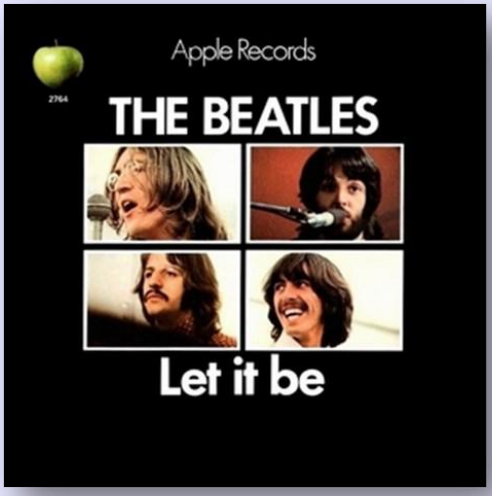
HORIZONS

A publication of the Massachusetts Air and Space Museum

The Massachusetts Air and Space Museum inspires new generations to explore, experience, and pursue interests and opportunities in science and technology

Vol. 8 Issue 3 September 2022

Win The Beatles Airplane!



The Beatles Last Album Together

OWN A PIECE OF "THE BEATLES" HISTORY *(Sort Of)*

Portions of this article were published in the April 2022 issue of AOPA Pilot magazine

By: Kevin R. Currie, MASM Director

As pilots, we all try to be somewhat knowledgeable about the different planes that are out there. The more unique (think Ercoupe, VariEze, Osprey, etc.), the more apt we are to give it a second look and remember it. We are often puzzled and intrigued when we see an aircraft of different design. Wondering why an extra piece would be added such as canards in Burt Rutan's designs or controls removed like rudder pedals in the case of the Ercoupe, pilots delve deeper into the plane, wanting to touch, understand, and explore the uniqueness

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Barnstable High School's Colin Fravel Awarded First MASM Scholarship

L-R: Karen MacFarlane, Student Support, Admin. Asst.-BHS, Colin's mom Michelle Fravel, Colin (yes he is 6 feet 8 inches tall) and Georgia Pappas.

By: Joe Dini, MASM Board Chairman

The MASM scholarship committee reviewed and vetted applicants for receipt of a $5,000 scholarship. The committee compared several suggested existing application styles which they tailored to meet MASM's goal of furthering the study of aviation and aerospace to enhance awareness and progress in these areas.

Since MASM has established a presence in Hyannis, Tom Hiniker (MASM Board Member) and the committee wanted to focus on high school students attending Cape, Islands and Southeastern Massachusetts schools.

The committee was chaired by Tom Hiniker. Georgia Pappas (MASM Director and Vice Chair of the Board), Shelia Bauer (MASM past Director) and Kevin Currie (MASM Director and Vice President), make up the remainder of the committee.

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From the Cockpit

The summer is winding down and I'm disappointed that the stinted progress on the museum reopening forced us to miss the tourist season on Cape Cod. Nevertheless, there is promise on the horizon! The new space is presently undergoing the necessary renovations and I anticipate that we will be back open to the public before the Columbus Day holiday in October. No plans have yet been set for a grand event but as the dates solidify we will notify everyone of what the intentions are.

In the meantime, there has been progress on other fronts. We are working with the administration at the Cape Cod Gateway Airport for the second Southeastern Massachusetts Aviation Career Fair. This event is scheduled for Thursday, October 20th. In what is anticipated to become an annual event, middle and high school students from the cape region will be introduced to the many aviation related careers paths available to them. As many as 50 or more exhibitors will be present to expose the attendees to the many career opportunities open to them in the aviation and space industries. This is a big event and many hands are needed. If interested in helping out, contact me at: kyoung@massairspace.org, or give me a call at ***(508) 423-2023****.*

Lastly, there has been some movement forward on acquiring a space at the airport with ramp access. This is still in the early stages, but I anticipate giving much more detail in the next Horizons.

Keith Young, Director

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Museum soon to open at:

434 Main Street Hyannis, Mass.

Museum Hours:

To Be Announced

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Tom had been successful in establishing a scholarship program through his formation of the ISTAT Foundation, while on the board of ISTAT. ISTAT is committed to providing its members with the highest quality and best-value networking and education opportunities in commercial aviation, administering the industry's leading appraiser program, and investing in the future through the ISTAT Foundation (International Society of Transport Aircraft Trading).

