Valor

ROOMY A-22 PROVES PLEASANT TO FLY

Ukraine design meets Florida know-how

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Visibility is tops in the A-22 Valor, with lots of glass surrounding the pilot and passenger forward, aft, to the side and above.

Early in the new millennium,

I took a trip to Kiev, Ukraine. My mission was to visit two companies producing aircraft for what was to become the light-sport aircraft segment. I didn't know then that the A-22 I flew with designer Yuri Yakovlev would become a U.S.-assembled special light-sport aircraft (S-LSA).

Before the fall of the Berlin Wall in 1989, Americans hardly knew Ukraine, a large and diverse country with a rich aviation heritage that once employed lots of skilled aviation workers and engineers building large transport aircraft and fighters. Ukrainians spent decades toiling for the Soviet state, and most speak Russian today despite having an indigenous Ukrainian language. Antonov, an aerospace name Americans have come to know, had a massive Ukraine operation under the Soviet leadership.

When the communists withdrew, tens of thousands of experienced technicians and engineers found themselves out of work. A few ended up building little airplanes to earn a living. Thus was born Aeroprakt, a company started by young entrepreneurs (a daring concept in a post-communist nation) with some Arabian investment. This is where the story gets interesting.

UKRAINIAN CREATIVE RUSH

Under Yuri's leadership, the company cranked out design upon design—variations on a theme some might say, yet revealing surprising diversity. An early entry was the A-22. After those many designs, it is the A-22 that remains Aeroprakt's focus today.

Let's jet across the Atlantic back to Sebring, Florida, where Float Planes and Amphibs (FPNA) has its headquarters. The company specializes in floatequipped airplanes but sells plenty of landplanes, too.

I flew a land version of the A-22 Valor. (Studies show that associating a word with a number makes a name easier to remember.) Showing me the ropes for the FPNA A-22 was Michael Westbrook, a general aviation pilot who said he likes the Valor for its maneuverability at slow speeds.

Shawn Okun manages FPNA. The business entered the field with ready-to-go floatplanes and amphibians based on Quicksilver and other kits. It had creative financing and leasing options that were sophisticated beyond the reach of most sport aviation businesses. With his flair for marketing, Shawn soon put FPNA on the radar screen.

As the SP/LSA rule became reality, FPNA followed the action into light-sport aircraft. Soon after, Shawn picked up the Aeroprakt line and began to Americanize it. Today, FPNA receives a painted airframe on wheels and completes the building, then covers the wings using metal to the outside of the fuel tank. Outside of this range, the wings are fabric-covered, as are all control surfaces, though Shawn says FPNA is working on metal skins for the top of the wings. Fuselage and fixed tailplane components are metal-covered, though a large part of the aircraft around the cockpit is clear plastic. The A-22's fuel tanks are composite.

Next FPNA adds wiring and plumbing, outfits the interior, installs avionics, prepares the engine, and completes the certification documentation, test-flying, and preparation for customer delivery. That's not vastly different from what Boeing does.

VALOR DETAILS

The wing tanks sit about half a bay out from the wing/fuselage junction and hold 12 gallons per side, for a total of 23.5 usable, said Michael.

A-22 Valor ailerons are flaperons running the full span of the wing and drooping down to 10 and 20 degrees. At such small deflection numbers—yet they have good effect—the loss of aileron throw from flap travel is minimal. Trim is located just to the right of the center console. Approximately in the

The A-22 Valor can be flown with the doors on or off, though you'll lose 10 mph in cruise with the doors offs. They are easily detached from hinges at the top of the door. While many like panel-mounted yokes because they make entry and egress easier, this arrangement in the Valor leaves nowhere to rest your arm in flight. An optional center stick with a Y handle eliminates that problem. Overall, the panel layout is neat and well organized.

middle is neutral; there is no other indicator of position.

Fixing the flow of hydraulic fluid via a small lever sets a parking brake. You can either pump up the brake fluid level by actuating the brakes and then setting the flow lever or set the lever first.

