

# Chiltern Airwords



The Boeing KC-46 (named Pegasus by USAF), photographed at Oshkosh 2019 by John Roach

## The Chiltern Aviation Society Magazine November and December 2019



## CHAIRWORDS

Lawrence's excellent FAA article in the last issue of Chiltern Air Words included a photo of a Stinson Reliant. My thoughts went back to our Air Training Corps Squadron's camp at the Royal Naval Air Service Station at St Merryn, Cornwall, in 1944. On 28<sup>th</sup> July a colleague and I were offered our air-experience flights as part of the programme. We had the choice of a Proctor or Stinson Reliant to fly in. I really wanted the Proctor, but my colleague beat me to it (he caught his finger in the sloping door as he boarded!). Minutes later I climbed into Stinson Reliant aircraft FK961 along with a tall young Royal Navy Lieutenant and his colleague. With its 300 hp Lycoming engine the Reliant was soon climbing away, levelling at a mere 900ft. We followed the beautiful Cornish coastline for 25 minutes before arriving at RNAS Perranporth. All too soon it was over. With an exuberant yell our young pilot rolled the aircraft over and commenced a very steep descent before landing at our destination. Happy days.

With Christmas and New Year approaching may I, on behalf of the committee, send our best wishes for the Festive Season to all CAS members and families. Also, our grateful thanks go to Graham Williams who's stepping down as a committee member following his move to Caddington. He'll continue to attend our monthly meetings whenever possible during the lighter months. It is nice to know that he and Elsie have settled down well in their new home. **Keith Hayward**

## EDITORWORDS

Note to contributors; Once again this issue was a bit of a struggle as we have run out of feature articles. So, dig deep in to your memory banks and send your anecdotes, as it is very likely that Airwords will be issued **quarterly**. When emailing articles for Airwords, to [cas.clubsecretary@outlook.com](mailto:cas.clubsecretary@outlook.com) please send the words and any photo and images separately and not within the article.

**KEITH HAYWARD.** Chairman  
52 Pinn Way, Ruislip, Middx HA4 7QF  
Phone 01895 637872.

**JOHN ROACH.** Vice Chairman / Membership Secretary  
13 Thames Drive, Ruislip, HA4 7AY  
Phone 01895 637222 e-mail; [cas.vice-chairman@outlook.com](mailto:cas.vice-chairman@outlook.com)

**LAWRENCE HAYWARD.** Club Secretary / Assistant Editor  
91 Hartland Drive, South Ruislip, Middx, HA4 0TJ  
Phone 0208 8453414 e-mail; [cas.clubsecretary@outlook.com](mailto:cas.clubsecretary@outlook.com)

**PAUL KENDALL** Webmaster  
e-mail; [chilternaviation@btinternet.com](mailto:chilternaviation@btinternet.com)

**WEB SITE** [www.chilternaviationsociety.wordpress.com](http://www.chilternaviationsociety.wordpress.com)

**DAVID KENNEDY** – Editor  
69, Sharps Lane, Ruislip HA4 7JD. Phone 01895 637202. NO E-Mail or internet access, but help is on the horizon! For future items please send to me on paper OR e-mail articles directly to Lawrence at the above email addresses.

**CHILTERN AIRWORDS;** Please note Chiltern Airwords is produced purely for CAS members' own private study and enjoyment and it is not for sale. Opinions expressed in Airwords are the author's and not necessarily those of the CAS Committee.

**THE CHILTERN AVIATION SOCIETY (CAS);** Founded in 1968. Associate member of Air Britain Historians Ltd. **President;** Philip Birtles. **Patron;** David F. Ogilvy OBE FRAeS. CAS Membership £15 PA. Non-Members also welcome at our monthly programme of talks for a small contribution of £2 per event.