Tom approached the MASM board last year, stating his willingness to chair a committee that may eventually lead to establishing a foundation within MASM to ensure the future of aviation and aerospace. Not only did Tom agree to form such a committee, he agreed to personally fund a scholarship. The MASM board unanimously approved the concept.

The 2022 applicant chosen to receive the scholarship exceeded all criteria. Colin Fravel attended Barnstable High School and lives in a single parent home with his mom in Hyannis. He has been accepted at Georgia Institute of Technology in their aerospace engineering program. In addition the the MASM scholarship, he receive many others. Here is a brief profile of Colin's achievements, submitted by Georgia Pappas.

Colin Fravel, Barnstable High School 2022

Community Involvement: *National Honor Society, Astronomy Club, Math Club, Astronomy Independent Study, Deckhand at Hyannis Whale Watcher Cruises, General Tutoring*

Honors/Awards: *Brown Book Award for excellent verbal and written communication skills, Rensselaer Medal Award for excellence in math and science, 4 years of high honor roll, 2018/2020 National Latin Exam Magna Cum Laude, 2019 Maxima Cum Laude National Latin Exam*

Leadership: *Vice President of Mu Alpha Theta chapter of Barnstable High School in charge of coordinating math tutoring from pre-algebra to AP Calculus*

The $5,000 check was sent directly to the college at the direction of his high school Scholarship Coordinator, Karen MacFarlane who provided the MASM committee with required information.

Georgia and I attended Senior Recognition Night on June 7, 2022 and met Colin, his mom and Karen. He is a charming, thankful, and gracious young man.

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of something novel. Pilots seem to be, for the most part, inquisitive and politely gregarious when around like-minded folks.

Every time someone walks by the open hanger door when I am washing the plane, I get similar comments. "Nice plane. What kind of homebuilt is it? A Kingfisher (or some other homebuilt amphib)?" And every time my response is the same, "Thanks. But it's not homebuilt. It's a Thurston Teal." They squint a bit, tilt their head to the side, and say, "Thurston Teal? Never heard of it. Is it new?" It's not surprising that these folks are not familiar with an airplane that received its FAA certification in 1970, was manufactured in Sanford, Maine; and only had a run of 38 planes built.

The Massachusetts Air And Space Museum (MASM) was featured in a piece by Julie Summers Walker in the May 2021 issue of AOPA Pilot. Dr. Nat Sims, a MASM supporter, donated his Thurston Teal to the museum to be raffled off as a fundraiser for the museum's educational efforts. After having an annual performed at its home field in Newport, Vermont, Mike DuPont, an A&P, IA and owner of American Aero Services in Taunton, MA, donated his time to go up to Vermont and fly the Teal back to our hanger in Mansfield, MA. N501ME started out life in 1970 as N2011T and was initially scheduled to go to the Bahamas for use by *The Beatles*, but more on that later.

Thurston Teal N501ME

N501ME was designed and built by David Thurston in his factory in Sanford, Maine. Thurston received his Aeronautical Engineering Degree from New York University just before the start of World War II. In 1942 he went to work for Grumman Aircraft and after the war assisted Leroy Grumman in the design of numerous amphibious aircraft being developed for the general aviation market. Thurston also designed and built the Colonial Skimmer, which later sold and ultimately became the Lake Buccaneer.

As you can see from the accompanying photos, N501ME is a classically beautiful plane even when sitting on the ground. David Thurston built the Thurston Teal with usability, simplicity and functionality in mind. The Teal has a manually operated retractable gear system. The photo of the floor area shows the two bars between the seats that are used for lowering and retracting the gear along with the rudder control for water operations. The larger bar is for the mains and the smaller one right beside it is for the tailwheel. Throttle, mixture, carb heat, and propeller pitch are all located on the ceiling.

With its 150hp Lycoming engine, constant speed prop, and two-place setup, N501ME has plenty of power for its designed recreational flying. Operating speeds are given in miles per hour and are what you would expect from this size amphib:

116 mph max level cruise

106 mph 75% power at 5,000 feet

95 mph 65% power at 5,000 feet

Ground takeoff is listed at 500 feet and landing at 400 feet. Water takeoff is listed at a bit longer at 600 feet while landings are shorter at 400 feet. With its 24.5 gallon fuel tank (24 usable), its 75% power setting will get you a 250 mile range.

