experimental aircraft association

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 *July 2019*

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:

HOMEBUILDER'S DOWN DAY

You
Tuesday, 16 July 2019
Whenever
Your Workshop

By order of the **Kommandant** and your **Board of Directors**, the ***Project Police*** of EAA Chapter 1000 are hereby directed to meet individually in groups for the regularly scheduled meeting/gathering/event on the third Tuesday of the month. Yes, you are empowered to figure out for yourself how to entertain yourself from 1700 to 1900 on 16 July 2018. Dinner at the BK Dead Cow Emporium is authorized but remains optional.

The **Kommandant** will be preflighting the **Fightin' Skywagon** and loading it to wing himself and **JDIII** off to Wittman Airfield in Oshkosh WI. Likewise, the **Vice Kommandant** will be on his way to Oshkosh. **Opie** will probably already be in Oshkosh, and hopefully **Stormy** will have finally decided whether to fly **George** to Oshkosh, drive the **BWF**, or go to work and be depressed. **Erbman** will be at home explaining to **Junior *PPO* Emmy** why it is important to keep her headset on in the airplane, in hopes that someday she might understand.

Since it is summer, many of you have already made plans to be somewhere else on that day, so we're not bothering to put together a program for you to miss.

Homework: The **Kommandant** has assigned you tasks for the time you are not at the chapter meeting, assuming you're not on your way to Aviation Mecca. If you have a current airplane project, put in a couple of hours of building time on your project. If your airplane is in need of maintenance or upgrades, spend a couple of hours working on that. If you don't fit in either of those categories, then step to your computer or device and go to http://www.eaavideo.org. Type "Chapter Video Magazine" in the search box and click "Search". Pick one of the month's magazine and watch it. Alternatively, go to Amazon.com and order "Mike Busch on Airplane Ownership". **Evil Editor Zurg** will be watching your Internet traffic, so we will know if you have completed your assignment.

Next month's meeting will be our annual Jethawks baseball meeting. **Cobra** has secured Lancaster Skybox tickets for **26 August**, a Monday. Apparently the Jethawks were not willing to rearrange their schedule to conform with our normal meeting schedule.

- Erbman
Subbing for the **Vice Kommandant**

Last Month's Meeting

EAA Chapter 1000
USAF Test Pilot School
MOL Room
Edwards AFB, CA
18 June 2019
Hellmuth Steinlin, Presiding

Six ***Project Police Troopers*** met at the USAF TPS to welcome **Brian Finnegan** and **Michael Smith** from the **Planes of Fame** Air Museum in Chino. The **Kommandant** was not in attendance, as he was still recovering from his surgery as covered in last month's **Kommandant's Korner**. We started with a casual look around the Test Pilot School, with Brian and Mike gushing over the various models by **Bill Guoan**. Rumors that they were thinking of ways to surreptitiously remove the models back to their museum could not be confirmed.

Brian and Mike allowed as how this was their first time to ever be on Edwards AFB.

After the consumption of many **Tuki Kukis** (to the delight of **JDIII**), the assembled mini-horde reassembled in the MOL Room (where an HDMI input was available).

Brian and Mike started their presentation describing the goals of the **Planes of Fame Air Museum**. Following was the story of how it all started with **Ed Maloney** collecting airplanes. Near the end of World War II airplanes were being stockpiled at western US airports in preparation for the expected invasion of Japan. When the war abruptly came to an end, the US Army Air Force decided it no longer needed the large surplus of aircraft, so they sold off a few and started scrapping the rest. **Ed Maloney** could not abide the idea of all of the airplanes disappearing, so he started collecting as many aircraft as he could.

After collecting a bunch of aircraft, in 1957 Ed decided to make them available to the public. He opened an Air Museum, which he cleverly named "**The Air Museum**". While very generic, it really wasn't confusing, as at the time it was the only air museum west of the Mississippi. In 1970 some of the aircraft were loaned to a display in Buena Park called "Movie World: Cars of the Stars and Planes of Fame Museum". In 1973 this display closed, and the aircraft returned to the new location on Chino Airport. The name was retained to become the "Planes of Fame Air Museum".

