Inflight Chronicles

Volume 2 – February 2024

IN THIS ISSUE

Fun Facts

- For 40 years, NASA strapped 165,000 pound space shuttles on top of heavily converted Boeing 747 jetliners.
- John Edward Long, Jr. holds the world record for the most flight time by a pilot: over 65,000 hours (about seven years and four months) at the time of his death in 1999.
- There are 15,367 Charter Flights businesses in the United States as of 2023, an increase of 1.8% from 2022.

This Month in Aviation History

- On February 01, 1911, The Burgess Company became the first licensed aircraft manufacturer in the United States and received authorization from the Wright Brothers to build the Wright aircraft.
- On February 07, 1959, pilots Robert Timm and John Cook broke the world record for longest flight without landing: 64 days, 22 hours, 19 minutes and 5 seconds on a Cessna 172 aircraft.
- On February 28, 1918, President Woodrow Wilson issued an order requiring licenses for civilian pilots and owners.

Part 1: FAA Accepts Reliable Robotics' Remotely Operated Aircraft System

The FAA has accepted the requirements for advanced aircraft navigation and autopilot systems in Cessna 208B Caravans. Reliable Robotics will be the first in the industry to agree on a testing and analysis campaign for the remotely operated aircraft system (ROAS) with the FAA. The company will demonstrate how its ROAS aligns with the regulator's safety and performance requirements for operations in U.S. and Alaska.

ROAS is intended to reduce or eliminate accidents due to pilot error or impairment, such as controlled flight into terrain (CFIT) and loss of control in flight, which accounts for the bulk of fatal aviation accidents. Initially, the firm will supplement personnel in the cockpit rather than replace them. It intends for the operations to include a single onboard pilot to perform abnormal procedures.

Reliable Robotics made history in November of 2023, when they successfully flew a Cessna 208B Caravan with no one on board. The uncrewed, FAA-approved Cessna 208B Caravan flight was remotely operated by pilot Danah Tommalieh for about 12 minutes, from a control center 50 miles away. Reliable's system automates aircraft through all phases of operation, from taxi to takeoff and landing, allowing pilots to safely operate it from the ground. Hardware and software automates flight control surfaces and engine controls, while voice and data networks enable remote command and radio management.

During the testing phases, automated aviation systems will first appear in cargo aircraft designed for 3,000 plus-pound payloads and then eventually to smaller aircraft with no passengers onboard. The firm's tech is designed to be aircraft agnostic. It could one day be equipped on other Textron designs or those of different manufacturers.

In addition to the FAA, Reliable Robotics has completed watershed technology demonstrations with NASA and AFWERX, the innovation arm of the U.S. Air Force. In January 2024, it was awarded military airworthiness approval to begin further flight testing and perform operational missions for the Air Force using remotely piloted aircraft.

https://www.flyingmag.com/faa-reliable-robotics-agree-on-testing-criteria-for-automated-aircraft-system/
https://www.flyingmag.com/reliable-robotics-completes-historic-cargo-flight-with-no-one-on-board/

Part 2: APG Introduces New App for GPS Spoofing and Jamming

GPS spoofing and jamming incidents can lead to potentially dangerous situations, as they compromise the accuracy and reliability of navigation data. The FAA has recently issued a Safety Alert of Operators, urging flight crews to monitor their onboard equipment and be prepared to fly without satellite navigation.

Aircraft Performance Group (APG) has developed NaviGuard, a free, standalone GPS anomaly detection and verification app for iOS devices.

NaviGuard offers real-time monitoring of problem areas, enabling pilots to anticipate and avoid issues stemming from GPS anomalies. The app provides proactive notifications, alerting pilots of known danger zones during flights and offering the option to reroute or proceed with full awareness of potential hazards. Additionally, NaviGuard verifies in-flight GPS coordinates by mapping them relative to Navigational Aids (NAVIDs), thereby removing any uncertainty about location accuracy.