**MEETINGS:** Fourth Wednesday of the month (third in December) 8pm to 10 pm at *Ruislip Methodist Church Hall, Ickenham Road, Ruislip, Middx, HA4 7BX.*

## 2019 PROGRAMME;

**WED Nov 27<sup>th</sup>** - The Berlin Airlift by Lawrence Hayward (Confirmed change to previous programme)

**WED Dec 18<sup>th</sup>** - Members Evening (confirmed)

## OVERTAKEN BY EVENTS – CAPTAIN A S JOHNSON DSO DFM, BEA & BA - BY KEITH HAYWARD



On 16<sup>th</sup> March 1964 a group of BEA staff, including myself, were invited to fly in Trident 1 G-ARPG (pictured here via Jim Davies) on a whistle-stop tour around Europe. This was prior to the introduction of the new jet aircraft on a number of BEA routes.

In command was Captain A S Johnson assisted by an array of senior pilots who were converting to fast jets from the earlier propeller aircraft. This was quite a challenge for the experienced, mostly ex-RAF Bomber Command pilots, brought up in aircraft with much lower cruising speeds. The first sector was to Nice, at a cruising altitude of 29,000 ft and this height was achieved very rapidly after leaving Heathrow. This indeed was a new era of air travel!

After crossing central France, we were suddenly aware of the wing flaps and air brakes being extended and a rapid rate of descent was apparent. We seemed to drop like a stone with the cabin pressure struggling to adjust to the new altitude. Just as suddenly, the aircraft settled down and we started a long approach into Nice Airport, landing right alongside the clear blue Mediterranean Sea. After we had landed Captain Johnson apologised for the rather rapid descent but stated that they had been ‘somewhat overtaken by events.’ They had been cleared to cross the St Tropez beacon at 5,000 ft before the final run into Nice but found themselves approaching the beacon very rapidly whilst still at cruising height – hence the fast rate of descent. Lessons were being learnt very rapidly on the flight deck of having to think ahead. After a very pleasant tea in the transit lounge at Nice we continued to Frankfurt, our next port of call, without incident.

Arthur Johnson was a tough character. Born in Hull he joined the Merchant Navy as an apprentice at the age of 14½. He joined the Royal Air Force in the mid-1930s and trained as a bomber pilot. He flew HP Heyfords (*see photo below*) and in 1937 collected one of the first new Whitley bombers which he demonstrated at that year’s Hendon Air Show. In 1940 he took part in early Bomber Command raids flying Whitleys and as a Sergeant Pilot was awarded a DFM; later he received a bar to that medal. In 1944 he was a participant in the famous Nuremburg raid and gained a DSO. He was a rugged character with somewhat distorted facial features. This was due to injuries received when he fell out of an aircraft which had to crash land. He was found in a ditch one mile short of the wreckage. Incredibly he was still alive and spent nearly a year in hospital recovering from his injuries. He then insisted on returning to active duty. In 1945 he was seconded to BOAC flying Dakotas to Karachi, West Africa and Cairo. A move to BEA followed in 1946 and he soon became Flight Captain No.1 Flight at Northolt on Dakotas. He later moved on to Viscounts and then to Vanguards as Flight Manager. During his Viscount period he took part in the famous 1953 Air Race from Heathrow to Christchurch, New Zealand; sadly, he didn’t win.



His later Vanguard days were recalled by the late Captain Ron Gilman of BEA. Operating a sales tour to Iraq, Gilman in the captain’s seat was preparing to land at Baghdad to demonstrate the aircraft when he suddenly asked the control tower for permission to overshoot. This gave him the opportunity to show off this large aircraft at close quarters at very low altitude. Gilman recalled that he decided to abort at 50 ft as they approached the runway threshold. Captain Johnson, who was sitting in the jump seat, leant forward and thumped Gilman on the back shouting ‘not that bloody low.’ Gilman recorded that Johnson had very big hands and it hurt. In retirement Johnson took up pig breeding – a far cry from his amazing flying career. A memorable character from an earlier era.