Flying the Teal from land is like flying all close gear tail draggers (think Piper Pacer or Pitts) – keep your feet alive and fly the plane through takeoff and landing. But the Teal does love water landings and takeoffs as long as you have the landing gear in its proper position. When Mike DuPont flew it down from Vermont, he was so impressed with it that he bought three raffle tickets in the hope that it would become his. But just to make sure that the new owner is comfortable and capable, MASM is providing the raffle winner with $3,000 to be put toward a new rating or endorsement. With only 1350 total time on the airframe and 130 hours since engine and prop overhaul,

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this craft has plenty of life in it.

Currently, there are only five Thurston Teals listed in the FAA registry. Most of the remaining planes are located outside of the United States and that makes a lot of sense when you think about it. Canada has plenty of spots that are only accessible by air and water, and Europe has a rather restrictive general aviation policy. In most places in Europe, every time you fly you are charged an airport departure fee, a landing fee, and myriad other fees if you need to file a flight plan or ask for a weather briefing. Some European pilots have gotten around many of these fees by flying their Teals in water mode using lakes and rivers near their homes. Twenty-four of the Thurston Teals listed on the www.seebee.info website have some form of non-USA registration numbers listed.

And as promised, *The Beatles* connection: A note was sent by David Thurston to Mark O'Malia, the son of the original owner, in 1973 (a copy of which will be provided to the raffle winner through the graciousness of Mark. Mark's father Charles J. O'Malia was the first person to take possession of N501ME and the note helped to explain why a 1970 plane was being delivered to him as a new plane in 1973. It seems that the aircraft was purchased by a NYC management company for Apple Records in July of 1970 and was scheduled to be delivered to *The Beatles* while they spent time together in the Bahamas. Unfortunately, the Fab Four broke up in 1970 before the plane could be delivered. It was stored in the Thurston Teal factory while the courts settled the band's issues.

The Massachusetts Air And Space Museum's mission is to educate, promote, and share with the public the many contributions that area companies, organizations, and individuals have made and continue to make within aviation. In addition, MASM works to educate younger people in the career opportunities available to them beyond being a pilot, aircraft mechanic, or rocket scientist. The funds made available by raffling this exceptional Thurston Teal will go a long way toward making this happen. For more information on MASM and the Thurston Teal raffle, please visit the museum's website at www.massairspace.org. You could take a chance on owning your own unique amphibious aircraft and a piece of Beatles history (sort of).

Kevin Currie is a long-time private pilot, 35 year AOPA member, and a Director at the Massachusetts Air And Space Museum in Hyannis, MA.

Win a Piece of Beatles History

MASM Raffle

GRAND PRIZE

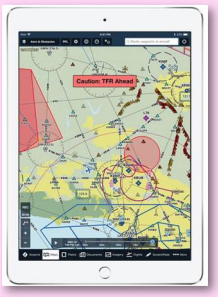
The classic 1970 Thurston Teal Airplane (N501ME). This is a 2/3 place all aluminum amphibious airplane with fewer than 1,350 hours of total time. The 150 HP Lycoming engine and Hartzell prop have ~130 hours since overhaul. The aircraft will include a new annual inspection and new tires. Also included are instruments and avionics as follows: ADS-B, a PJ2 COM Radio, Electronics International model R-1-4 digital RPM/TACH, model M- 1 digital manifold pressure gauge, King KLX 135 GPS/Moving Map/Com, KT 76A transponder, PS Engineering PM 1000 2-place intercom system. In addition, the winner will receive $3,000 for his/her tail wheel rating and/or seaplane rating. The airplane value is estimated at $58,500.

SECOND PRIZE

Second prize is a Bose A20 Aviation Headset that is valued at $1,095.95.

THIRD PRIZE

Third prize is an iPad MINI with 256 GB and Wi-Fi, plus a one-year subscription to ForeFlight Pro-Plus. This prize is valued at $689.98 (cellular service is not included).



Tickets prices are $65 for a single or $150 for a block of three and may be purchased at the link listed below. Additional purchasing and raffle information may be found by visiting our website at **www.massairspace.org**.

The Thurston Teal was designed by David Thurston and manufactured in Sanford, Maine at the **Thurston Aircraft Corporation**. Mr. Thurston had a long and productive career in developing aircraft for water use. During World War II he worked for Grumman Aircraft and later on helped create the **Lake Buccaneer**, **Colonial Skimmer**, and the **AeroMarine Seafire** as well as the **Thurston Teal**.