Further expanding its utility, APG is integrating NaviGuard technology into other aviation applications, including RocketRoute FlightPlan, enhancing the ecosystem of tools available for flight planning and operation.

Notably, NaviGuard prioritizes user privacy, with assurances that the app does not store or share users' GPS data, aligning with concerns over data security.

The iOS stand-alone app, NaviGuard, is now available for download.

https://flyapg.com/blog/anti-gps-jamming-and-spoofing-apps
https://www.gpsdaily.com/reports/APG_Launches_NaviGuard_A_New_GPS_Anomaly_Detection_App_Enhancing_Aviation_Safety_999.html

Part 3: Emergency Landing - British Airways Flight 5390

On June 10, 1990, 81 passengers and 6 crew members took off on British Airways Flight 5390 from Birmingham, England to Malaga, Spain. This flight was piloted by 42-year-old Timothy Lancaster, an experienced captain with more than 11,000 flight hours and his co-pilot 39-year-old Alastair Atchison, who had logged more than 7,500 flight hours.

Thirteen minutes after take-off at 08:20 local time, the flight reached an altitude of 17,300 feet. The cabin crew started to prepare the meal service and both of the pilots released their shoulder harnesses, when a loud bang erupted in the cockpit. The left windscreen had separated from the forward fuselage which caused a sudden decompression. Lancaster, who was on that side of the cockpit, propelled head-first out of the aircraft. His legs caught on the flight controls which miraculously prevented him from being completely sucked out of the plane. However, this action disengaged the autopilot, compelling the plane into rapid descent.

Alastair Atchison immediately took control of the aircraft and continued at a safe altitude to regain acceptable air pressure and oxygen levels, as the plane did not have enough auxiliary oxygen supplies for everyone onboard.

Meanwhile, the cabin crew secured loose objects and instructed the passengers to prepare for an emergency landing. Flight Attendant, Nigel Ogden, entered the cockpit and secured Captain Lancaster's legs, clinging to a chair for support. Eventually, Ogden became exhausted from holding onto Lancaster, so Flight Attendants, John Heward and Simon Rogers, took over. During this harrowing ordeal, Captain Lancaster's head repeatedly struck the fuselage, terrifying the crew with thoughts that he would not survive.

Atchison eventually regained control of the aircraft and received clearance from Air Traffic Control to make an emergency landing at Southampton Airport. At 08:55 local time, Flight 5390 landed successfully, despite concerns that the runway may have been too short for the fuel heavy BAC 1-11-500.

In total, Lancaster was pinned outside the cockpit for more than twenty minutes. He suffered frostbite due to the time spent outside the aircraft, as well as shock, bruising, and fractures to his arms. Steward Nigel Ogden was the only other serious injured party, suffering frostbite and a dislocated shoulder. There were no other injuries reported.

An investigation was promptly launched to determine the cause of the BA Flight 5390 incident. The investigators found that 84 of the bolts used were 0.026 inches (0.66 mm) too small in diameter, while the remaining six were the correct diameter but 0.1 inches (2.5 mm) too short. This seemingly small difference meant that the bolts were unable to withstand the air pressure difference between the cabin and the outside atmosphere, causing the decompression. These bolts had been installed during maintenance a mere twenty-seven hours before the incident took place.

As a result of this incident, every aircraft of a similar design underwent thorough inspection, which uncovered at least two other planes with windscreens secured by the wrong bolts. This discovery prompted the correction of the error, preventing the possibility of another, potentially more fatal, cockpit blowout.

The flight crew of British Airways flight 5390 were recognized for their heroism following the incident. Atchison and the flight attendants were awarded the Queen's Commendation for Valuable Service in the Air. Additionally, Atchison was awarded a Polaris Award in 1992 for his bravery.

https://www.aerotime.aero/articles/british-airways-flight-5390-the-pilot-who-survived-being-sucked-out-of-a-plane

Part 4: Emergency Landing - Air Transat Flight 236

On August 24, 2021, 293 passengers and 13 crew members took off on Air Transat Flight 236 from Toronto to Lisbon, Portugal. This flight was piloted by 48-year-old Robert Piché, an experienced captain with 16,800 flight hours and first officer, 28-year-old Dirk De Jager, who had 4,800 flight hours.

