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CHAPTER 81

SKY WRITER

May 2010 Newsletter

Meeting Notice!

May Chapter Meeting:
15 May 10 AM - Regular Meeting at Ryan Field Administration Building

2010 EAA 81 Dues are Due!

Annual dues are $20. As of May 7th 84 of our 105 regular members have paid their 2010 dues. Checks should be made payable to: EAA Chapter 81 and sent to Mick Myal, 2900 E. Weymouth, Tucson, AZ 85716, or brought to a chapter meeting.

Upcoming Events

Two major fly-ins take place in Arizona on June 5th. Where else can you get two $5 breakfasts with a flight in-between?

- EAA Chapter 586 Annual Fly-In Pancake Breakfast at the Show Low Regional Airport, Discounted fuel will be available. Proceeds to promote GA and Young Eagles
- 5th Annual Springerville Municipal Airport Fly-In at the Springerville Municipal Airport

EAA Chapter 81 Chapter Meeting Minutes
April 17, 2010

Project Meeting was called to order at 1005 by President Duane Boyd at the hangar/palace of Bob Sutherland. This hangar has to be seen to be believed, with walls lined with pristine workbenches, mega-lighting, countless power outlets, and an astounding assortment of tools. As though this were not enough, witness the 2nd-story lounge overlooking the rest of the hangar, complete with spiral staircase and full bathroom. In addition, there is also a stand-up mini-john on the ground floor for those men in a hurry (ladies need not apply).

Treasurer's Report: There was $11,399.03 in the bank as of March 1. Interest being what it is these days, I would bet that the total is still under $11,400.

Secretary's Report: President Boyd told Secretary Bob Miller to "keep it short" (what, me long-winded?) so he did, telling everyone to look at the Minutes of the March 13 Chapter Meeting on the Website or in Skywriter.

Old business: about a dozen of us had attended the Pima Air and Space Museum outing and a good time was had by all who attended, on a not-too-warm day. The SR-71 Blackbird is now indoors, and one can climb up and take a peek inside. Where else in the West can one closely examine the entire Century series of US fighter jets, a B-17 Flying Fortress, and a GM, not Grumman, TBM torpedo bomber!

Erik Fjerstad, Newsletter Editor, is still requesting input from members on their projects. A few words and a couple of photos on your progress would make great copy for SkyWriter.

New Business: We still are seeking volunteers for Project Meetings, although, due to the summer temperatures, we are anticipating making the June meeting an indoor meeting at the Ryan Field meeting room, in lieu of the usual even-month Project Meeting. We still need members to show off their projects, at any state of assembly, for the project meetings to continue when it cools off a bit.

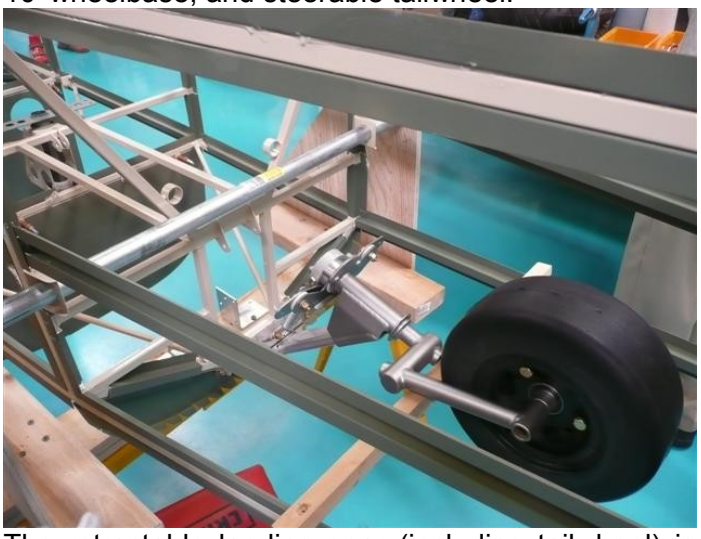
All of the above was rapidly accomplished, and, within 15 minutes, Bob Sutherland was able to begin his Project Presentation. Bob started by informing us that his dad had been a Marine pilot in WW II, flying the Corsair. Bob himself has been flying a North American Navion for 18 years, and is a partner in a Super Decathlon. His project aircraft is a Titan T-51 Mustang, a ¾ -scale Experimental replica warbird designed and produced by John Williams. Bob met John at the Copperstate Fly-In in 2006 and was impressed by the factory demonstrator. He bought his kit then, but did not start it until January of this year.

