Sky Arrow 600 Sport

Eyes in the Sky

An Italian light sport auditions for local law enforcement

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You're not the only ones kicking the tires of the new light-sport models, checking financing plans to see if you can make the payments and still buy food, electricity, and, there was something else, oh yes, college for the kids.

The Sheriffs' Association of Texas is exploring the 100-horsepower, tandem-seat Sky Arrow 600 Sport and a whole bunch of other models, including powered parachutes, to see if it can provide aerial capability to law enforcement agencies that have tiny budgets. The association got a grant from the U.S. Department of Justice (DOJ) to explore the use of high-wing light sport aircraft for Texas sheriff's departments such as Val Verde County, which often has only two deputies on patrol at any one time, but 3,400 square miles to cover. It takes 1.5 hours to drive across the county.

The association got the grant from DOJ's Office of Science and Technology in Washington, D.C., and bases the aircraft near Washington, D.C., at Bay Bridge Airport on Maryland's Eastern Shore, where the research effort is managed for the association. When you see Segway scooters used by police in airport terminals, know that it was this same DOJ research agency that got them there. Some of the DOJ science and technology officials are convinced that the new light-sport aircraft category may be the avenue to aviation assets for smaller law enforcement units and have designed a research program to find out.

Duties for the Sky Arrow include search and rescue on land or water; there are many lakes in Texas but the smaller sheriff's departments do not own boats. Other uses are: border patrol flights to aid in the location of staging areas for illegal immigrants; fire watch for brush and grass fires; marijuana eradication; and photography or surveillance of critical infrastructure.

The $75,500 Sky Arrow 600 Sport is nearly identical to the FAA-certified $110,000 Sky Arrow seen in *AOPA Pilot* in 2000, (see "Sky Arrow: Yes, It's a Real Airplane," March 2000) but at 1,433 pounds, the FAR Part 23 aircraft was 110 pounds overweight for the light sport class. The engineers at Iniziative Industriali Italiane in Rome scratched their heads and started tossing things out. The carbon-fiber airframe didn't change, but the canopy is made of thinner plastic; the panel is smaller; the vacuum system is gone and with it, the heading indicator; there is only the single 17-amp alternator on the Rotax 912 ULS engine rather than the additional 40-amp alternator required on the certified Sky Arrow, since no night operations are allowed under light sport rules. (Police may be able to get an exemption for night operations.)

On the certified aircraft the wing struts have heavy metal bars in them for rigidity (not structural strength), but those have been eliminated on the Sport model. (The certified Sky Arrow used a two-blade prop, but there was engine vibration that shook the wing struts, so bracing bars were added to the fuselage. With the use of a three-blade prop on the Sky Arrow Sport, the vibration was eliminated, and the bracing bars were not needed.) The brakes are lighter and a few frills, like shelves in the front seat and a tail support to keep the aircraft from tipping when parked, are gone.

Of all the aircraft evaluated so far, Sheriffs' Association of Texas Technical Assistance Division Director Joe Peters likes the 94-KTAS Sky Arrow Sport the best. Although not a pilot, yet, as a self-described "street cop" he knows what he needs, and that is visibility. Even better visibility for police work is available from a powered parachute, but it can't fly in whipping winds. The Sky Arrow can fly in those winds, as you'll see in a video of my takeoff in a 70-degree, 14-knot crosswind (above). Watch for the 20-knot gust.

The aircraft I flew was a prototype, and there were a few improvements yet to come from the factory, although deliveries have started. The gear had been designed for heavier weight, resulting in a pigeon-toed look that was wearing out the edges of the tires. That was to be changed by the end of 2006. Howard Hawkins, the San Diego-based Sky Arrow dealer, said he was not happy with the toe brakes and indicated that the model might be converted to fingertip brakes like those of the Part 23 Sky Arrow. In two of the early Sky Arrow 600 Sport aircraft, including the one I flew, there had been a problem with the flaps locking in the down position and not retracting. The problem was found to be a loose actuator and was repaired.

The strongest selling point is the 600 Sport's "armchair in the sky" view. The pilot's arms rest on two ledges, and the controls fall exactly under his hands. (While the seat doesn't move, the rudder pedals can be adjusted fore and aft to accommodate pilots of various sizes.)You need only wrist and hand movement to fly the aircraft. The side stick is operated by the right hand, and the throttle/carb heat controls are under the left. From a form, fit, and performance standpoint you have to look hard to find something to criticize about this aircraft.

Preflight

But you don't have to look long: Checking the oil level during preflight is a pain. OK, follow me through the procedure. The engine is up there, on top of the cabin, so you'll first need to stand in the backseat. A convenient toe step in the side of the aircraft makes that easy enough, but once there you are nowhere near the dipstick. Now place a foot on the back of the front seat to give yourself another 2-foot boost. That puts most people about waist high with the cabin roof, where you'll lift and place one knee on the roof. If you failed to fully open the engine cooling baffle on top of the engine that hides the oil port, better get back down and do that. It is on the right side of the front cockpit, back down there.

So there you are, one knee on the cabin roof, and the dipstick is beneath the top-right side of the engine, but the opening is blocked by metal bracing. You still need to poke a finger in that opening, though, to flip a panel forward that hides the oil port. Now, with the oil cap exposed, and using the left hand only, reach down through the top-left opening of the engine, thread your hand to the right, and unfasten the oil cap. The stubby little dipstick is resting inside.

While you are up there, you might as well fuel the airplane too, because the gas cap is under your knee. Although the airplane can be fueled from a ladder, you'll need the aforementioned Mount Everest climbing procedure to check the oil. The aircraft uses standard motorcycle oil, and in the nose, a standard motorcycle battery. See you at Sears.