The unusual part of the Planes of Fame is that it was one of the first air museums to decide that aircraft should be maintained in flying condition, and actually flown for the public on occasion. At the time any museum worth its salt only kept aircraft on static display. Now it is generally accepted that static museums and flying museums are complementary, both serving important purposes.

The presentation finished with an overview of many of the aircraft in the museum collection. Brian invited all ***PPOs*** to come visit the museum in Chino, or even the satellite facility in Valle AZ. He sweetened the deal by handing 20 free passes for the museum to the **Vice Kommandant**. Two are already gone, but see **Hellmuth** to get yours.

The **Planes of Fame Air Museum** is currently at the top of the list of fly-out locations for May 2020. We'll decide on a date after the dates for the 2020 air show are published so that we can deconflict.

Brian and **Mike** are also interested in returning to Edwards to see more of the base and the **Flight Test Museum**. This has been turned over to **JDIII** and the **Kommandant**.

In appreciation for speaking to us, the ***Project Police*** presented a check for $300 to support the Planes of Fame Air Museum.

Most of this is true, except, of course, for the parts we just made up.

- Erbman
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

This K^2 is coming to you from "on the road" in the pleasant central California town of San Rafael where we spent the Nation's B'Day with the Charests.

I'm pleased to report that I cleared myself to return to flight status just in time for this trip…mostly. I am still living with the medically-imposed limit on lifting "more than 10-15 pounds" but that restriction will be lifted (STS) in the next two weeks. That did pose a small problem in moving the **VC-180** out of the hangar two days ago when we were preparing to launch for the holiday family gathering. Fortunately, a prominent sign on the airport security gate advertises "airport personnel are available to assist persons with disabilities in opening hangar doors or moving aircraft". Well, that definition fit my present condition so after the American Airports line-dude finished topping the **Fightin' Skywagon's** tanks with liquid energy I asked if he would make good on the promise of assistance. Of course, he cheerfully agreed. No sooner had we started to push out a "neighbor" from the hangar across the aisle rushed over to help as well…a gratifying reflection of the good will in the pilot community.

In short order we were taxiing out to runway 24 in gusty winds for our departure. Based on the TAF I had set a departure time of not later than noon to get airborne before the typical heinous afternoon winds. At 1115 we took the runway with the tower calling **240/24G31** (*Day-um!*). That made for a short takeoff roll and a couple of skips in the gusts while I did my best rudder dance. Climb out into the teeth of the gale resulted in 75 KGS and arrival at our 8500 feet MSL cruise attitude well before we reached the Tehachapis. Turbulence was mercifully light and once we entered the San Joachin Valley even the small bumps disappeared and our ground speed crept up to the low 120s. The rest of the trip to Petaluma airport (O69) was smooth and uneventful and gave me the opportunity for a first evaluation of the recently installed **Garmin G5 HSI**. Consider the following a "preliminary report of results" as extensive testing has not been completed.

Overall, visibility and readability of the instrument were excellent. I had been expecting some challenges in this area due to my aging eyes but was pleasantly surprised how easy it was to read and interpret the relatively uncluttered display. Likewise the pilot interface was intuitive. The single "push, then turn" knob for selecting menu items was positive and precise…as long as the initial push was positive. A couple of times I found myself inadvertently changing the heading bug because I hadn't completely pressed the knob to its detent. This is not a real issue and I expect pilot compensation will prevail. Having a positive "press" requirement is likely a good thing in turbulent conditions. Operationally, accessing the menu is

not often required in cruise flight unless the pilot desires activation/deactivation of the GPS-steering (GPSS) mode or to switch the display to the backup ADI mode. On an approach, the menu would be required to change the OBS setting, but for little else.

The GPSS feature for controlling the STEC 50 autopilot is a significant new capability over the mechanical DG/CDI that the G5 replaced. The GPSS control algorithm built into the G5 allows the 1970s-vintage analog autopilot to replicate a modern digital flight management system…at least in tracking a course. For those not familiar, the GPSS uses the heading bug to drive autopilot heading changes. Those heading changes are calculated based on inputs from air data (for wind determination) and magnetic heading (from the GMU11 wing-mounted mag heading unit). The result is smooth tracking of a desired GPS course, including changes in course of up to 90 degrees regardless of wind conditions with no pilot input and minimal overshoot.