Bob notes that many Mustang replicas have come, and most have gone as well, whereas Titan has sold 225 kits since 2003, and many are flying. Unlike most other Mustang replicas, the T-51 was designed to have benign low-speed flying characteristics, much like its factory-mate, the Titan Tornado. With a gentle stall in the mid 40 MPH range, it is much more pilot-friendly and accessible to a greater number of pilots, not all of whom are equipped to fly hot V8 (or V12, or even turbine!) powered taildraggers.
Of course, the battle cry of "More Power" rings loudly in the US, and, while the design was originally

intended to be powered by a Rotax 912, Jabiru 2200 or 3300, and Cam 100 engines, builders are opting for the Suzuki 2.5-2.7L V6, dubbed the "Mini-Merlin" after the Rolls-Royce Merlin V-12 engine that powered the Hawker Hurricane, Supermarine Spitfire, DeHavilland Mosquito light bomber, and, of course, the later North American P-51 fighters. Dan Hawkins developed this firewall-forward package. Bob's electronic fuel-injected 180HP 70-degree V6

was initially set up to exhaust into log manifolds and then out into stacks to look like the original Mustang, but he has done it one better with doubled pipes exiting each port, making 6 distinct pipes per side. Prop will be a Whirlwind 84" 4-blade with electric variable-pitch. A Dynon EFIS is planned.

Cooling is via a belly-radiator, just like the real thing. The T-51 kit provides a two-part welded steel frame, designed so that no holes need to be drilled into the frame. Instead, rivets go into a "hat section," or parts are bonded. Bob had the frame powder-coated locally, and has already incorporated some upgrades into his aircraft, including switching to aviation fittings firewall-forward and converting the main fuel tanks to direct-fill instead of using the suggested elbows. Extra range comes in the form of 9 ½ gallon drop tanks, and the originally fabric-covered elevator and rudder are metallized. No composites are employed. Skins are pre-formed, but not drilled, and are designed to overlap, and, where strength is needed, some of the 0.040" skins are doubled. All bulkheads must be cut and shaped, and the manual is really a set of blueprints, supplemented by a builders' forum and "great factory help." Rivets are dome-headed and are pulled, not driven. Wings are built with solid Styrofoam leading edges and ribs are added later. Ground handling is fairly docile with an 8' track and 10' wheelbase, and steerable tailwheel.



The retractable landing gear (including tailwheel) is hydraulic. Kit price when Bob bought his was $37,500, and is now up to $54,900. It will typically cost about $125K to complete one with a Rotax engine. It can be built as an ELSA with fixed gear and fixed-pitch prop, or, at the other end of the spectrum, with a 244HP Honda V6! Factory specs are: empty weight 850#, gross 1450#, length 23.6'., height 9'2", wing span 24', fuel capacity without drop tanks 25 gallons of 100LL. Performance varies with engine, prop, etc. but generally is as follows: With any engine, Vne is 197 MPH. Cruise can be 150 (Rotax) or 170 (V6), stall in the 40s, range 600 miles, climb 1200 ft/min (Rotax) to 2100 ft/min (V6). Takeoff and landing runs are under 350', and ceiling 16-18K feet. The aircraft is aerobatic, at +6 and -4G rating, but Bob just wants to fly for fun and show it off! Of course, the occasional loop or roll is not out of the question. This is an amazing project, and we all wish Bob, who admits that he is not a mechanical kind of guy, a great education and building experience.

The next meeting will be at the Ryan Field meeting room on Saturday, May 15 at 1000.

Respectfully Submitted by
Secretary Bob Miller

Titan T-51 Information

For additional information on the Titan T-51, visit their website: http://www.titanaircraft.com/ Here is a video link of a flight with great "mini-merlin sounds" http://www.youtube.com/watch?v=rbIgZ4U1buM or, with 914S power: http://www.youtube.com/watch?v=lr4gHBbyu2s&feature=related

Notes of Interest

The trailer decking party at Joe Seibold's house was successful. Here is the result. Contact Joe Seibold to borrow it to transport your project.

mailto:seiboldj@aol.com (520) 818-0603)

Notes from Members

Member Bob Olden donates his ¾ scale P51D project to San Diego Air and Space Museum.

