

EAA Chapter 81 Project Meeting Minutes

April 16, 2016

Meeting was called to order at the hangar of Chuck Valade at Marana Airport, by President Eric Witherspoon at 1002. Chuck had not offered to present a Project Meeting at the previous March meeting at Ryan Field, but, rather had brought it up after the meeting was adjourned, so many Chapter 81 members were surprised at the venue, although it was announced in the newsletter and on the website. Despite this, attendance was good with over 30 members and visitors present. Thanks to foresight of some members, there were seats, coffee, and donuts for all.

Secretary's Report: Bob Miller actually had a copy of the Minutes of the March 19 meeting in his hand, ready to read to one and all. Bob is well known as a Legend In His Own Mind, and believed that everyone would want to hear the Minutes; he was, as usual, wrong. Before he could take a breath to begin his Magnum Opus, a savvy member moved that the Minutes be accepted as published in SkyWriter and the website, without being read. In an inspiring demonstration of teamwork and frantic desperation, the motion was seconded and unanimously passed. Someone did throw Bob a bone, stating that he did a good job at keeping the Minutes amusing.

Treasurer's Report: Jim Gries was unable to attend but had passed on the numbers to Bob: \$13,415.84 in the bank. Expenses included 3-months' Chapter Hangar rental (through June), and 61 members were paid up.

Old Business: Young Eagles Coordinator Tito Sanchez told us that the Young Eagles event held last Saturday went really well. 9 girls participated ranging from ages 8-14. In his opinion, 8 is too young and 9 is marginal, regarding ability to behave and participate. This opinion was backed by the experiences of Gary Woods and Torsten Leibold, who flew the younger ones, who found the experience terrifying. The pilots' wives served as ground crew and provided briefing. Input from this experience will go toward steering the direction of future Young Eagles events. Joe Seibold recalled when whole busloads of kids were brought up from Nogales, AZ for "Youth in Aviation" programs on a regular basis. It has not been determined yet whether Chapter 81 will continue sponsoring a Young Eagles Program.

New Business: George Snyder apprised us of the upcoming 70th anniversary of the Swift at Airventure Oshkosh this year. There is also an annual convention of Swifts in Athens, Tennessee, where there will be a drawing with 999 \$100 tickets sold with the grand prize a new engine worth \$33K. Fliers were distributed at the meeting. George also has a pair of run-out IO-320 engines from a Twin-Commanche, complete with all accessories, for sale. George will be one of the first to use our new Borescope. Local A&P A.J. Pawlowski donated some non-functioning aircrafts scales to Chapter 81 and our multi-talented Newsletter Editor, Erik Fjerstad, has them operating perfectly. The Chapter 81 Hanger is coming along, now featuring not only boxes of books, videos, and aircraft parts, but a matching pair of used 2 X 8 foot work benches. It is hoped that, by the cooler fall weather, we can begin holding meetings there with demonstration of building techniques not suitable for the Ryan Field Administrative Conference Room.

Visitors: Scott Horton is an aircraft maintenance tech. Scott Kelly, from Portland Oregon's Chapter 105 flies an RV-6. Jeff Smith is a past member of our chapter. Bob Glock, here with Jack Evans, has lost his medical.

At 1015, the moment we were all anticipating arrived: Chuck Valade began his presentation on his Stealth Zenith CH 750 Cruiser (yes that is the correct spelling). Sebastien Heinz, of Zenith Aircraft (previously Zenair) is marketing another aircraft called the Cruiser; a factory-built SLSA. I say "Stealth", because there was no recognizable part of a CH 750 to be seen, although there was plenty of