The GPSS mode is selected via the previously described menu access and, essentially, captures the heading bug for its use. Referring to the accompanying photo you can see the mode annunciation in the upper left corner of the display. When GPSS is active, the knob will move the heading bug, but is only used for reference. When GPSS is disabled, moving the heading bug directly steers the autopilot (if engaged in "HDG" mode). Slight display differences allow the pilot to quickly determine the status of the GPSS and the heading bug.

When GPSS is not in use the "NAV" mode of the autopilot can drive the autopilot using the legacy analog course deviation signals sent by the G5. Of course, when tracking a VOR or LOC course, GPSS is not used, requiring pilot input to change the GPSS setting when shooting a "coupled" approach using the autopilot.

On the lower corners the unit displays two selectable navigation sources that drive two independent bearing pointers to assist in pilot situation awareness and is reminiscent of the bearing/distance/heading indicator (BDHI) in the F-4 and other military aircraft. More on the capabilities of this latest gadgetosis nervosa attack will be reported in future columns if there is interest. Until then…

Fly Safe and Check 6!

- Gary Aldrich
Kommanding

Dr. Strangeflight or: How I Learned to Stop Flailing and Love the Simulator

Our investigation into state of the art flight simulators at reasonable costs began with an FAA update to two portions of 14 CFR Part 61 affecting instrument training and recency of experience (currency) requirements. As we were approaching the time to start my instrument training, the **Kommandant** suggested that we investigate the possibility of using any simulators in the area to enhance my training or allow us to continue training when weather conditions were not suitable for flying.

The change relating to instrument training was:

14 CFR 61.65(i) *Use of an aviation training device.* A maximum of 10 hours of instrument time received in a basic aviation training device or a **maximum of 20 hours of instrument time received in an advanced aviation training device** may be credited for the instrument time requirements of this section if—

(1) The device is approved and authorized by the FAA;

(2) An authorized instructor provides the instrument time in the device; and

(3) The FAA approved the instrument training and instrument tasks performed in the device.

This update doubled the number of training hours allowed over the previous version of the regulation.

Another significant change was regarding acceptable methods for maintaining instrument currency:

14 CFR 61.57(c)(2) *Use of a full flight simulator, flight training device, or aviation training device for maintaining instrument experience*. A pilot may accomplish the requirements in paragraph (c)(1) of this section in a full flight simulator, flight training device, or **aviation training device** provided the device represents the category of aircraft for the instrument rating privileges to be maintained and the pilot performs the tasks and iterations in simulated

instrument conditions. A person may complete the instrument experience in any combination of an aircraft, full flight simulator, flight training device, or aviation training device.

The key changes in this update were that any or all of the requirements for instrument currency may be accomplished in the simulator, and more significantly, no instructor (CFII) is required to be present. In the past, to shoot approaches for instrument currency in your airplane only required a safety pilot, but in the simulator required an instructor. Apparently the FAA harmonized these two methods.

As such, we set out to form our own opinions about the suitability of available simulators for instrument training and maintaining currency.

The Search For A Simulator

Before going on, we really should clarify our terms. In the FAA lingo, there are various levels of simulators. In fact, to the FAA, a "simulator" is the big, expensive, full-motion device that airlines use for training and emergency procedure practice that match specific aircraft as close as possible. Those are well out of the price range we are interested in here.

The next level down is the Flight Training Device. I haven't been able to find a good description as to what constitutes a Flight Training Device, but I do know that an FTD was not what we were looking for in this case.

What we were looking for was the Aviation Training Device (ATD), which according to Advisory Circular AC 61-136A, "includes the hardware and software necessary to **represent a category and class of aircraft** (or set of aircraft) operations in ground and flight conditions having the appropriate range of capabilities and systems installed in the device as described within this advisory circular (AC) for the specific basic or advanced qualification level." Note that an ATD doesn't have to match your airplane. Being an "Airplane Single Engine Land" is sufficient.

