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### Fun Facts

- The first King Air 90 prototype flew on January 24<sup>th</sup>, 1964 marking 60 years of King Airs.
- A bridge in Gunnison County, Colorado closed on April 19<sup>th</sup>, 2024 after a crack was found in the bridge girder during an inspection. The detour routes are more than 300 miles – but many patients use this bridge for hospital and medical office access. Eight general aviation pilots in Colorado have volunteered their planes, fuel, and time to transport patients in need while the bridge is being repaired, as long as VFR is able to be utilized throughout each flight.



### This Month in Aviation History

- On April 4, 1947 – ICAO was formed in Montreal, Canada.
- On April 19, 1945 – IATA was formed in Havana, Cuba.
- On April 6, 1967 – Trans World Airlines (TWA) became the first American airline to have a fleet composed entirely of jet aircraft.
- On May 8, 1935 – Amelia Earhart made the first non-stop flight from Mexico City, Mexico, to Newark, New Jersey in 14 hours and 19 minutes.
- On May 15, 1918 – The first regular air mail service began with regular flights between Washington, D.C. and New York City. It is operated by the United States Army Signal Corps.
- On May 24, 1918 – The United States Army Air Service organized.

## Part 1: ForeFlight and Breakthrough Energy Partner on Contrail-Avoidance System

ForeFlight has recently announced a partnership with climate and clean-energy group, Breakthrough Energy to explore the development of a tool that could help flight planners and pilots reduce contrails. The tool would combine weather forecast analysis, satellite imagery, and other data to model and detect control conditions.

ForeFlight's Chief Revenue Officer, Kevin Sutterfield said that the data is something that the company's customers have been seeking to reduce their climate footprint and is important as business aviation continues its sustainability goals.

By analyzing data from satellites and meteorological data, and overlaying a thorough understanding of the conditions in which water vapor is likely to condense around soot particles produced by jet engines, Breakthrough Energy can produce a constantly updated map of areas in the atmosphere where contrails are likely to form.

ForeFlight is looking at adding the tool into Flight Dispatch with the Profile View for planners to help decide whether an altitude change could help avoid contrails and have the ability to evaluate the tradeoffs between fuel consumption and contrail avoidance. For pilots, ForeFlight is exploring putting this information into the Weather Briefing in ForeFlight Mobile so they can have up-to-date forecasting and the ability to make last-minute adjustments.

Eventually, the ForeFlight application should calculate both the extra cost of additional fuel needed to reroute the airplane around those areas and the additional carbon that would be emitted to do so. If the equation makes sense financially and in terms of reducing carbon, the pilot could then select the alternative flightpath.

Matteo Mirolo, Breakthrough Energy's Head of Policy and Strategy for contrails stresses, "We're not talking about changing all flight trajectories." He has estimated that changing just 5% of flights could avoid 80% of the contrails.

There is no official timeline for the new system rollout, but Kevin Sutterfield says deployment into the ForeFlight App is "months, rather than years" away.



<https://www.ainonline.com/aviation-news/business-aviation/2024-05-29/foreflight-breakthrough-energy-partner-contrail>  
<https://aviationweek.com/shownews/ebace/foreflight-breakthrough-energy-partner-contrail-avoidance-system>

## Part 2: Gulfstream G700 FAA Certification

In April, the Gulfstream G700 achieved FAA type certification. This is a huge accomplishment for Gulfstream, and will help elevate business aviation travel in the coming years. The G700 has exceeded initial expectations in takeoff and landing distances – it has a field length takeoff distance of 5,995 ft (1,827 meters) and a landing distance of 3,150 ft (960 meters) under standard conditions. Both numbers are shorter than originally anticipated, allowing the G700 to operate out of a wide range of airports.



Despite going through the most rigorous certification program in Gulfstream history, the aircraft is able to provide unparalleled performance and cabin comfort. Comfort is a major priority, offering the lowest cabin altitude in business aviation at 2,840 ft (866 meters) while flying at 41,000 ft (12,497 meters). This is even lower than originally announced.

The G700 offers passengers whisper-quiet noise levels and a 100% fresh air system eliminating recirculated air in the cabin. It features 20 signature Gulfstream Panoramic Oval Windows that flood the interior of the aircraft with natural light.

Gulfstream first announced enhancements to range, speed, and cabin altitude back in September 2023, and the G700 exceeded these initial projections. It has a range of 7,750 nautical miles (14,353 kilometers) at Mach 0.85 cruise speed, or 6,650 nautical miles (12,316 kilometers) at Mach 0.90 cruise speed. This is a 250 nautical mile improvement at both speeds since the announcement.