The challenging oil-checking procedure is mostly a problem caused by the location of the engine, and it doesn't detract from the otherwise clever Italian engineering of the aircraft. Descending back to the ground, you'll notice there is only one fuel drain to bother with, and it is on the lower left of the fuselage some 4 feet below the engine. (The tank runs behind the rear seat where there is a window in the tank to observe the fuel amount.) You're well assured of tapping the lowest point of the tank to look for water or contaminants.

Since it is a Rotax, you not only can, but should, burn less expensive auto gas or mogas. Some who operate this Rotax 912 ULS on other aircraft models suggest you use 100LL only a third of the total flying hours if you want to keep overhaul costs down. My demonstration flight was flown with 100LL, but here is what the FAA says: Use standard specification fuel for automotive- spark engines, and use 100LL only if automotive fuel is not available, because 100LL has higher lead content and therefore, "the wear of the valve seats and deposits in the combustion chamber will increase." It should be noted that most airports do not sell mogas, and your airport may not want you to store mogas in your hangar.

The aircraft tail easily lowers to the ground using only 10 to 12 pounds of down force, and stays there perfectly balanced while you check elevator and rudder hinges. Ground handling is very easy, and before one of my flights the wind moved the aircraft along the ramp before brakes were set using a knob on the right side of the cockpit armrest.

Worried about avionics theft? Unscrew the thumb screws of the instrument panel, unplug it, and take the whole panel home with you, where it is out of the summer heat or freezing cold. It is unlikely a thief would steal an airplane that has no panel. Security for the airplane is not impressive. You lock the pilot's air vent to keep anyone from reaching in to unfasten the canopy.

Taxi

The Rotax starts quickly like a car engine and in warm weather does not need the choke, which is located on the left armrest. The aircraft has a castering nosewheel, and some pilots prefer a steerable one, but even when maneuvering out of high grass in the parking spot I hardly noticed whether the wheel was steerable or castering. I had been warned that, given the high winds blowing 70 degrees to the runway, I would find that the large tail surfaces would make taxiing difficult. However, while taxiing slowly I didn't find it a problem. On a later flight with lower winds but quartering from the rear left, I had more difficulty turning.

Runup is at 4,100 rpm (it's a Rotax, after all) and cruise flight is flown at 5,000 rpm. With the engine above and behind the occupants, normal conversation is possible in the event of an intercom failure, such as the one that occurred after I missed a checklist step calling for the generator half of the master switch to be turned on prior to takeoff. The battery died but we circled awhile to charge it, gaining back our radio and transponder, before re-entering heavily controlled Washington-Baltimore ADIZ, where Bay Bridge Airport is located.

Takeoff and flight test

Rotation occurs at 45 to 50 KIAS. The procedure preferred by volunteer instructor Tim Adelman, an Annapolis attorney with an office just across the Chesapeake Bay Bridge from Bay Bridge Airport, requires the stick to be full back for the start of the takeoff roll. Once weight is off the nose, the stick is brought quickly forward to prevent the nose from rising too high. Climbing at 65 KIAS, the climb rate was 1,500 fpm with two fairly large men and half a tank of fuel aboard. A full tank would have put the aircraft over maximum gross weight.

A cruise speed check show-ed the aircraft getting 94 KTAS, although Adelman usually flight plans for 90 knots. Not a blazing speedster, but speed is not needed for fun flying, observation, and training. Adelman has flown this Sky Arrow Sport from Maryland to Oshkosh and enjoyed every mile, mainly because it is hands-off stable.

The usual test of stalls and steep turns revealed a docile aircraft. I was surprised to discover, while trying to make it break cleanly in a full stall, that it climbed even while shuddering from the onset of a stall. Only light control forces and small movements were required of the ailerons, elevator, and rudder to maneuver.

I did notice from time to time an uncommanded slight movement of the ailerons, a gentle side-to-side push. I didn't welcome it during the formation flight to take photos for this article, although the Sky Arrow Sport was effortlessly held in position 35 feet from the aircraft carrying *AOPA Pilot* photographer Chris Rose.

Hawkins said the same tendency was noticed in the fully certified Sky Arrow and small vertical tabs were permanently fixed to each aileron to stop the movement. There was no danger of control flutter at the speeds flown by the Sky Arrow Sport, he noted, but he said the factory may consider adding the same tabs to the already-approved Sport model's ailerons.

Landing

You want to know if this aircraft will make you look good to your passenger and to those watching at the airport. The answer is yes. Adelman suggested 3,500 rpm when abeam the touchdown point, and 10 degrees of flaps at 67 KIAS or less. With the full 30 degrees of flaps, you'll touch down at about 45 KIAS or less, after coming across the numbers at 55 to 60 KIAS, meaning it is a slow process with plenty of time to make corrections. I landed in the 14-knot crosswind mentioned above, touching down about 6 feet left of the intended centerline, while Hawkins claims to have put it safely on the runway with more than 20 knots of crosswind. Without wind on a later flight, three of four landings were greasers.

If you're just up taking pictures, you're likely to come back with some good shots because the curve of the remarkably clear canopy allows few reflections to spoil the photo. Or have someone else fly and take out the easily removed rear window — no reflections at all, guaranteed.

The Sky Arrow Sport is perfectly designed for its mission, and that is to have fun. Or perhaps soon, if the aircraft passes inspection by the Sheriffs' Association of Texas, another mission will be to make the bad guys have less fun.

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