Bob wrote: My interest in flying dates back to WWII when I built many, many models of WWII airplanes, particularly fighters (or “pursuit” planes as they were known then). However, I didn’t take my first flying lesson until I was 70 years old. As is the case with a lot of us reaching this "advanced" age, I was lucky to

have the Sport Pilot certificate available. There is no way that I would even risk trying to qualify for a third class medical.

It didn’t take me long to see how closely the Fisher and Loehle kits looked to the multitude of “paper and stick” planes that I had built in my childhood. The first project that I tackled was and is, a Fisher biplane that I have chosen to build as a ¾ scale version of an N2S Stearman. For power, I am going with the obvious, an R2800 Rotec Radial. This is the project that I am spending my summers with in Illinois.

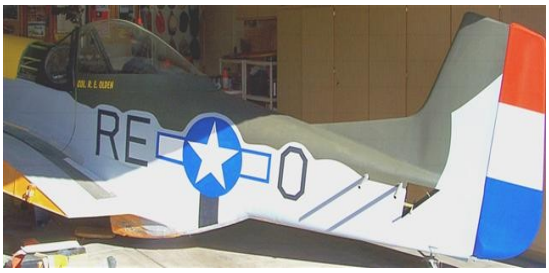
It also didn’t take me long either to figure out that it was going to take me years to get the N2S in the air, so I bought a completed QC Challenger II to spend part of my summers flying. But this story is about my modified Loehle 5151.

Spending my winters in AZ, I soon got tired of not doing much more than sitting around in the sunshine. However, since I now knew how much time and work was involved starting a project from a kit, I began to look for a wood-based project that had been started and competently built to about 50% completion or so. As luck would have it, I found a 5151 that was about 50% complete and snapped it up.

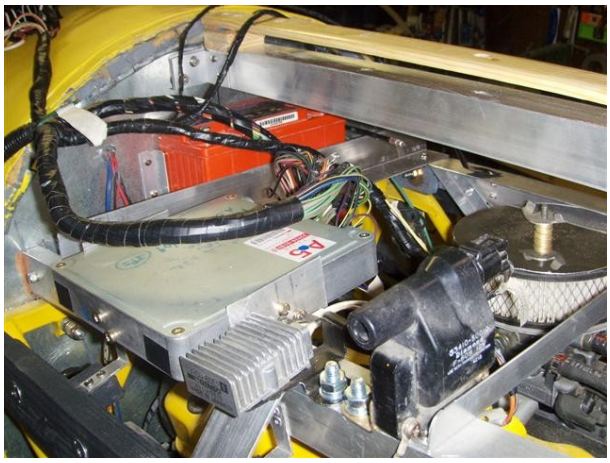
It was originally a Loehle 5151 kit, begun in 1986 by an architect in a Chicago suburb. Coincidentally, I am a retired architect originally from IL. This original builder passed on many drawing and details of the real P51D and had attempted to modify the kit to reflect these more accurately.

The most notable variation was the sheathing with 1/16" spruce plywood on the fuselage. Stringers and ribs with attendant scalloping between them hardly looked like a P51. I continued this construction by covering the top surfaces of the wings and tail with 3/64" plywood. The bottoms of these surfaces were all covered with dacron. The gear is retractable but I locked it down to conform with LSA requirements.

The construction was all done in 1/2 of my garage. As portions were completed, they were moved to my hanger at Ryan



The paint scheme was taken from a model built by john Orvosh, a friend of mine and fellow Aeroclub member here in Green Valley. .



The engine and redrive was built by Raven Redrives who has been building these engines for the last 12 years. It was really shoehorned into the 3/4 scale P51 cowl. Given the opportunity, I would use another engine.

In the two and one half years that I worked on this project, Eldon Helmer overlooked it as the EAA Tech Counselor.

After two and one half years working on my 3/4 scale P51D project, I finally came to the admission that age and arthritis have come to dominate my life to the extent that getting in, and particularly out, of a P51 is no longer feasible. It is something I could probably only have done comfortably 20 years ago. However,

just selling a partially completed aircraft project, even one that is 90% complete as was mine, is not the best way in my mind to see it properly completed nor to get a proper return on even my out-of-pocket expenses. Since until FAA signs off on it as airworthy, an unfinished project is just a bunch of sticks.

