LIBERTY FIELD FLYERS

FEBRUARY 2019 NEWSLETTER

OFFICERS

President: Harry Torgovitsky

Vice President: Mark Johnson

Secretary: Ruth Tucker Bogart

Treasurer: Vic Bologna

Newsletter: Mark Johnson

Technical Advisor: Bill Sherlock

Flight Advisor: Marlin Jones

MEETING SATURDAY

Please mark Saturday, FEBRUARY 9th on your calendars and make every effort to attend the Club meeting. Remember, there will be free pizza and we still have 2 club shirt for sale! And they are the ones with Mark's award winning logo design! (above) We also plan a short flight at 10:00 AM so we can get back by 11:30AM for our 12:30 pizza! The meeting is at 1:00 PM. Harry adds that all good members who haven't yet paid, should pay their dues asap.

JANUARY 12th 2019 MEETING MINUTES

By Ruth Tucker Bogart, Secretary

President Harry Torgovitsky called the meeting to order at 1:00 p.m.

December minutes were approved.

Old business:

Polo shirts were distributed. Thanks to Mark Johnson for ordering these.

Chapter dues of $45 should be paid within the next month or two. Harry accepted payments from members.

New business: none

The chapter's Technical Adviser Bill Sherlock gave a presentation describing his role in setting the world land speed record on October 15, 1997. The meeting was well attended for this extremely interesting presentation.

Bill pointed out that the supersonic car record of 763 MPH still stands. He introduced the members of the team by photographs and showed pictures of various products made by Pegasus.

Bill described through photos the testing of the car in the desert in Jordan, then the environment in Black Rock Desert, Nevada, where the speed record was set. He noted that he and others in trikes felt the supersonic shock wave when the car broke the sound barrier.

The car is now in a museum in Coventry, England.

The group gave a round of applause to Bill for a fascination presentation. The meeting adjourned at 2:40 p.m.

Respectfully submitted.
Ruth Tucker Bogart, Secretary

THESE ARE WORTH SEEING AGAIN

ESPECIALLY IF YOU MISSED THEM THE FIRST TIME

Colorado via drone

Visit to Mont Blanc by aircraft

A FLYER AND CARTOONIST OUT OF OUR PAST…

DON ANDERSON

Don was as good a cartoonist as he was a pilot. If you look closely you will see the precision and attention to details he gives to our planes as he gave to his flights. His plane is the red Tryke on the right. The red/gray one was Les's second iteration and the Yellow one was Mark's third plane. Those were the days we always had 4 to 8 planes in the skies every weekend…. the good old days!

HYPE FOR NON-PILOTS. MEET THE ICON A5: "AN AIRPLANE ANYONE CAN FLY" (MAYBE)

*Sent to us by BIM*A lot of hype here, but not for us experimentalists. See video here (skip ads if you can)

COME FLY WITH ME

The photography is fantastic and the skill of the participant is amazing. Watch until the end and you will learn where the scenes are filmed.
See this YouTube video. Just awesome !!

ARE VERTICAL TAKEOFF ELECTRIC AIRCRAFT READY FOR PRIMETIME? SEE 3 ARTICLES BELOW.

QUESTIONS ABOUT EVTOL PRACTICALITY REMAIN

BATTERIES ALONE MAY NOT BE ENOUGH

October 4, 2018 By Jim Moore

Hardly a week now passes without fresh reports of a new milestone or corporate partnership or design concept for an electric vertical takeoff and landing (eVTOL) aircraft promising to soon whisk passengers between city rooftops high above the snarled traffic. Even if aviation regulations and laws are changed to facilitate an eVTOL future, the laws of physics and math may prove more problematic.

An artist rendering of an Uber eVTOL design concept. Image courtesy of Uber.

Ride-sharing giant Uber has drummed up plenty of enthusiasm for the concept of electric flying taxis, which the California company envisions deploying in cities to connect strategically situated rooftop “skyports” with flying machines that take off and land vertically on battery power.

This is all supposed to start around 2020, and many of aviation's biggest manufacturers—the likes of Embraer, Boeing, and Bell Helicopter, among others—have assigned engineers to work up designs and prototypes. Bell and Garmin announced Oct. 2 they are teaming up on the avionics to support such a concept. In September, Bell announced it will partner with NASA to develop an eVTOL aircraft.

Not everyone is quite so enthusiastic this will actually work.