A lever under the left seat looked like a fuel shut-off. Instead, it is a battery isolator. Flipping the lever shuts off all electrical power and the lever itself can be removed. This creates a "dead" airplane, which is perfect when you allow other people to sit in your airplane, such as at air shows, without supervision. With a different appearance and feel than the battery isolator switch, the dual fuel shut-off handles resemble lever arms. In the vertical position, you are good to fly. In the horizontal, fuel is shut off.

Michael said that at the widest point of the bubble door the Valor's cockpit measures 52 inches laterally. This gives it one of the widest cockpits in light-sport aviation. Regardless of the figure, the Valor felt spacious for two average-sized people. We literally had elbow room on each side. I love to repeat this benchmark cabin width value: A Cessna 172 Skyhawk has a cabin width of 39.5 inches, according to Cessna's website. The A-22 Valor is more than 12 inches wider.

I love that the doors remove easily—it's the ultralight pilot in me—and that you can fly with them off. Michael admitted you lose about 10 mph when you do this, but he also enjoys flying with the doors off. They come off via two pins at the top hinge point: substantial but easily removed. A clip secures the base of the door's hydraulic lift piston. All three components can be removed in minutes and you can then remove the door.

Entry to the Valor turned out to be easy; just turn around and sit down. I found it a long reach to close the gull-wing door, pulling it by its frame, but soon both doors were latched securely. The single-point door latch has access inside and outside. The inner latch is curved, apparently to avoid catching clothing on it.

The Valor offers a convenient hang point for your headset just aft of each occupant. Headsets plug into a housing that covers the overhead flap lever linkage. This location is easily reached and will largely keep wires away from control levers.

The location of the Valor's yoke left my arm dangling in the air with no arm support, a common problem that yoke designs present compared to joysticks. FPNA plans to alter this situation but, in the meantime, another solution comes from a choice of either dual yokes or a center stick with Y controller and Y brake handle. The Y stick option effectively fixes the armrest problem.

Aft of the seats, each of which has four-point seat belts, a zipper-closed compartment can hold 44 pounds of luggage.

FLYING WITH VALOR

As we taxied for takeoff at South Lakeland Airport I found the nose wheel steering to be quite responsive. Linked directly to the rudder pedals by pushrods, the nose wheel can easily turn the A-22 inside a wingspan if you bear hard on the rudder pedal. Differential steering by brakes is hardly necessary given the high level of taxi maneuverability.

At the end of the runway, I also discovered the parking brake would hold very well during an engine run-up at 3500 rpm. Now we were ready to go aloft. Michael estimated takeoff

At 52 inches wide at its widest point, the A-22 Valor's cabin is one of the roomiest in the S-LSA industry. Handy headset holders are located above the side-by-side seats. A baggage compartment behind the seats can hold up to 44 pounds.

roll at about 300 feet. I didn't get a chance to step off the distance, but the Valor certainly executed a brief ground roll. Rotation comes at about 40 mph indicated, and at that speed it fl ies off the deck with minimal control effort.

Landings also proved simple. My initial approach was done at about 80 mph, then slowing to 70 mph on fi nal. Over the runway, I slowed further to 60 mph and then worked gradually to a full-stall fl are. Should you fl are so deeply that you could touch a tailskid, you do have options: Aeroprakt half-buried a small rear wheel under the tailplane.

"It's very light on the nose wheel, enabling it to land and take off much like a taildragger, without all the fancy footwork," Shawn said. He added that the Valor also works well on unimproved strips.

Indeed, all my landings, done at 0, 10, and 20 degrees, went well. On one landing, I got slow while still a bit higher than optimal, but the aircraft graciously handled my plop on the tarmac. This reinforces the instruction mission of the Valor.

Valor's trim control was responsive, though I did not fi nd as much nose-up as I might have preferred for slow fl ight. Of course, trim can be adjusted to suit personal taste. In slow fl ight I got very slow, less than 40 mph indicated, and the Valor made me feel like I was still comfortably above stall. Controls remained effective, although the rudder got softer at this speed and more input was needed to accomplish control.