While recovering my costs was nothing to sneeze at, I especially wanted to see it properly completed since I had “pledged” to complete it myself. Having lost a little interest though, in finishing my project since I admitted my physical limitations, I thought this situation through and came to the conclusion that the highest and best use for my project might be to donate it to a tax-exempt air museum who would complete it and take a tax deduction. I then contacted seven air and space museums, received interested responses from five, as far apart as CA and FL. Four then decided that they actually wanted and would complete it.

The next problem was to find an appraiser acceptable to the IRS. This took a while to finally find the only one in AZ, John Gentile in Phoenix. John did a thorough job, fully satisfactory to me and my P51D was on its way. By the time that you read this it may well be completed and on display at the San Diego Air and Space Museum.

Of course, I’m now looking for another, more-mountable project to spend my winters working on in Arizona.

Bob Olden, Green Valley AZ and Kewanee IL
EAA 801727, Chapters 81, Tucson & 188 Erie IL

Interesting Historical Information

Buck Clippard sent this link to a remarkable photo history of the 1949 National Air Races at Cleveland.

http://www.airrace.com/1949 NAR .htm

Sport Aviation Fuel Crisis

Eric Witherspoon provided this link to a comprehensive overview of the fuel situation for sport aviation: http://www.e0pc.com/SNF10.pdf

I've selected a few slides for reference, but review the entire article for info on Auto Gas and Alcohol.

What is Legal Avgas?

FAA is not involved with avgas definition, NO FAR for avgas.

ASTM D910:

- **100 LL** (Blue) 2 grams of Tetra-ethyl Lead (TEL) / Gallon Maximum
- AirNav lists 100 LL at 3536 of 3632 FBO's (4/5/10) in the US. (97%)

ASTM D6227:

- **82 UL** (Purple) Not produced in US, but an 87 UL spec is being added.

ASTM D7547-09:

- **91 UL** (DOD request for drones) Probably never produced for public use.

ASTM D4814: Commonly known as motor gasoline or "Mogas".

- **87 AKI** (No dye) (EAA / Petersen STC, Rotax 912, 85 HP)
- **91+ AKI** (No dye) (Petersen STC, Rotax 912, 100 HP)
- According to AirNav, mogas is found at 120 FBO's (4/5/10) in the US. (<4%)

Fuels for Sport Aviation

100LL (Avgas)

- Generally available now, but for **how much longer?**
- Was special topic of **AV09 Fuels Panel Discussion** on 7/27/09

Autogas (aka unleaded auto fuel, mogas, etc.)

- 65,000 **auto fuel STC's** issued by Petersen Aviation and EAA since 1982
- STCs require **87 or 91 AKI** unleaded, **ethanol-free** gasoline
- 91 AKI unleaded is the recommended fuel for most **LSA powerplants**

Fuels for Sport Aviation

Ethanol Blended Auto Gas

- Result of state **mandates** and unintended consequence of federal RFS act.
- **Ethanol forbidden** under ALL auto fuel STCs (FAA allows1% or less)
- **Tolerated** up to E5/E10 in some engines & A/C, but never recommended
- Some Pros, **many Cons**, affects both engine and airframe

Heavy Fuels

- Diesel, Biodiesel, Jet Fuel; Long history in turbines; Diesels are new
- Most new compression-ignition (diesel) aircraft engines deliver 150+ HP
- Relatively heavy and rare yet for sport aircraft, not discussed further here

Avgas Reality

Avgas represents 0.14% of US gasoline production

~ 135 billion gallons of unleaded auto fuel / yr. In US (2008)

~ 185 million gallons of 100 LL in US (2008),

declining ~7.5 million gallons / year since 1983.

Made by maybe 10 refineries in continental US out of about 150.

Requires special handling and segregation at every step because of TEL

TEL is going to be banned by EPA

Only **one** company makes it, not in US, worldwide demand declining.

By October 2010, EPA will publish schedule of TEL demise.

~ 80% of GA aircraft could be using unleaded mogas now, but that probably only represents <40% of avgas use.

That's all for now.

Please send items of interest, classifieds, (mailto:newsletter81@eaa81.org) *or to Erik's address on front page.*
Erik Fjerstad, Newsletter Editor

Check out the Chapter Website at http://WWW.EAA81.ORG/

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