Arizona State University physics professor and AOPA pilot Peter Rez published an academic text in 2017, *The Simple Physics of Energy Use*, and, in 2018, a review in an academic journal (*MRS Energy and Sustainability*) that expresses doubt backed up by calculations:

"We can assess if air taxis are practical from the performance of existing small helicopters like the four-seat Robinson R44," Rez wrote. "They are able to do trips of about 2.5 h with a tank of 50 gallons (190 L). The energy per unit mass of a battery is about 50 times worse than gasoline or jet fuel. If an electric motor were driving the rotor, it would be 3 times as efficient as a gas turbine, or an internal combustion engine operating in an optimal manner at peak operating temperature and rpm. Replacing the fuel with a battery would reduce the time for a journey to 10 min before a recharging is necessary. If more of the mass were devoted to fuel or battery then there would be less available for passengers (it is already a tight squeeze). The poor energy density of batteries compared to liquid hydrocarbons limits both the journey time and the range of an electrically powered helicopter or drone. Furthermore, as with the electric car, more time will be spent on charging the battery than actually making a journey."

Ten-minute endurance, and no more? Say it ain't so. Even in relatively compact cities, flights that short will fall short of being truly practical.

The Elroy eVTOL design by Dallas-based Astro Aerospace landed headlines following Transport

Canada approval for initial, unmanned flight tests in September. Image courtesy of Astro Aerospace.

In a recent email conversation, Rez, who has been personally involved in the fundamental research of energy storage, was skeptical that new battery concepts being researched—redox flow batteries, for example—would solve the fundamental problem that batteries store far less energy than an equivalent mass of liquid hydrocarbon fuel, such as the avgas that powers his Mooney.

“For an electric airplane to be competitive batteries have to improve in energy density by a factor of about 50/3 ~ 16,” Rez wrote. “Can't see how this is going to happen. To bring about any significant improvement we need to move to lighter elements (not transitions). (I) thought I had a way of doing this. Worked great in theory, but bombed in the lab!”

That may explain why at least a few of those vying to snatch a slice of the eVTOL industry being pushed (hard) by Uber are not relying on batteries alone. Workhorse Group, an American firm developing the SureFly eVTOL aircraft, for example, has attracted investment for a concept built around a hybrid-electric powerplant, the startup announced in September. But Dallas-based Astro Aerospace is pressing forward (and publishing flight test video) with an eight-rotor, battery-powered aircraft that lifted off near Toronto in September.

It may prove telling that the edited video lasts 59 seconds, and there is nobody aboard. In a news release, the company reported that the test flight lasted four minutes and 30 seconds, and that the vehicle will ultimately have a 25-minute flight time with a top speed around 44 mph. That might be enough to make eVTOL practical, but the proof has yet to be seen, as AOPA Editor at Large Tom Horne recently noted.

The contrarians await further proof of this concept.

BOEING FLIES ELECTRIC VTOL

January 24, 2019 By Jim Moore

It didn’t fly far, but a takeoff, hover, and landing on Jan. 22 in Manassas, Virginia, showed the world “what revolution looks like,” in the words of Aurora Flight Sciences CEO John Langford.

The Passenger Air Vehicle prototype logged its first flight Jan. 22. Photo by Boeing.

Langford's company, a Boeing subsidiary since 2017, led Boeing's effort to design and build a "passenger air vehicle" under the Boeing NeXt program, which aims to bring urban air mobility to the masses in the form of on-demand, autonomous air transportation.

Langford founded Aurora Flight Sciences in 1989, and the firm has been designing and adapting aircraft (including general aviation aircraft) to fly without pilots for many years. Unlike Textron subsidiary Bell and others that are building aircraft aiming to enter urban air taxi service with pilots at least at first, the Boeing concept aims for autonomy from the get-go. Photos of the first flight appear to show a dummy strapped into the seat, standing in for future paying customers who will have no role in piloting the aircraft.

"Certifiable autonomy is going to make quiet, clean and safe urban air mobility possible," Langford said in a Jan. 23 news release.

Boeing posted a video of the flight, noting the rapid development of the concept aircraft.

"In one year, we have progressed from a conceptual design to a flying prototype," said Boeing Chief Technology Officer Greg Hyslop. "Boeing's expertise and innovation have been critical in developing aviation as the world's safest and most efficient form of transportation, and we will continue to lead with a safe, innovative and responsible approach to new mobility solutions."

Electric motors drive the PAV, which uses a mix of lifting rotors and airfoils to achieve vertical takeoff and landing, and more efficient forward flight supported by wings. The PAV will have a range of up to 50 miles, and is not the only aircraft Boeing is developing for autonomous flight. The NeXt program also includes an unmanned cargo aircraft able to transport up to 500 pounds, among other platforms.