Bay State Air Shows

On the local scene, Massachusetts will play host to two very different air shows in September 2022. The first is the **US Aircraft Expo** September 16th and 17th at the Beverly Airport:

"US Aircraft Expo is a platform where the latest models of general aviation aircraft will be on display at one venue. It is also a platform where prospective buyers can see the newest aircraft from Beechcraft, Bell, Cessna, Cirrus, CubCrafters, Embraer, Enstrom, Epic, Glasair, Honda Jet, Diamond, Husky, Piper, Pilatus, Quest, SuperPetrel, SyberJet, TBM, Icon, Tecnam and more. It will have representatives from AirFleet Capital, Aviation Tax Consultants, and Wings Aviation Insurance on-site to help with any questions that arise during acquisition and ownership."

Us Aircraft Expo Boston—2021

The hours are 10:00 AM to 3:00 PM and you can pre-register to attend by logging onto:

www.usaircraftexpo.com

The other major Massachusetts air show in September presented by the **American Heritage Museum** with their **World War I Special Aviation Weekend** is being held on the 17th and 18th of September at the American Heritage Museum grounds in Stow, Massachusetts.

"This weekend will be the official unveiling of our original 1917 Nieuport 28 restoration project and we aim to fly it each day for our visitors. We are also working with several organizations to bring and display their accurate World War I replica aircraft and original rotary engines as well.*

Nieuport 28

We will also be bringing some of the original rare WWI uniforms and flight clothing of noted World War I aviators that is part of the Parks Collection that has moved to the American Heritage Museum. Such examples are the original uniform of Douglas Campbell, America's First Ace; and the original leather flight coat of Captain Eddie Rickenbacker.

Gates open at 9:00am and close at 5:00pm each day. Demonstrations and schedules will be firmed up as we get closer to the event."

Is Commercial Mach 1.7 Just Around the Corner?

Boom Supersonic Overture

With the end of supersonic commercial travel aboard the former French-British-built Concorde in 2003, the only supersonic travel available for those outside of military pilots has been the extremely small number of those who could afford to venture into near space and return. But Boom Supersonic may be about to change all that with the introduction of their new hypersonic passenger aircraft *Overture*.

According to an announcement in July at the Farnborough Air Show, the *Overture* is projected to be available for commercial service by the end of this decade. According to a company spokesman, orders are at 70 thus far throughout the industry to cover some 600 air routes worldwide. Stay tuned!

Boeing787 Being Delivered at Long Last

Boeing 787 Dreamliner

According to CNBC as of August 10, 2022, Boeing has been able to resume delivery of the 787 Dreamliner after a long hiatus. A preliminary announcement along these lines was released at the Farnborough Air Show in July, with the FAA lifting all restrictions on the production and delivery of the wide-bodied jets. American Airlines and other major carriers have been anxiously awaiting the arrival of these aircraft as they have had to alter many of their long-haul international operations over the past two years in the absence of this new equipment.

The 787 Dreamliner was plagued with operational issues not long after their initial production runs, including fires onboard caused by the heavy use of lithium-ion batteries. The Dreamliner relies heavily on internal electrical systems that placed enormous strains on those batteries. Deliveries of the many aircraft already in the pipeline were halted early in 2021 for a variety of reasons, and only resumed last month after a sign-off by the F.A.A.

Boeing has produced a number of variations that include the 787-8: 186 ft, 242 passenger version with a 7,355 nm range, the 787-9: 206 ft, 290 passenger version with a 7,635 nm range, and the 787-10: 224 ft, 330+ passenger variety with a range of 6,430 nm. Despite some turbulence along the way, Boeing's 787 Dreamliner remains a proven long-haul wide-bodied jet that is favored by many major carriers. The company has over 1,500 pending orders that should keep both their Everett, WA and North Charleston, SC plants very busy for a long time to come.

Lilium EVTOL Aircraft About to Take Flight

Lilium EVTOL Aircraft

Vertical Take-Off and Landing [VTOL] are nothing new. Since the proliferation of the British-built Harrier Jump Jet since 1969, VTOL aircraft are commonplace among military arsenals. But, an all-electric VTOL is another matter, especially when it is designed for commercial applications.

Meet the Lilium EVTOL. This aircraft is partially a blended wing design with no bulky tail plane housing a heavy rudder. Instead, thrust and guidance are obtained through the use of multiple jet engines incorporated into the wings and the canards. The most amazing part of this multi-jet powerplant is the fact that it is battery powered.

These EVTOL aircraft made their formal debut in 2019, but are already well on their way toward certification not only by the E.U.'s EASA, but also the F.A.A. in the United States.