The airplane's full-span fl aperons are generously responsive. I measured about two seconds in the 45-to-45-degree roll reversal exercise. This is faster than most airplanes in the LSA category. Balancing the yoke imparted additional feedback at first control input, then it continued a good feel such that the roll rate was easily controlled. These qualities combine to make for reduced pilot workload on a cross-country fl ight, yet leave plenty of authority for a crosswind landing, for example.

Float Planes and Amphibs is located on Sebring Regional Airport, Sebring, Florida. The company sells powered parachutes and weight-shift trikes in addition to its fixed-wing line and also offers instruction in all three categories. (Note: FPNA does not distribute the two aircraft parked in front of the company's ramp-side doors in this photo.) For more information visit *www.FPNA.com*.

High-speed runs were done at maximum power of 5400 rpm—at which setting the engine management system was giving us some caution about overrunning the engine. Nonetheless, the Valor managed 92 mph upwind and 122 mph downwind for an average groundspeed of 107 mph. This was done at 2,000 feet mean sea level (MSL) with a ground temperature of 80 degrees. At altitude on a cooler day, you might easily manage 110 to 115, I estimated, and that's even better than FPNA states on its website. Also, my experience was with an 80-hp Rotax. If you select the 100-hp Rotax 912S, your speeds will probably increase slightly.

Climb rate was a bit less than factory fi gures at about 800 fpm. This was with the standard 80-hp Rotax 912 that some prefer, as it works the engine less hard and can use lower-priced regular auto gas. The Valor's sink rate appeared to be slightly higher than some other LSA, and usually glide performance is not strong if the sink rate is higher.

Steep turns at 45 to 60 degrees of bank with power set in the high 4000 rpm range went very well with little effort needed to maintain altitude through 720 degrees of turn.

Checking the Valor's stability profile, I stalled with the fl aps down at the 20-degree down position, the most available. I saw stall at 28 mph indicated. With fl aps retracted, stall came at about 35 mph indicated. These are certainly low values, and airspeed indicators are notoriously unreliable at such speeds, but it was nonetheless obvious from wind noise and ground movement that the Valor stalls very slowly.

Power-off stall with the yoke full aft came at around 40 mph indicated. I experienced very little altitude loss and no tendency to break nose-forward. Only a bit of wandering at incipient stall forecast the stall.

Not one stall exhibited any break over. In each case, the yoke made a slight lateral wiggle to suggest stall was approaching. I performed power-on stalls at 5000 rpm and accelerated stalls in each direction at 35 to 40 degrees of bank. On one accelerated stall to the right, I observed a slight movement and muted noise from the extensive clear plastic surrounding the cockpit.

On one stall I kept the stick full aft and continued to be able to turn the airplane almost the same as at normal fl ying speeds.

Adverse yaw was almost nonexistent, giving only a slight hesitation before turning the direction as controlled. The Valor will handle by

control yoke only (no rudder pedal input) very readily, almost as good as a two-control design.

In the longitudinal stability check, with a rearward tug of the stick from trimmed flight, I found a single oscillation (one upward and one downward movement) before returning to near neutral. I discovered essentially the same response from a stick-forward disturbance.

When evaluating throttle response, I retarded the power from trim and the nose lowered reasonably and then stayed in that position; it did not return to neutral. With a power addition, the nose went up just as it should.

VALOROUS PURCHASE?

I strive to write a balanced article with positives and negatives, but it was difficult to find fault with the Valor. The lack of return to level flight after power adjustment and lack of an armrest for your yoke arm are about all I can find. Some folks won't care for the plastic covering all around them, as it might make them feel vulnerable. I didn't have a problem with it, but pilots make their own judgments. Flying an A-22 Valor will likely put most concerns to rest, and I feel sure you'd enjoy the flight.