Just under four hours into the journey, the plane began to develop a fuel leak to its number 2 engine. Twenty-five minutes after the leak began, the pilots noticed low oil temperature and high oil pressure readings for the affected engine. When the fuel imbalance warning arose, the crew transferred fuel from the left to the right tank to help address the imbalance. However, this was only lost through the ruptured line, worsening the leak to a gallon per second.

Captain Piché told the flight crew to prepare to ditch in the ocean. Flight Attendants began to demonstrate emergency water landing procedures, while Captain Piché and De Jager tried to maintain control of the plane.

Eventually, Piché reached the control tower at the Lajes Air Force base on Terceira Island in the Azores to declare an emergency landing. The aircraft was still 75 miles away from Lajes, when both of its turbofan engines flamed out due to fuel exhaustion. With both engines inoperative, the only emergency power the aircraft had in order to fly was a Ram Air Turbine, which spins in the wind to power instruments and hydraulics.

For 18 minutes after the engines cut out, the pilots successfully steered the powerless aircraft like a glider towards the island using only basic instruments and instructions from the control tower. Descending at thousands of feet per minute, the A330 landed at Lajes, about 1,030 ft. past the threshold of runway 33, at a speed of around 200 knots.

The crew evacuated the passengers in less than ninety seconds. In total, fourteen passengers and two crew members suffered minor injuries, while two other passengers sustained serious injuries. The only major damage to the aircraft was the main landing gear and the lower fuselage as a result of the hard emergency landing.

The investigation revealed that the lack of adequate clearance between hydraulic lines and the fuel line due to the installment of an incorrect part in the hydraulic system by Air Transat's maintenance staff caused the rupturing of the fuel line, resulting in a fuel leak. This accident also underscored the risks associated with undetected fuel leaks to aircraft operating on long range overwater routes. New low fuel-alerting requirements for two, three, and four-engine aircraft were included into Appendix K to 14 CFR Part 25, Extended Operations (ETOPS).

Flight 236 broke the world record for the longest glide by a passenger aircraft (Air Transat Airbus A330) at nearly 75 miles, or 121 kilometers. In 2002, Captain Robert Piché and First Officer, Dirk De Jager's were given the "Superior Airmanship Award" by the Air Line Pilots Association, International (ALPA). In 2012, Robert Piché wrote a book and since then has spoken at numerous conferences about his experience on Flight 236.

https://www.chicagotribune.com/2001/08/29/im-not-a-hero-says-pilot-whose-skill-saved-300-on-plane/
https://www.aviationnepal.com/2001-flashback-air-transat-flight-236-emergency-landing-in-lajes-afb/#google_vignette

Part 5: Emergency Landing - Cessna 208 Caravan N333LD

On May 10, 2022, after departing Marsh Harbour in the Bahamas, Ken Allen (single pilot) was flying a Cessna 208 Caravan with two passengers on board when the unthinkable happened. About one hour into the flight and nearly 12,000 ft. in the air, Ken stated he wasn't feeling well and slumped over the controls.

Quickly realizing the severity of the situation, one of the passengers, Darren Harrison, went to the front of the plane and radioed into ATC. Snippets of the audio from the "AirTrafficVisualized" YouTube video have been transcribed below:

Passenger: I've got a serious situation here. My pilot has gone incoherent. I have no idea how to fly the airplane, but I am maintaining 9,100.

ATC: N333LD, roger, what's your position?

Passenger: I have no idea. I see the coast of Florida in front of me.

ATC: N333LD, can you say again what the situation is?

Passenger: Pilot is incoherent. He is out.

ATC: Just continue, stay wings level, maintain 5,000 and follow the coast, and we're going to try and find you here on the radar.