eye candy with a Zenith CH 601 that Chuck completed just over a year ago, and a Glasair I both parked in front of Chuck's hangar. The Glasair was built by a friend in Michigan. It features a 150 HP Lycoming O-320 with Prince P-tip prop and dual CDI (Capacitive Discharge ignition). Chuck added winglets that not only increased high-altitude performance, but lowered the MCA (minimum controllable airspeed) from the upper 60 knot region to the 40s; a worthwhile mod if ever there was one. The Zenith 601 is also notable in that Chuck, who is rather good with his hands, rebuilt a clapped-out Continental O-200 100 HP engine, modified it for weight-reduction, and has an aircraft that qualifies as an LSA, but cost him about \$22K to build. Not the engine; the entire aircraft! It would appear that Chuck lays eyes on a design and immediately sees what could be improved; then proves that he was right by making the successful modifications! He is certainly a Serial Builder, having also completed a BD-4 in Michigan. His new project, the CH 750 Cruzer, was designed for engines from O-200s all the way up to O-360s. The reason that we don't see airplane parts hanging in his hangar is that he is a Snowbird, fleeing Tucson's delightfully balmy summer climate (can you say "steenkin'hot") for Michigan every spring, and returning every fall. He is deciding how much prebuilding he wants done by Zenith (they are fine with everything from doing the whole thing to pure plans-building) and decided to do the wing spars, horizontal stabilizer spar, and flaperon spars himself. They are already on their way to Michigan where the rudder will be built. Chuck is not only an A&P, but loves to teach as well. He discovered that, in order to cut straight lines on long 12-foot wing skins, the best method was to score and break along the score line. The problem was that the steel scoring blade he was using would dull on the 6061-T6 aluminum alloy. (6061 is the alloy and T-6 is the heat treatment specification). So Chuck, who feels that any money that doesn't go into flying is wasted, invested in a \$4 straight-edge from the aircraft department at Harbor Freight and found online an OLFA Heavy-Duty tungsten-blade scoring tool (Part # PC-L 1090486) for under \$15. He scores repeatedly until he can see the score from the opposite side; this takes about 15 passes on 0.025" and 20 passes with 0.040" aluminum. He then bends from the top and the metal breaks cleanly, leaving a razor-edge. This is smoothed off with a "chip chaser", a V-shaped blade that is pulled along the edge. Chuck explains that the 6061-T6 used in the Cruzer cuts the same as 2024 but it more corrosion-resistant. 2024 is Al-clad, meaning that there is a coating of pure aluminum to add corrosion-resistance. Chuck makes his own forming bucks out of fiberboard and uses a mallet to hammer-form, for example nose-ribs. Rather than using a router, Chuck uses a carbide cutter in a Formica laminate tool. He demonstrated the form for the 18 rear ribs (2 fiberboard buck halves clamped together and cut along the edge with the laminate tool. He demonstrated the construction of a rib by clamping aluminum and forms into a vise, using a soft mallet to slowly start bending, only 7 to 8 degrees initially, but eventually down to 90 degrees. This puts waves into the free edge, and at this point, Chuck demonstrated making flutes with a simple tap of the mallet onto a wooden mallet handle. This is so easy and effective, one wonders why they invented fluting pliers. The sites of future rivet holes are marked in advance so no flutes overlie them. After the initial pass, he finished the flutes with a harder plastic mallet on the hammer handle. He then dismantled the form and peeled the rib off. Chuck advises against using a fly-cutter to make the lightening holes in the ribs; instead, he makes a form, clamps the rib into it, and uses the laminate cutter. To make the chamfer, he has a form routed out to a 45 degree angle, lays a sheet of 50-60 durometer rubber over it and uses a hydraulic press; perfect every time. Why go to all this trouble when the factory will happily sell you a wing kit? At \$7K for the kit, that amounts to \$54 per rib, and Chuck demonstrated that he can make a rib in minutes, once the bucks are constructed. Another cool tool Chuck showed us is a \$5 lead-filled strip that can be bent to draw complex curves, then straightened out by rapping on a level table. As he has no metal break nor shear, he buys materials cut to length, such as the square steel tubing that he lays on saw horses to make his work table. The Cruzer employs Avex pulled 3/32" rivets; when countersunk, they pull into domed rivets. Chuck emphasizes that the mandrel must not pull out of a pulled rivet used in structural applications. If it occurs, the rivet must be removed and replaced. Although Avex rivets are not approved in the US for structural

purposes, the rest of the world disagrees and uses them successfully. For fuel tank use, sealed rivets can be purchased from Murphy Aircraft. George Snyder contributed that Huck rivets are sealed, but that they cost \$75 per 100. Chuck was thinking of buying a fuselage kit, but decided that he will be making most of it himself anyway. He will purchase the welded aluminum fuel tanks and assemble the wings with the tanks next month (in Michigan). When asked why he has 2 similar-performing aircraft (the CH 601 and the CH 750 Cruiser), Chuck explained that he has two homes, and the huge canopy on the 601 will augment the cabin heater for Michigan flying, whereas the high wing of the 750 will provide shade for Arizona aviation.

This was a most unusual Project Meeting; instead of seeing the expected partially-completed aircraft, we were treated to a nearly-empty hangar with a few affordable tools and a brilliant demonstration of how to fabricate aircraft parts at minimal expense. Many have turned away from the Kit aircraft industry because the buy-in price is too high. These folks have forgotten the roots of the Homebuilt aircraft hobby. It was a breath of fresh air for Chuck to pull together a fascinating demonstration of how one can economically make bucks, improvise tools, and build amazing aircraft on a realistic budget. Buy prefabricated parts where it makes economic sense to do so, and make your own parts where it is practical to do so. You might be amazed at what you can affordably create with your own two hands!

Meeting was adjourned at 1110. The next meeting will be a project meeting at the home of Stephen Zigelstein on Saturday, May 21 at 1000; however, those who arrive at 0900 will get free breakfast!

Respectfully Submitted by

Secretary Bob Miller