In 2023, the G700 was predicted to operate at a maximum speed of Mach 0.925, but today, the maximum operating speed is Mach 0.935. The G700 is the fastest aircraft in the Gulfstream fleet and provides excellent passenger comfort while maintaining a high standard of safety and performance.



## Part 3: Virtual Reality for MX Training

Aviation training group, CAE, predicts the need for skilled aircraft maintenance, repair, and overhaul technicians will significantly increase over the next decade. In anticipation of this demand, CAE and its partner Xennial make a case for deploying so-called extended reality technology to help with the development of new technicians.

CAE recently trialed and implemented simulation with a new technician training program for the Gulfstream G500/G600 and G650. The virtual reality hardware now being deployed includes headsets and hand-tracking technology.

“Virtual reality, especially when it comes to aircraft technician training, is proving to be a high-value solution. One of the main reasons it is used in maintenance training is to lower the risks associated with traditional training methods,” commented Alexandre Prevost, CAE’s division president for business aviation and helicopter training. These risks include dependency on the availability of physical equipment and longer aircraft downtime. CAE also said virtual reality is more adaptable to new aircraft models, suitable for digital tracking and evaluation of trainees, and more cost-effective for repetitive practice of tasks.

In the past, new employees typically underwent months of continuous supervision during hands-on instruction. Experienced mentors guided them through maintenance tasks, often at the expense of their own individual duties. Additionally, this training occurred on the actual maintenance line, with tasks performed on real aircraft. For those new to, or unfamiliar with established safety protocols, this environment could pose potential dangers. However, the adoption of Virtual Reality technology has revolutionized this process, allowing for safer, more efficient training experiences.

The application of maintenance training uses of virtual reality is expanding and includes FlightSafety International, which offers virtual engine training with Pratt & Whitney Canada, Rolls-Royce, which has developed virtual reality engine models where students can disassemble virtual engines on and off a virtual airplane, and Ogden Air Logistics Center (Hill Air Force Base, Utah) which has established an aircraft maintenance virtual reality immersive classroom.



**FlightSafety**



**Rolls-Royce**



**Ogden Air Logistics Center**

<https://www.ainonline.com/aviation-news/business-aviation/2024-04-01/cae-says-extended-reality-key-mro-technician-training>

<https://www.hill.af.mil/News/Article-Display/Article/3736890/ogden-alc-uses-virtual-reality-to-enhance-aircraft-maintenance-training/>

## Part 4: Important Aviation Person: Charles Edward Taylor

### Charles Edward Taylor



Each year, May 24<sup>th</sup> is celebrated as Aviation Maintenance Technician Day, but the man who started it all is often not recognized as an important part of aviation history. Charles Edward Taylor was the first Aviation Maintenance Technician – and is often noted as “the man aviation history almost forgot.”

Born May 24<sup>th</sup> 1868 in Cerro Gordo, Illinois, Taylor first worked as an errand boy/binder at Nebraska State Journal at the age of 12. While at this job, Taylor discovered that he was skillful in using tools and mechanically inclined. This sparked him to move to Kearney, Nebraska in his 20s and start his own business making metal house numbers. In Kearney, he married Henrietta Webbert in 1884 when Taylor was 24 years old. Little did Taylor know, her uncle had a connection to the Wright brothers, and marrying her would change his life.

The pair had a child and moved to Dayton, Ohio in search of a better life. Henrietta was from Dayton, and still had family living there. Taylor began working for Stoddard Manufacturing Company, where he made farm equipment and bicycles. He eventually opened his own tool shop. At the same time, Wilbur and Orville Wright had a bicycle shop in Dayton. Their shop was leased to the brothers by Henrietta’s uncle.

Occasionally, the Wright brothers asked Taylor to make mechanical parts for their bicycles. They were very impressed with his work. In 1901, the two brothers began working on gliding machines and flying, so they asked Taylor to come and work for them. They would pay Taylor \$18 a week, a good salary at the time. Taylor liked the brothers, but also took the job as it was only six blocks away from his home.

Taylor knew about the brother’s interest in flying and experimenting, and he was hired to handle shop customers, especially when the two traveled to Kitty Hawk, North Carolina to test their gliders. They traveled a few times a year when they had an improved flying machine to test. The first time Taylor helped with their aeronautical projects was when he helped to build a wind tunnel to test their glider.

