EAA Chapter 81 Project Meeting Minutes
March 20, 2021

Meeting was called to order at 1005 at the Ryan Field Hangar of Bob Miller by President Erik Fjerstad. Over 20 Chapter 81 members and guests were present.

Secretary's Report: Bob Miller did *not* have a copy of the Minutes of the February 20 meeting, so, of course, some wise guy insisted that the Minutes be read. Someone waved a copy of the February Minutes and there was an immediate motion that the Minutes be accepted as published on the website and in Sky Writer, quickly followed by a Second and unanimous vote. That was a close one!

Treasurer's Report: Kevin Byers says that we started the year with $4,020.80 and now we have $4,613.83, so somebody is doing something right. Part of that was the $400 we collected in hangar rent, $720 in dues, balanced by our paying $550 through March for the hangar, $47 for coffee, and $420 for miscellaneous expenses.

Visitors: David Furrey used to keep a Cessna 150 at Ryan Field back when there were wooden community hangars. He later became a Bonanza driver, but fortunately, Dave is not a doctor, so he survived. Jim Moss has been a member of Chapter 81 for 8 years, but also belongs to chapters in Anchorage, Alaska and Deer Valley, Arizona. Milton Ames is retired Air Force and flies a Piper Comanche and a Midget Mustang.

Old Business: Jim Keown is seeking 2 members to lead the team for the Cessna 140 project (getting it ready for ferry flight). If we do not find leadership soon, we will sell the aircraft for whatever we can in its unrestored state.

New Business: Al Taylor has passed away. Members of Chapter 81 and of Southern Arizona Teen Aviation have been finishing his RV-7A for his widow. They are seeking a hangar where they can do some painting. President Fjerstad brought in "a pile o' DVDs" that he had to clear out of his house or else. He created a random list of Chapter 81 members, and, if your name is called, "By God, you'd better pick one up!" All were tastefully wrapped up in brown paper to assure the selected few that they were

getting pot luck. All were collected, and some might even be kept by happy new owners.

And now for the Main Event: Bob Miller's presentation on his Kitfox Series V Vixen project, also known as The Never-Ending Project.

Bob sort of backed into this project: he discovered that his friend and Chapter 81 member Bob Lagle (now deceased) had purchased a Kitfox kit, converted his 3-car garage into the Garage Mahal, complete with dancing girls, lighting, music, climate-control, abundant shelving, and tools of every description (OK, I may have exaggerated slightly about the dancing girls). He inventoried every part, and then lost his nerve and let the project sit untouched for 3 years. In exchange for a chance to fly the Kitfox, Bob Miller offered his skill as a mechanic and a bunch of enthusiasm, taking one weekday evening and one full Sunday every week from his 50+ hour-per-week job to participate in the build. The Bobs worked steadily for about a year and a half before Bob Lagle lost interest and sold the project to Bob Miller for the grand total of $6,000.

Now Bob Miller did not have a Garage Mahal. He didn't even own a house at the time, citing that his student loan payments were the size of mortgage payments. So, he had to pay them off, buy a house with a 2-car garage, empty and clean it out, and make it into a workshop before he could start building at home. Building was slow, until he could retire from his then-60-hour-per-week job. Now that he is retired, Bob has no excuse (other than his numerous hobbies and volunteer activities) for not getting the project done. To his credit, he did try to get everything done that could be accomplished in the very limited space of his undersized garage.

After a 2 1/2 year wait for his hangar at Ryan Field, Bob finally was able to move his project and pack the shelves with aircraft parts, most of which should fit a Kitfox. He thanks George Snyder for 2 sets of shelves and a used roller cabinet for tool storage, as well as for helping in the move.

Some Kitfox history: Once upon a time in Boise, Idaho, there was a kit plane manufacturer called Avid Aircraft. An Avid employee named Dan Denney redesigned the Avid Flier with some improvement and started his own company, calling his aircraft the Kitfox. At one time, the Kitfox was the most popular kit aircraft in the world. Denney went out of business, but it

was bought by Skystar, which continued making Kitfox kits until they too went out of business. A former Skystar employee named John McBean purchased all the inventory, supported ongoing projects, and eventually started Kitfox Aircraft, which is a thriving business with a 2 1/2-year waiting list for kits and 4 years for the factory-built Kitfox SLSA (Special Light-Sport Aircraft). There have been 7 main versions of the Kitfox (plus variants such as short-wings), all with folding wings and tube-and-fabric construction. The Models 1-4 were compact and many had 2-stroke engines and conventional (read tail wheel) landing gear. The next models were designated Series V-VII, and were larger and capable of hosting larger engines. So, there are older Kitfoxes with tiny 2-stroke engines and now ones with 180 HP Lycoming-originated O-340 hot-rod engines, with lots of options in-between. Just to confuse things further, all the early Kitfoxes had conventional landing gear, some were converted to tricycle gear, and, since the Model 4, tricycle gear has been available. On top of all this, the Series V was offered in either conventional or tricycle gear versions, and the Series VI and VII can be switched between the two. As Bob's is a Series V Vixen, he has tricycle gear as his only option, slightly disappointing, as Bob is a tail wheel pilot. The Vixen is also unique in that it is the only Kitfox with a swept vertical tail.