Projecting a speed of 175 MPH and a range of 155 miles, the Lilium EVTOL 7-seat aircraft may be available for purchase as early as next year, with promised improvements and upgrades as advancing technologies permit. Lilium has brought together a collection of scientific, engineering, mechanical, chemical, battery, and aeronautical experts to produce one truly ground-breaking technological wonder.

Check out the link below for a most informative update on their progress.

https://www.youtube.com/watch?v=qZ73PftBfFg

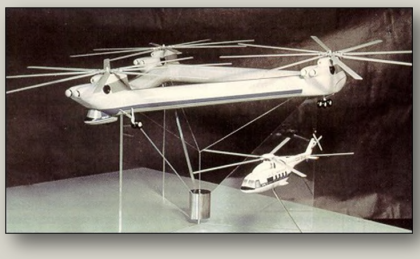
The Former USSR's Mi-32

Proposed, but Never Built

In this, the age of drones filling the skies, the notion of quad-copters is commonplace. But in the latter days of the Soviet Union a tri-rotor copter was conceived that would have weighed in at roughly 150 tons. When compared to the Mi-26 Halo, it would have dwarfed the Russian heavy-lift workhorse. Like the Mi-26, the Mi-32 was designed to provide giant lift capabilities in the most remote regions of Siberia, acting as a flying crane. It would have had a payload capacity of 55 tons. The body would have been larger than a Boeing 737 being 40 meters long [131+ feet] and 30 meters wide [98+ feet].

Soviet Mi-26 Halo Helicopter

Due to the shaky economic climate in the Soviet Union at the time it was proposed, and the eventual collapse of then Soviet Russia, the USSR's Flying Triangle never became a reality.



Comparison of the Mi-32 over the Mi-26

Friends of MASM

The Massachusetts Air and Space Museum has many friends, supporters, and doners that are the truly the heart and sole of our organization. The leadership is voluntary insuring that all of MASM's financial resources go directly to the museum's operations.

In addition to all those supporters mentioned above, there are a number of organizations and agencies that remain good friends of our museum. In particular are **Angel Flight NE**, **AOPA**, **The Ninety-Nines**, and **EAA**. Together we not only write the story of aviation, but we preserve it and celebrate it for future generations.

News of the Cosmos

Carina Nebula

The James Webb Space Telescope launched by NASA last December has begun producing some startling results. The telescope has the ability to reach across time and capture images such as the photo above of the Carina Nebula that is over 7,600 light years from Earth. By the standard that is used on Earth to calculate time, JWST has already discovered galaxies in the cosmos that are thirteen billion years old and thousands of light years away from us. It is actually finding compelling evidence of the actual origins of the universe that support the big-bang theory.

The JWST employs primarily infrared spectrums to observe and analyze the data received from space revealing that it is anything but space. This is the most sophisticated instrument ever deployed into space and the potential for discovery and for answering the questions of our origin are at hand. Stay tuned!

C.A.V.U

Most people familiar with aviation know that the abbreviation "CAVU" stands for *"Ceiling and visibility unrestricted."* In this recurring feature of ***Horizons***, your ability to see clearly into the history of aviation will be tested through identification of flying machines that once were. The first reader who submits the correct answer will be entitled to bragging rights and have their name and answer published in the subsequent edition of ***Horizons***. Submit your name, the name of the aircraft, the type or version (if applicable), and the country where it was manufactured to the editor-in-chief of ***Horizons*** at: **horizons@massairspace.org**

Here is your challenge for this edition:

For additional content, click on many of the photos in this edition except this one. You'll find videos and links for more information!

June 2022 Edition's Answer:

Kalinin K-7 — Russia [Soviet Union]
Passenger & Military—Max. speed: 180 km/h (110 mph) **Range:** 860 NM
Dry weight: 24,400 kg (53,793 lb) **Max. take-off weight:** 46,500 kg (102,515 lb)
Dimension: Wing span: 53 m (173 ft 11 in); length 28 m (91 ft 10 in); height 12.4 m (40 ft 8 in); wing area: 454 m^2 (4,890 sq ft)
Powered: 7 x Mikulin AM-34F V-12 liquid-cooled piston engines, 560kW 750 hp) each
Service Ceiling: 4,000 m (13,000 ft) **Payload:** 7,000 kg (15,432 lb)
Correct Answer: Once again, bragging rights for being first to answer correctly go to our frequent flyer **Roger McDowell**