In 1902, The brothers wanted to reach beyond creating gliders and wanted to build a powered machine. The Wrights prepared sketches for a biplane, but were unable to find a manufacturer for the engine. So, they turned to Taylor. The required power-to-weight ratio was not available in the U.S. for their first engine-driven Flyer. Taylor designed and built an aluminum-copper, water-cooled, four-cylinder aircraft engine in only six weeks, based partly on the sketches given to him.

The cast aluminum block and crankcase weighed 152 pounds (69 kg) and were produced at either Miami Brass Foundry or the Buckeye Iron and Brass Works, near Dayton, Ohio. The Wrights needed an engine with at least 8 horsepower (6.0 kW). The engine that Taylor built produced 12 hp (8.9 kW). Taylor used a drill press, lathe, and assorted hand tools to create this. He created all metal parts for the engine.

Building this engine led Taylor to achieve the title of First Airplane Mechanic. However, he didn't want fame or limelight – he just wanted to do a good job. Taylor maintained the airplanes Wilbur and Orville built, as well as managed the hangar that housed them at Huffman Prairie. Thanks to this, Taylor also holds the title of First Airport Manager. Charles Taylor wanted to learn how to fly, but the Wright brothers discouraged him from this dream, as they were afraid to lose him as a mechanic.

In 1909, Taylor assisted Wilbur and his Model A Flyer with his flight to Governor's Island, New York City. Wilbur planned to make several overwater flights at the Hudson-Fulton Celebration to demonstrate the aircraft. Taylor didn't go with Wilbur, but came with him to make sure that the engine worked perfectly during the trips. They installed a watertight canoe on the Flyer's lower wing for buoyancy in case of an emergency landing.

Taylor worked for the Wrights until 1911, when he went to work for Calbraith Perry Rodgers who was joining the race to be the first person to accomplish the first U.S. transcontinental flight. Taylor followed Rodgers in a train, repairing the aircraft each time it crashed, a total of 16 times. Rodgers arrived in California with only three original parts on the aircraft. Rodgers arrived too late to win the prize, but Taylor became the first airplane mechanic to service a transcontinental flight.

Taylor stayed in California because his wife fell ill, and returned to Dayton in 1912. Wilbur had died of typhoid fever at age 45 while he was gone. Taylor worked for the Dayton-Wright Company again in 1919, and saw Orville often. Taylor moved back to California in 1928, but when the Great Depression hit, he lost his job at a machine shop in Los Angeles. He invested in land in the Southern California desert and built a house there, but nothing substantial came of his venture.

In 1936, Henry Ford used detectives to track Charles Taylor down, wanting him to reconstruct the Wrights bicycle shop and create a replica of the first engine for the Greenfield Village museum. He returned to Dayton, helped Orville restore his family home, recreated the shop, and worked on the replica engine until 1941. In California, Taylor never mentioned that he created the first aircraft engine.

Charles Taylor returned to California in 1941 and got a defense factory job. In 1945, he had a heart attack and became unable to work. Orville set up an annuity to Taylor of \$800 a year, which in addition to Social Security is all Taylor had left. Unable to pay bills, he lived in Los Angeles County Hospital charity ward, where a reporter found him in 1955. News of his state traveled fast, and the aviation community raised money to help Taylor. Thanks to this, Taylor spent the last few months of his life cared for in a private sanitarium. He died there on January 30<sup>th</sup>, 1956 from asthma complications. This was eight years to the day that his lifelong friend Orville Wright died.

Charles E. Taylor is buried alongside other aviation pioneers in the Portal of the Folded Wings Mausoleum at Valhalla Memorial Park, Los Angeles. The FAA awards Charles Taylor Master Mechanic Award in his honor. It's thanks to Aviation Safety Inspector Richard Dilbeck of the Sacramento FSDO's effort that Taylor's birthday is memorialized as Aviation Maintenance Technician Day. Taylor's name was written on Idvar-Hazy's Wall of Honor, memorial for the all-stars of aviation in 2012.

AMT Day brings deserved honor to all the men and women who inconspicuously maintain the integrity of aircraft and don't seek recognition for it. They are, like Charles E. Taylor, the unsung heroes of aviation safety.

[https://www.faa.gov/sites/faa.gov/files/about/history/pioneers/Charles\\_E\\_Taylor.pdf](https://www.faa.gov/sites/faa.gov/files/about/history/pioneers/Charles_E_Taylor.pdf)  
[https://en.wikipedia.org/wiki/Charlie\\_Taylor\\_\(mechanic\)](https://en.wikipedia.org/wiki/Charlie_Taylor_(mechanic))

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