Overall, the Valor provided a satisfying experience that may please many pilots, except for those seeking the maximum performance for the category. I did not independently measure the interior so I cannot verify the 52-inch claim, but it certainly felt spacious for two average-sized persons.

FPNA reports 250 Valors are currently flying in the United States, Canada, Germany, United Kingdom, France, Spain, Italy, Ukraine, United Arab Emirates, Australia, and several other countries. Only a dozen are registered in the United States, but that number seems likely to grow. Certainly FPNA's American representation can settle uncertain minds about buying a product from faraway Ukraine.

The tri-gear sits low to the ground, making entry and egress easier. Responsive nosewheel steering and differential brakes make the aircraft easy to maneuver on the ground.

If the S-LSA prices are still beyond your budget, FPNA indicated it would pursue an E-LSA kit so that owners could do their own maintenance. This may also offer some reduction in purchase price in exchange for doing some building.

But for now, let's talk cost of the S-LSA models. FPNA sells a series of four equipment packages for the A-22 Valor.

A basic A-22, which could deliver loads of enjoyable flying, costs about $80,000. If you accept that most homebuilt airframe kits in the A-22's category with Rotax engine, basic instruments, radio, transponder, and finish paint and interior could easily run $40,000 to 50,000, then $80,000 for a finished, ready-to-fly, certificated airplane that can be used commercially for flight instruction and rental is a fair bargain in today's world. It's closer to the price people expected for LSA when the rule was announced in 2004.

FPNA packages the A-22 in four baseline configurations, each more elaborately equipped (and intriguingly named) than the last.

The line starts with the day VFR Bristol basic package for $79,999 with the 80-hp 912, basic gauges, Grand Rapids engine information system (EIS) or equivalent, emergency locator transmitter, taxi and landing lights, interior finishing, and choice of paint.

One notch up is the advanced day-and-night Sebring package for $99,999, which adds interior lighting; navigation and strobe wingtip lights; Dynon D-180 electronic flight instrument system (EFIS) with outside air temperature, fuel flow, horizontal situation indicator software, and complete engine monitoring package; MicroAir radio; and MicroAir transponder with Mode C.

If you want bigger-name brands, choose the day-and-night VFR Hampton package for $117,677, which adds the Garmin SL30, Grand Rapids EFIS and EIS, and artificial horizon.

Finally, you can choose the amphibious, day VFR CapeTown for $120,243, which is essentially the Bristol basic with radio and transponder, but adds retractable amphibious landing gear and the FPNA waterborne amphibious float system.

Given all these choices and the good behavior of the fun-to-fly A-22 Valor, I suspect FPNA will be able to sell all it can get.

Valor A-22

SPECIFICATIONS:

(Note: All specs and performance provided by factory. Figures are *unverified* except as otherwise stated in article.)

DIMENSIONS

Wingspan: 33.2 feet
Wing area: 150 square feet
Length: 20 feet
Height: 7.9 feet
Seating: Two, side by side
Cabin width: 52 inches*
Empty weight: 575 pounds**
Gross weight: 1,199 pounds
Useful load: 624 pounds **
Payload, full fuel: 481 pounds**
Fuel (all)**:** 23.9 gallons***
Wing loading: 8 pounds/square foot
Power loading: 15 pounds/hp
Powerplant: Rotax 912 UL
Power output: 80 hp
Propeller: Three-blade Warp Drive
Baggage area: Aft of seats, 44 pounds

*At bubble door's widest point.
**With basic equipment; accessories can add considerable weight.
***Optional fuel tanks raise total on board to 33.9 gallons.

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PERFORMANCE

Never exceed speed: 119 knots/137 mph
Cruise speed, typical: 109 knots/100 mph****
Stall speed, best flaps: 28 knots/32 mph****
Max rate of climb: 1,000 fpm
Takeoff distance: 197 feet
Landing distance: 250 feet
Cruise duration (economical)**:** 7.5 hours (no reserve)
Cruise range (economical)**:** 528 miles (no reserve)
Fuel consumption (economical)**:** About 3.2 gph