ATDs come in two variants. The Basic ATD (BATD) consists generally of a single monitor sitting on a desktop with flight controls, engine controls, and simulated avionics.

The Advanced ATD (AATD) generally consists of a cab with an instrument panel, flight controls, engine controls, simulated avionics, and multiple monitors to give a wide angle of outside visuals.

A couple of quick phone calls determined that neither the Edwards Aero Club nor Barnes Aviation had any sort of ATD.

Having watched *One Six Right*, I knew that the Van Nuys airport (KVNY) had some flight schools, and it is not terribly far away. After some web searching and phone calls I found that our best bet was **Encore Flight Academy** (http://EncoreFlight.com). Encore Flight Academy has four (4) Redbird FMX AATD and at least one Redbird BATD.

An example BATD, the Redbird TD

An example AATD, the Redbird FMX

Redbird FMX AATD

The Redbird FMX was a big box with two seats, representing a general aviation cockpit. Flight controls were provided for the left seat, and the right seat was for the instructor. The FMX was sold as a "full motion" device, but we did not evaluate the motion capability, as our interest was instrument procedures and not seat-of–the-pants flying. There is a large amount of literature available that says that motion base is not necessary for suitable training, but motion base still has its proponents. Interestingly, we never saw any of the other instructors using the motion either.

The FMX was driven by a large desktop type computer. Wrap-around visuals (out the window) were provided on six screens. Two more screens displayed the instrument panel and the avionics. Screen overlays included knobs and buttons for controlling the instruments and avionics. Changing these overlays and changing to the appropriate software allowed using the same hardware device to represent multiple different aircraft. The avionics were software simulations of popular boxes, such as the Garmin 430/530.

Flight controls consisted of a yoke and rudder pedals. One FMX showed that a control stick could be installed in place of the yoke. A flap control switch resembled a Cessna electric flap switch. Push-pull throttle and mixture controls were provided, though we mostly left the mixture in full rich for our purposes. A key magneto switch and various other switches were provided. These could be useful for teaching checklist procedures to primary students, but we mostly ignored them for our purposes.

Control of the FMX was through a tablet device connected to the FMX's WiFi router. Once connected, a web application was run in a browser to control the FMX. Any browser enabled device would work, so we were able to use our own iPad. We think this was preferable over a provided tablet because you could make sure it was charged beforehand. Logging on involved a password, and we eventually hired an instructor for half an hour to get the password and guidance on how to operate the FMX.

The Redbird FMX we used was set up to resemble and have the performance of a Cessna 172. The panel was round dials (steam gauges) with a separate OBS course/glideslope indicator (no HSI).

At the time of our use, the FMX AATD was renting for $90 an hour of Hobbs time. Of interest was that the AATD Hobbs meter did not run while the simulation was paused.

You Knew The Simulation Wouldn't Be Perfect…

After an on-again off-again relationship (mostly off) with Microsoft Flight Simulator since 1983, I was prepared to be disappointed. I expected the Flying Qualities of the FMX to be significantly different from flying an actual airplane, and, sadly, I was right. There was no force feedback in the yoke or pedals. Moving the trim wheel produced no corresponding change in yoke force, so trimming was literally a big guess. Move the trim wheel, release the yoke, see what happens. Repeat. Very unrealistic.

There was no speed stability feedback, so you couldn't tell you were off your trimmed airspeed by forces on the yoke. A noticeable friction deadband meant that from a trimmed condition, you could pull on the yoke, let go, and the airplane would climb. Push and release and the airplane would descend, all at the same trim setting. Maintaining altitude required close observation of instruments. In actual flight, other cues from force feedback are available.