## SIMMONDS & SPARTAN AIRCRAFT LIMITED - BY LAWRENCE HAYWARD



In 1928, Oliver E. Simmonds was not happy with the high cost of manufacturing light aircraft, so he designed and built a wooden two-seat biplane called the Simmonds Spartan and from that Simmonds Aircraft Limited was formed. To reduce maintenance costs all four wings and ailerons were the same; this allowed one spare wing to be used in any position. Powered by a Cirrus III, the prototype G-EBYU first flew in time to enter the King's Cup Air Race of 1928. The aircraft was flown to the Berlin Aero Show on 24 October 1928, a non-stop flight of 7 hours and 10 minutes. Production began at Woolston, Hampshire, with the final assembly and test flying at Hamble Aerodrome. Forty-nine aircraft were built, many for export, with New Zealand customers buying the most. At home twelve were

delivered to the National Flying Services for use as trainers. Three aircraft were operated on floats in Fiji. Although not as famous as other aircraft of the period, one aircraft was ski-equipped and was notable for covering more than 45,000 miles over Norwegian mountain ranges. Three aircraft were built as three-seaters, with two passengers in tandem in front of the pilot; these were mainly used for pleasure flying.

Sadly, Simmonds Aircraft Limited ran into financial difficulties in 1930 and Whitehall Securities Corporation Ltd, acquired a substantial holding in Simmonds Aircraft Limited and separately Saunders Roe Ltd, effectively merging both Saunders Roe and Simmonds Aircraft Limited. Consequently, Simmonds Aircraft Ltd now became *Spartan Aircraft Ltd*. The first aircraft from the renamed company was the Spartan Arrow, a two-seat biplane of which fifteen were built. Due to the success of the Spartan Arrow, the company developed the Spartan Three-Seater, which was made with a spruce and plywood fuselage. Although not many aircraft were built, the Three-Seater was considered to be a mainstay of the pleasure flying business in the 1930s, and a bit more fun to take three people, as opposed to the usual two. The wings were designed to fold back in order to be stored in a shed rather than requiring a dedicated hangar, though there was apparently some bias at the time, against aircraft with equally shaped wings, as it was thought that this made recovery from a stall much harder

Following the first batch of nineteen aircraft, designated the Three-Seater I, an improved version, of which just six were built was designated as the Three-Seater II. The Three-Seater IIs had improved visibility for the pilot and easier access for the passengers. All were all powered by a 130 horsepower Cirrus Hermes IV engine.



Currently I know of two Spartan survivors; the first is a Simmonds Spartan II, formerly G-ABYN. The owner of this rare Simmonds Spartan II biplane wants to sell his aircraft, and ideally, he'd like to see it return to Cowes, Isle of Wight, where it was built. In June 1932, as serial number 102. Currently registered ZK-ARH, it is the last surviving plane of its type and engine, anywhere in the world (*photo top right*). During its lifetime it has passed through several owners and was based for a while, at Heston, then Hedon, before being sold to R. A. Clark in 1938. Its home from then on became Tipperary, Ireland and it was re-registered as EI-ABU. With the outbreak of war in 1939, Clark stored the Spartan in a sawmill. There it languished until 1992, when it was moved back to England. Then it was sold to New Zealand. In 1994 the current owner Rod Hall-Jones registered it as ZK-ARH. It needed a complete restoration which was finished in 2004. Rod insists the aircraft is not a replica. Most parts of her were reused. Date stamps and original placards are visible. The Cirrus Hermes IV engine has been stripped down, is in good condition and refitted. The other survivor is Spartan Arrow Two-Seater G-ABWP (*above right*) amazingly still survives in airworthy condition. Built in 1932, it was bought by Richard Shuttleworth in December 1936 and after years of storage reappeared at Hendon in July 1951 for the 50 years of Flying Exhibition. In 1953 it passed to WG Lilleystone, and then the Spartan Group flying out of Denham.



G-ABWP originally flew with a white tail fin, but since 1976, this has been pale blue. G-AWWP has had a reasonably charmed life but did have a minor accident on 27<sup>th</sup> October 1985, when the lower left mainplane of G-ABWP came into contact with the tailplane of Piper J3 Cub G-AKAZ, after both aircraft had landed at the same time on Runway 27 at Barton Aerodrome, Lancashire. Each aircraft only received minor damage. Later, circa 1999 the aircraft was in store at Redhill but since then I have lost track of its movements. However, over more than a decade this aircraft has been a fairly regular attendee at Old Warden airshows, most recently 1st September 2019. As for Spartan Aircraft Ltd its final product was the Spartan Cruiser a three-engined light airliner developed from the Saro-Percival Mailplane. Production ended in 1935 changed name in 1930 to Spartan Aircraft Limited (but not to be confused with the Spartan Aircraft Company of the USA). The company ceased to build aircraft in 1935.