[Moments later]

Passenger: You guys located me yet?

ATC: You're about 20 miles east of Boca Raton. Just continue northbound over the beach and we'll try to get you some further instructions.

Passenger: I have no idea how to stop the airplane. I don't know how to do anything.

As Harrison neared Palm Beach, Florida, Robert Morgan, a certified flight instructor, was called from his break to help out. Robert Morgan learned that Darren had been around aviation and seen other pilots fly, but had never flown a plane himself. Robert instructed Darren: "You look great, you're a little fast, what I want you to do is grab the throttle. Just pull that back a little bit cause we need you to slow down."

Once on the runway, Harrison didn't know to stop the plane, so controllers instructed him on how to brake and adjust the levers. After landing safely, pilot Ken Allen, was quickly taken to the hospital where he recovered from the agonizing ordeal.

Since his successful emergency landing, Darren Harrison has publicly reunited with both Robert and Ken.

Robert Morgan and Darren

Ken Allen and Darren

https://www.nbcnews.com/news/us-news/passenger-no-flight-experience-saved-plane-nosedive-landed-pilot-passe-rcna28492
https://www.youtube.com/watch?v=9Jy8jpfyiek

Part 6: Notable Aviation Person
Charles Augustus Lindbergh

Charles Augustus Lindbergh was born on February 4, 1902 in Detroit, Michigan. Lindberg grew up on a farm in Little Falls, Minnesota and spend most of his life going between the farm and Washington D.C, as his father was a congressman representing the 6th district of Minnesota. Lindbergh wasn't great at school, and admitted that he almost failed out of high school, but WWI gave him the opportunity to work full time on a farm for full academic credit, which granted him his diploma.

Although Lindbergh wasn't great at school in general, he was good at engineering and went to college at the University of Wisconsin for Mechanical Engineering. After three semesters of college, a year and a half, Lindbergh dropped out and enrolled at a flight school in Lincoln, Nebraska.

Lindbergh's first experience with aviation was at a young age when he watched a barnstorm pilot in Little Falls show off his airplane and sell rides. He didn't fly in the airplane that day, but it inspired him to someday become a pilot himself. Lindbergh accomplished his first solo flight in 1923. He bought a WII era Curtiss JN-4, which was commonly referred to as the "Jenny" at the time. With this airplane, he became a barnstormer/daredevil pilot and made stunt flying tours through Southern and Midwestern states, performing at fairs and other events.

Lindbergh enlisted in the Army Corps Reserve in 1924 and trained as an Army Air Service Reserve Pilot. He attended Army flying schools in Texas, but after he finished, the Army was not in need of pilots, so he became an airmail pilot in 1926. He flew the route between St. Louis, MO and Chicago, IL.

Backed by a group of businessmen in St. Louis, Lindbergh competed for the $25,000 Orteig Prize, which was awarded to the person who accomplished the first nonstop flight between New York and Paris. At the time, Lindbergh was only 25 years old. In early 1927, he had a single-engine monoplane built in San Diego by Ryan Airlines. This airplane had extra fuel tanks, and it required a periscope to see forward. This airplane eventually became known as "The Spirit of St. Louis."

"The Spirit of St. Louis" was flown by Lindbergh from San Diego to St. Louis, then New York in preparation for the flight. Two men had disappeared after their attempt at the prize a few days earlier, so the American public was anxious to see whether Lindbergh, flying alone, would be able to complete this flight. Lindbergh was delayed for a few days due to bad weather, but on May 20th at 7:52am on Roosevelt Field on Long Island, Lindbergh took off on his flight to Paris. Just before nightfall, he passed St. Johns, Newfoundland. After a 3,600 mile flight that took 33.5 hours, Lindbergh landed at Le Bourget Field near Paris at 10:24pm on May 21st. There was a crowd to greet Lindbergh, and they swarmed his airplane once his engine was off.