To be fair, this behaviour is well known. Redbird says on their website "When someone talks about a simulator, the fact that "it doesn't feel like the real thing" almost always comes up. While that might not be a big deal when you're teaching instrument procedures, this lack of "feel" turns most devices into a paper weight when you try to teach basic aircraft handling. The primary culprit of "simulator feel" is the traditional spring-loaded yoke system that has been the industry standard since the 1940's. We've known that force feedback systems are the answer to this problem, but these systems have been hugely expensive and delicate components that aren't even an option on most general aviation training devices … until now." Redbird's solution is a "Control Loading" option, which provides force feedback. However, this option is another $8500 on a $65,000 AATD (Yea, we won't be setting one up in the extra room upstairs).

I also knew there would be some transition time learning a new panel layout. The Bearhawk is essentially an EFIS over an HSI with a Garmin GNS 480 doing the navigating. It has turned out to be a reasonably well integrated solution just short of having something like a Garmin G1000. Flying with a traditional six-pack with a separate OBS took a little getting used to, but since I started in primary training on a similar panel, it didn't take me long to get used to it. As for operating the simulated GNS 530, I left that to the Kommandant since he was fluent in that box.

I found that I could learn to compensate for the FMX's Flying Qualities, but it seemed to take about 15 minutes at the beginning of each session to relearn the compensation.

One of the perceived benefits of simulation was the ability to place the airplane at a point airborne so that you don't have to spend a lot of time flying there as with an actual aircraft. This could certainly be done, but each new scenario startup in the air had the airplane out of trim (regardless of the previous trim setting), so it took a minute or so to retrim and get the airplane under control each time. Therefore, you don't want to start somewhere like at the Final Approach Fix, because you'll be well out of position by the time you get the airplane under control. You need to start at least a minute before the place you want to start.

The important parts of the simulation, such as the visuals and instruments, updated quickly and gave no impression of lag. However, this was done at the expense of speed in other parts of the simulation. Knobs to adjust things like the Directional Gyro (DG), OBS, or heading bug could not be spun as quickly as you can in the airplane. The knob was actually an input device to the computer, and the computer could only accept that input so fast. So while the knobs worked, you had to be patient. While you could spin the heading bug 180 degrees in about 3-4 seconds in your airplane, in the sim it took about 10-15 seconds.

The avionics were exceptionally slow to update. The moving map on the simulated GNS 530 updated roughly once every five seconds. This wasn't a big problem while tracking a course, but I found it very disorienting if I was trying to adjust my heading by glancing at the moving map.

The Encore instructor warned us that the control software could be "moody". We found that the weather scenario that was programmed in would change between setup and actually running the simulation. In one case, 1000 feet AGL ceilings at Fox (KWJF) became ceilings at 1000 feet MSL. We discovered this after flying an approach for 10 minutes, only to not break out as expected, thus losing one of the learning objectives of that approach.

Other numbers would randomly change, and soon we learned to recheck them after the simulation had begun.

Sometimes we found that the approach database would not match current plates. We were fine at KPMD and KWJF, but when we tried the DME arc at Victorville, we wasted 10 to 15 minutes to eventually conclude that the VCV VOR did not exist in the database, even though it was necessary for that approach.

Finally, an issue I had that a young student probably wouldn't was with focal length. The monitors for the "outside view" were actually only three to four feet from my eyes. That meant that they focused in the mid-range section of my trifocals, not in the distant section as an actual outside view would. The result was that I had to tilt my head up unnaturally to "look outside".

…But It Is Beneficial

Even with all of its known deficiencies, the FMX had enough benefits to make it a useful tool.

Of course, there are two useful things you can do in an FMX that you can't do in an airplane. First is the ability to "Stop the World" with the pause button while you sort things out or change your setup. The other is the aforementioned ability to place the airplane anywhere without spending time and fuel droning. This capability changes the whole economics of the FMX. Since the **Bearhawk** fixed costs (hangar, insurance, inspections) have to be paid anyway, the marginal cost of flying the **Bearhawk** for instrument training is primarily the cost of fuel, or about $50 an hour. The FMX cost $90 an hour, but we found that we could do roughly twice the number of approaches per hour, primarily because the outbound leg was eliminated. For approaches at other airports farther away, elimination of transit time to get there further increases the value of the FMX. So the answer to the question you've patiently been waiting for ("**Is the simulator cheaper than flying?**") is "**No, but Yes**". No, it's not cheaper by the hour, but it can be cheaper by the training objective. Of course, if you have to rent an airplane to go fly, the FMX is cheaper on all counts.