All the flight controls are now installed, along with the brake master cylinders and electric trim. The Kitfox uses many of the conventional materials for aircraft construction: steel, aluminum, foams, plastics, fiberglass, and wood. The two side-by-side seats are made from a single layup of fiberglass and are fixed but the rudder pedals are easily adjustable to fit pilots of different leg-lengths. Fiberglass is also found in the fairings, cowling, fuel tanks, and wheel pants if used. Aluminum tubular wing spars, panel, console, and grove-style spring landing gear are employed. Wood is used for the floor boards, wing ribs, and the ribs of the HS (horizontal stabilizer), elevator, VS (vertical stabilizer,) and rudder. Polyurethane foam is used for the tips of the HS, elevator, VS, and the rudder, and the wing tips are plastic. The airframe is welded by the factory of 4130 chrome-molybdenum steel, and all fasteners are AN hardware. The doors swing up gull-wing style and can be opened and closed in flight. The wings can be folded back along the fuselage with full fuel in the wing tanks, or deployed in about 20 minutes for trailering or storage. Bob appreciates that the Series V-VII are similar enough that many parts are interchangeable. He will be using the long windshield and transparent turtle deck of the Series VII, and has already constructed and installed the larger elevator to

improve authority at low speeds (more on that elevator to come). Speaking of low speeds, there are those who would not call a Kitfox a high-performance aircraft because of its limited top speed (cruise is 125 MPH), but that depends upon your definition of high-performance. To the FAA, high-performance is defined by having an engine rated at more than 200 HP. Bob defines high performance as able to carry a load nearly equal to the aircraft's empty weight and still take off or land within a football field! A Kitfox with VGs (vortex generators) can fly controllably at 35 MPH, giving it a 90 MPH speed range. Stalls are non-events and, because the Junkers-style flaperons are set at a lesser angle-of-attack than the wing, the Kitfox still has flaperon authority while stalled. The Kitfox can be spun and there are those who do aerobatics in them, although they are officially in the Utility category, not Aerobatic. Range with reserves is 600 miles. Bob's engine is a Rotax 914 turbocharged opposed 4-cylinder 4-stroke rated at 115 HP, but it can easily be converted with larger-bore cylinders to 130 HP. With the high-lift wings, this can provide a very steep angle of climb, handy for getting out of short fields with obstructions. The flaperons (flaps and ailerons combined) provide more lift than drag, compared to conventional flaps, but the Kitfox is aerodynamically dirty enough to slow down quickly just by lifting the nose, and it slips very rapidly to lose altitude without gaining speed.

OK, back to the elevator. Bob built the original Series V elevator with wooden ribs without understanding the properties of wood. He jammed the ribs into the steel-tubing frame so that the epoxy would not have to work so hard to hold them in place. He trusted the 2-part epoxy spar varnish to prevent the wood from swelling. Despite this, five of the eight ribs warped. Bob was about to fabricate new ribs and start again when he read in the Kitfox forum (Team Kitfox) that the Series VII elevator has more chord, offers more low-speed authority, and fits the elevator of the Series V. This would enable Bob to keep the nose wheel up during rough-field taxiing, putting it down only when ready to stop. Some of the ribs are reinforced by being bonded to tubing and Bob reinforced all the others to prevent warping, also sizing the ribs so that they are not jammed into place. Although the plans did not call for these reinforcements, Bob weighed all the 5-ply birch aircraft plywood reinforcements, and they came out to a total of 4 ounces, so flutter is unlikely to be a factor. Covering will be with the Oratex system, which has the final color already in place and requires no painting. It is stronger than conventional Dacron covering and,

without paint, also lighter. Of course, paint will be required for those areas not coved by fabric, such as the cowling, wing struts, and fairings.

Bob has already flown (on the airliner) to several Kitfox Factory Fly-Ins, which usually feature a fly-out to several of the back-country grass or dirt strips for which Idaho is famous. He hopped a ride in the back seat of a Cessna 206 for one of them and rented a Kitfox with an instructor for another. Flying his own Kitfox to another Fly-In and taking it into and out of those tiny airstrips is on his bucket-list. When asked when his Kitfox will be finished, his answer was, “Tuesday”. He’s just not saying which one.

Meeting was sort-of adjourned sometime after 1130. The next meeting will be held at the Ryan Field meeting room on Saturday, April 17 at 1000.

Respectfully submitted by
Secretary Bob Miller