Boeing's Passenger Air Vehicle concept aircraft will not require a human pilot. Photo courtesy of Boeing.

PIPISTREL AND HONEYWELL COLLABORATE ON URBAN AIR TAXIPIPISTREL AND HONEYWELL COLLABORATE ON URBAN AIR TAXI

January 31, 2019 By Jim Moore

If you're keeping track of mainline general aviation manufacturers jumping into the urban air mobility race, Honeywell Aerospace just inked a deal with Pipistrel to continue development of an electric vertical-takeoff-and-landing design with Uber Air in mind.

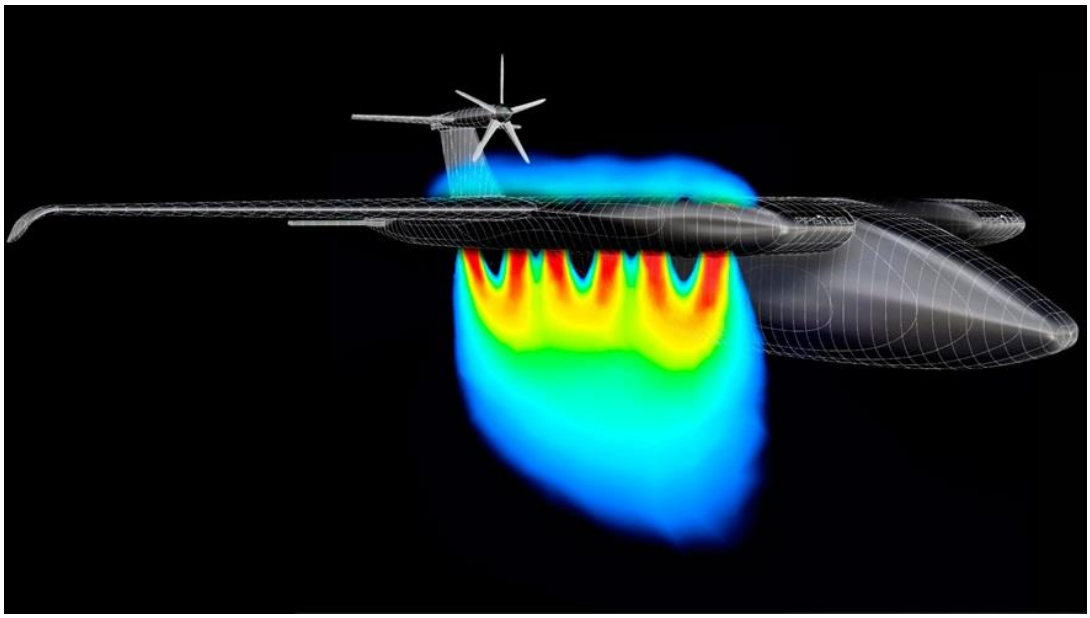

Image courtesy of Pipistrel.

Honeywell's pitch to serve the nascent Urban Air Mobility market is front-and-center on the company website. Design renderings released with the announcement with Pipistrel depict a three-seat prototype with ducted fans tucked into the wings for takeoff and landing, and a manta ray shape that incorporates airfoils for lift in forward flight driven by a tail-mounted pusher prop.

Slovenia-based Pipistrel is among the firms chosen by ride-sharing giant Uber to develop and pitch prototypes for aircraft to serve as air taxis capable of rooftop-to-rooftop service. The collaboration with Honeywell announced Jan. 24 means that the eVTOL design Pipistrel has in the works will feature Honeywell avionics, and gives Honeywell a foothold in the market.

"This is the beginning of a long-term relationship to collectively pursue the future of urban air mobility," said Pipistrel Founder and President Ivo Boscarol, in the news release. "Honeywell's expertise in integrated avionics and flight control systems, systems integration, certification and manufacturing, combined with our capabilities in designing and developing advanced light aircraft, makes us the perfect pairing to advance the urban air mobility market. Pipistrel was chosen to be one of Uber's vehicle development partners for their urban mobility solution, and our VTOL features next generation propulsion technology for achieving embedded lift. We have the concept which unlocks cost-attractive eVTOL opportunity by addressing efficiency and noise hurdles in vehicle lift, hover, and cruise stages of flight."

Pipistrel has a long history of electric aircraft development, having won NASA's Green Flight Challenge in 2011 with an electric four-seater. The firm's Vertical Solutions team has produced eight different designs since 2008, along with propulsion systems developed in conjunction with NASA and Siemens.