As expected, a strong benefit was in learning procedures. There was no ATC to worry about, no traffic to worry about, and no other distractions. It's a good build-up to real-world flying when all of those distractions come back. It turns out that things still go wrong with your simulated approach when the avionics are not set up correctly. It's probably better to learn the importance of avionics configuration and how to check that while sitting in a box instead of in an airplane.

One benefit that I hadn't thought about before was the ability to do approaches that I wouldn't be allowed to in the real world. For instance, I would never be allowed to fly an ILS into LAX in the **Bearhawk** with all of those airliners screaming up my tail. Why, you ask, would I even consider such a thing? Well, in my ground school **John** and **Martha** spent enough time talking to me about approach lighting systems. I wondered how the approach lights looked breaking out of the clouds and how much difference the "rabbit" made. There are no airports with approach lighting available for flying to around here, but I could do the ILS into LAX in the FMX. The effect was impressive, and I can see why approach lights are useful to airline pilots who have to fly regardless of the weather.

After getting into an approach or two, I was pleased to find all of the same mental processes firing as when I am doing an instrument cross-check in the **Bearhawk**. All of the appropriate stimuli were there, so it was very easy to immerse myself in the approach and act as though I were in an actual airplane. The suspension of disbelief was reasonably easy. The wrap-around visuals fill the visual field, and multiple times I had a very real feeling of movement (mostly roll) even though I was absolutely static.

By far the most significant benefit of the FMX was the simulation of the outside view. Yes, that's right. Instrument flight is supposed to be about not being able to see outside, and I'm telling you that the best thing about the FMX was the ability to "see outside". The "view limiting device" or "hood" used in the airplane has only one weather condition—zero visibility. The transition to unlimited visibility at minimums is stark and totally unrealistic. In the FMX, you could see the effect of the runway coming into view slowly out of the fog. Below the clouds but in low visibility, you could see objects on the ground going by, but still not be able to see the runway environment. The Kommandant tells me that this is a very real type of distraction, and it was far better to see it in the FMX first. Doing the PMD ILS Rwy 25 to minimums, you actually saw runway 22 before seeing the intended runway 25, which is another very real gotcha. As mentioned before, I was able to see the approach lights at LAX through the weather when no other ground elements were visible. Finally, on one approach where the weather was just below minimums (whether intentional or not), at minimums I executed a missed approach. Just as I did, the runway flashed into view and then right out again. I felt that urge to try to make the runway, but decided since I had already started the missed approach that I needed to continue the missed approach. The Kommandant said that was another very important scenario to experience, done safely in the FMX.

So Much For Training, What About Currency?

In summary, to maintain instrument currency, every six months you need to fly six approaches, track courses, and do a turn in holding. As stated above in 14 CFR 61.57(c)(2), these requirements can be satisfied in an airplane in actual IFR or in VFR with a view limiting device and a safety pilot. It also says the requirements can be satisfied in an "aviation training device". Of important note is that the words "basic" or "advanced" do not appear in this paragraph. Therefore, even a BATD can be used to maintain instrument currency. At Encore, the current rental rate for the BATD is $50 an hour.

There is also no requirement for an instructor to be present, so if you know how to set up the ATD you can do it all yourself. Note that it does say that you have to set up the visuals to simulate instrument conditions.

Considering the elimination of transit time and downwind leg time, the ATD can be a less expensive way to maintain your instrument currency. Probably more important, you can still use the ATD while the winds are howling much faster than you like to have your airplane out in. We don't know anyone who has actually tried using an ATD to update their currency, but it is currently an option.

In Conclusion

As expected, the AATD or BATD was not a replacement for flying. They had many deficiencies that make them an imperfect simulation of actually flying. However, they also had enough strengths to label them as a good complement to flying.

We used the AATD during the month that the **Bearhawk** was down for its Condition Inspection. We found that the AATD was good for about six to seven hours before we had exhausted its usefulness over flying in the airplane.