Charles A. Lindbergh became the first person to cross the Atlantic alone, and the first person to fly from New York to Paris nonstop. Americans loved him, and the press named him "Lucky Lindy" and the "Lone Eagle."

President Calvin Coolidge presented Lindbergh with the Distinguished Flying Cross and made him a colonel in the Air Corps Reserve. Lindbergh then went on a victory tour with his plane, flying to famous cities in all 48 mainland states. He wanted to prove to the American people that air travel was a safe and reliable method of transportation.

In Mexico, Lindbergh met Anne Morrow, the daughter of the U.S. Ambassador to Mexico. They got married in May, 1929. She served as Lindbergh's copilot and navigator for him on many flights. Together, they flew to many countries. Amelia Earhart and Anne M. Lindbergh both flew as passengers on the final leg of the inaugural flight of Transcontinental Air Transport (TAT) service piloted by Charles in July 1929. Lindbergh acted as a technical adviser to Transcontinental Air Transport and Pan American World Airways and personally pioneered many of their routes during his flights with his wife.

Lindbergh would go on to help Alexis Carrel, a Nobel Prize winning surgeon develop the perfusion pump, which kept organs alive outside of bodies. This became a precursor for the heart-lung machine. Lindbergh's son would be kidnapped in March of 1932, becoming the most famous crime of the 1930s. After the trial and conviction of the kidnapper and eventual killer, the Lindberghs fled to Europe as many credible threats were placed against their other son. They stayed in Britain for 6 months, then they went to Germany as honored guests. He traveled the globe as an Ambassador without the title, and returned to Germany in 1938, where Lindbergh received the Service Cross of the German Eagle. The Lindberghs wanted to buy a home in Berlin, but the as events leading up to WWII occurred, this plan became impossible and they moved to Paris. Before WWII officially broke out, the couple moved back to the U.S.

Political beliefs kept Lindbergh out of the Army during the beginning of the war, but after the attack on Pearl Harbor, he began flying combat missions in a P-38 Lightning. He flew about 50 missions during the war, and worked with Henry Ford on developing bombers. After the war, in the 1960s, Lindbergh spoke out about the conservation of natural resources. He still consulted for Pan American World Airways and the U.S. Department of Defense when he moved to Hawaii. He also served on the National Advisory Committee for Aeronautics and many other aeronautical boards and committees.

Lindbergh was awarded a Medal of Honor in 1927, along with many other awards throughout his life. His book written about the flight from New York to Paris was awarded a Pultzer and Eisenhower appointed him Brigadier General in the Air Force Reserve in 1954, after his previous position was revoked at the beginning of the war.

On August 26th, 1974, Charles Lindbergh passed away at the age of 72. Throughout his life, he helped America usher in an age of commercial aviation. In 1977, Neil Armstrong and others formed the Charles A. and Anne Morrow Lindbergh Foundation that supports sustainability in aviation and other environmental efforts. His airplane, The Spirit, is on permanent display in the main entryway of the Milestones of Flight gallery at the Smithsonian Institution's National Air and Space Museum in Washington, D.C. In 2002, his grandson Erik Lindbergh recreated the flight that made Charles famous.

"The life of an aviator seemed to me ideal. It involved skill. It brought adventure. It made use of the latest developments of science. Mechanical engineers were fettered to factories and drafting boards while pilots have the freedom of wind with the expanse of sky. There were times in an aeroplane when it seemed I had escaped mortality to look down on earth like a God."

- Charles A. Lindbergh, 1927

https://www.biography.com/history-culture/charles-lindbergh || https://www.britannica.com/biography/Charles-Lindbergh
https://historicmissourians.shsmo.org/charles-lindbergh/ || https://www.mnhs.org/lindbergh/learn/aviation/commercial
https://pioneersofflight.si.edu/content/charles-lindbergh#:~:text=He%20gained%20worldwide%20fame%20as,safe%2C%20reliable%20mode%20of%20transportation

Authors: Jennifer Jacoby & Kaitlyn Reinbold