCLUSION 2: Two notches of flaps is an acceptable landing configuration.

As a side note, it was interesting (though expected) to see the effect of flap drag on maintaining airspeed during approach on a specified glide slope. More drag requires more power, which maintains more control by allowing increase or decrease of power. Modulating flaps is not practical, but it does drive a nominal power setting that can be modulated easily.

Recommendations For Approaches

Probably the best approach (pun allowed) is to slow to 85 KIAS, run the Before Landing checklist and lower one notch of flap prior to the FAF. This also addresses the concern that the required motion (bending over) to lower the first notch of flap is probably best done at altitude and not close to the ground. If possible to maintain speed on the glideslope, slow to 75 KIAS and lower two notches of flap. This will put the airplane in a landable configuration at DA/MAP. If breaking out high enough, there will be the option to slow to 65 KIAS and lower the third notch of flap.

As for missed approaches, climb out is possible with two notches of flap, though the airspeed is limited to 75 KIAS.

DME And Identifying Fixes

Further reading on the operation of the GNS 480 reveals that the DME functionality of the NAV radio actually depends on the existence of a DME station. It doesn't actually receive signals from the DME station. When a VOR or ILS frequency is set and the 480 has decoded the identifier, it looks at the database to see if an actual DME station is collocated with the received station. If there is, it displays a DME distance. If there isn't (such as a VOR that is not a VORTAC or VOR/DME) then no DME is displayed.

Having actually read the approach plate for the PMD ILS, I found "Simultaneous reception of I-PMD and PMD DME required." We didn't see a DME readout because there is no DME collocated with I-PMD. All DME distances shown on the plate are from PMD VORTAC.

However, the GPS can identify the fixes, so distance to the FAF can be identified by distance to the FAF waypoint on the GPS. Discussions with **Dave Evans** revealed that in his experience he normally identifies the FAF by distance to go to the waypoint. He mentioned that when he does have to use DME, he has to remind himself that he isn't waiting for the number to go to zero.

- Russ Erb

EAA Young Eagle Rally at Tehachapi Airport

The terrific members of the Tehachapi Society of Pilots (TSP), the community of Tehachapi, Women in Aviation International (WAI), and EAA Chapter 1000 teamed up to promote a "Youth-in-Aviation Day" at Tehachapi Airport, Saturday 13 October 2018.



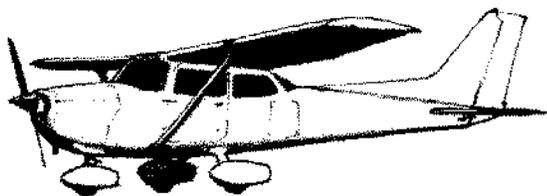
The weather was accommodating just long enough to allow us to satisfy all of our participants. No Young Eagle was turned away. It was a beautiful fall day with partly cloudy skies. We started flight operations just after 8:00 am and concluded about 1:15 pm when the surface winds and turbulence became prohibitive.

Our volunteers were numerous and well prepared. We had a total of eight EAA volunteer pilots and eight different aircraft. We also had three terrific gals who handled all registration and dispatching tasks. Our ground crew kept us safe by ensuring that the barricades were monitored and the flight line was supervised at all times.

The total number of Young Eagles flown was 69 with a total of 48 sorties. Our Young Eagles were motivated and inquisitive. I'm sure we inspired several new airline pilots and astronauts.

- Tom "Duke" Wayne

Lois Gets A New Cylinder



Randy "Kanard" Kelly's Cessna 182, "Lois" Skylane was being flown by one of Kanard's partners back in August on his way back from the Las Vegas area to Rosamond. The engine started to run rough, so the pilot followed his training and made a precautionary landing at the nearest airport, which happened to be Baker (002). While the airplane was on the ground safe, it turns out that the Baker airport is little more than a strip of asphalt two miles from town.

Watch this newsletter for the complete story from **Kanard**. Here's the spoiler—the cylinder that went bad has been replaced and test run. However, **Lois**, currently at Barstow-Daggett (KDAG), can't come home until a ferry permit is obtained, because she has been out of annual since shortly after the precautionary landing. That's another disturbing story of bureaucratic buffoonery.

Gratuitous Pictures Section



We sent Junior PPO Emmy to see George "Knife" Gennuso to get some training in *Project Police Picture Pointing*, but apparently he taught her something else



Erbman's latest project—a C-12 model for use as a classroom visual aid. Propellers by Stormy

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

Nov TBD: CNX EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942

Nov TBD: CNX EAA Chapter 1000 Monthly Meeting, 5:30 p.m., Flying Dog Ranch, 4400 Knox Ave, Rosamond CA. (661) 609-0942

Dec 11: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942

Dec 18: EAA Chapter 1000 Festivus Etc Celebration, 6:00 p.m., Kommandant's Quarters, 42370 61st Street West, Quartz Hill CA. (661) 609-0942

Jan 8: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942

Jan 15: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (661) 609-0942

Feb 12: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942

Feb 19: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (661) 609-0942

Mar 12: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942

Mar 19: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (661) 609-0942

Apr 9: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942

Apr TBD: EAA Chapter 1000 Monthly Meeting, 6:30 p.m., Flying Dog Ranch, 4400 Knox Ave, Rosamond CA. (661) 609-0942

May 14: EAA Chapter 1000 Board of Directors Meeting, 5:00 p.m., El Indio Restaurant, Rosamond Skypark, Rosamond CA. (661) 609-0942

May 18: EAA Chapter 1000 Annual Aviation Event, To Be Determined. (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.

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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**

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Rosamond CA 93560-7692
<http://www.eaa1000.av.org>**

ADDRESS SERVICE REQUESTED

**THIS MONTH'S HIGHLIGHTS:
NO REGULAR MEETING: GO FESTIVUS SHOPPING
MEETING, YOUNG EAGLE REPORTS
NO FLAP LANDING FLIGHT TEST
IMSAFE, ARE YOU?**