The AATD and BATD have potential for maintaining instrument currency, especially when weather or other problems don't allow flying. The IMC visuals were far more realistic than the inside of a hood. Finally, it was an easy way to fly approach types that are not readily available in your area.

- Erbman

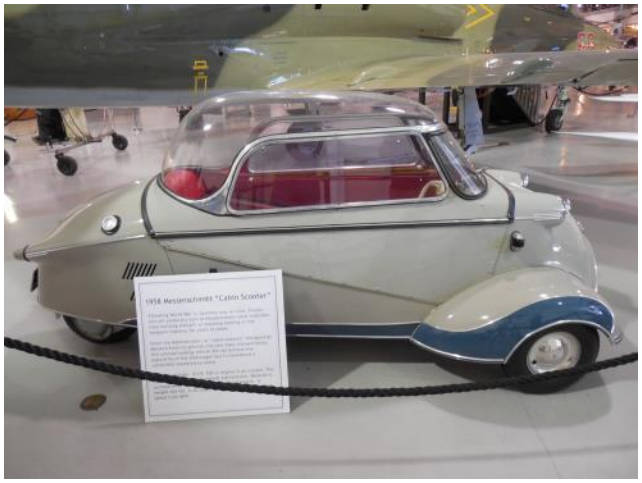
1958 Messerschmitt "Cabin Scooter"

(*These pictures are brought to you from the Hiller Museum next to the San Carlos Airport (KSQL)*)

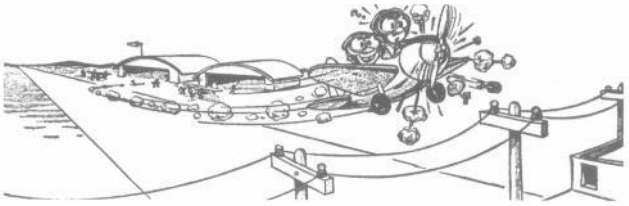
Following World War II, Germany was in ruins. Former aircraft producers such as Messerschmitt were forbidden from building aircraft—or anything harking of the weapons industry—for years to come.

Enter the *Kabinenroller*, or "cabin scooter." Designed by Messerschmitt to provide low-cost mass transportation, this unusual-looking vehicle did not achieve the popularity of the Volkwagen but is considered a collectible masterpiece today. Approximately 40,000 were built.

The one-cylinder, 10 HP, 200 cc engine is air-cooled. The car boasts a four-speed manual transmission. Reverse is accomplished by starting the engine backwards. It weighs 463 lbs, is all steel, and gets 100 MPG! Maximum speed is 62 MPH.



For more info, search Wikipedia for "Messerschmitt KR200".



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

EAA Chapter 1000 Board of Directors Meetings are now held on an unscheduled, as needed basis. If you need to know when, you're already on the e-mail notification list. (661) 609-0942

Jul 16: CNX EAA Chapter 1000 Monthly Meeting, Cancelled in lieu of AirVenture. (661) 609-0942

Jul 22 - 28: EAA AirVenture. Oshkosh WI.

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

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

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

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

Dec 17: EAA Chapter 1000 Festivus Etc Celebration, 6:00 p.m., Kommandant's Kwarters, 42370 61st Street West, Quartz Hill CA. (661) 609-0942

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

Feb 18: EAA Chapter 1000 Monthly Meeting, 5:00 p.m., Edwards AFB. USAF Test Pilot School, Scobee Auditorium. (661) 609-0942

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

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

May 16: EAA Chapter 1000 Annual Aviation Event, currently accepting ideas for activities. (661) 609-0942

Jun 16: 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.

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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

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THE LEADING EDGE
MUROC EAA CHAPTER 1000 NEWSLETTER
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http://www.eaa1000.av.org

ADDRESS SERVICE REQUESTED

THIS MONTH'S HIGHLIGHTS:
NO REGULAR MEETING THIS MONTH
GARMIN G5 PRELIMINARY REPORT
REVIEW OF AATD FOR TRAINING
A MESSERSCHMITT SCOOTER?

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