### **BOEING B-17 FLYING FORTRESS CRASH**



On 2<sup>nd</sup> October 2019, a Boeing B-17 Flying Fortress owned by the Collings Foundation crashed at Bradley International Airport, Windsor Locks, Connecticut, United States. Seven of the thirteen people on board were killed, and the other six were injured, as well as one person on the ground. The aircraft was destroyed by fire, with only the tail and a portion of one wing remaining. The aircraft was a 74-year-old B-17, a B-17G-85-DL with civilian registration N93012 and military serial number 44-83575. It was painted to represent a different B-17G, that of 91st Bomb Group's *Nine-O-Nine*, with military serial number 42-31909 which was a B-17G-30-BO. The original *Nine-O-Nine* was scrapped after WW2 at Kingman, Arizona.

During its original military career, N93012 operated as an Air-Sea Rescue aircraft until 1952, when it was reassigned to the Air Force Special Weapons Command for use as a specimen in weapons-effects testing. In this role, it was subjected to three nuclear explosions as part of Operation Tumbler-Snapper. The aircraft was purchased as scrap in 1965 for a price of US\$269 (equivalent to \$2,139 in 2018); being in relatively good condition, it was restored to airworthy condition for use as a water bomber over the course of ten years, entering civilian service in 1977. Following its operator's liquidation in 1985, the aircraft was acquired by the Collings Foundation in January 1986, restored to its 1945 configuration, and N93012 flew as *Nine-O-Nine* from August 1986. While operated by the Collings Foundation, it was involved in two prior accidents: on August 23, 1987, it overran the runway on landing at Beaver County Airport near Pittsburgh, Pennsylvania, and on July 9, 1995, it was damaged on landing at Karl Stefan Memorial Airport in Norfolk, Nebraska, as the result of an undercarriage (landing gear) malfunction. Sadly, the 2<sup>nd</sup> October 2019 crash and resulting fire destroyed most of the aircraft. Only the left wing and part of the tail remained.

On the morning of 2<sup>nd</sup> October, the 'living history' flight was delayed 40 minutes because of difficulty starting one of the four engines. The pilot shut down the other three engines and used a spray can to 'blow out the moisture' in the engine that refused to start. The aircraft took off from Bradley International Airport in Windsor Locks, Connecticut, at 09:48 local time (13:48 UTC). It carried three crew and ten passengers. A witness reported that an engine was sputtering and smoking. At 09:50, 2 minutes after take-off, the pilot radioed that there was a problem with engine number 4. The control tower diverted other traffic for an emergency landing. The aircraft came in low, touched down 1,000 feet (300 m) short of the runway, clipped the instrument landing system (ILS) antenna array, veered to the right off the runway across a grassy area and taxiway, then crashed into a de-icing facility at 09:54; the aircraft then burst into flames. Seven occupants were killed, and six were injured including one person on the ground. Of the injured, some severely injured were rushed to the hospital, including one who was airlifted. Among the dead were the pilot and co-pilot, aged 75 and 71 respectively. The airport was closed for 3½ hours after the crash. One of the passengers from the Connecticut ANG, managed to open an escape hatch after the crash, despite having a broken arm and collarbone. An investigation is now underway to establish the cause of the accident. Whatever the outcome it is a sad loss of life and the sad destruction of a beautifully restored B-17.



## DRONE OFFENSIVE - BY LAWRENCE HAYWARD

I first heard of an aerial drone when I was in the British Army in 1970s and heard about the Royal Artillery Batteries that were equipped to launch the AN/USD-501 Midge Drone off the back of a Bedford 4-ton truck. Midge stood for Military Intelligence & Data Gathering Equipment and it was able to fly for 150 Km typically in a circle back to its launch area where the rolls of film were removed for development in a couple of hours! Fast forward 50 years, and who would have thought that toy drones of ten years ago could be developed in to weapon of war, so revolutionary that a modern battlefield, with troops on the front-line fighting Daesh (ISIS) in Syria, will look as antiquated as a cavalry charge in a decade's time! With massive advances in digital camera optics, battery power, computing, GPS, laser targeting, communications, and miniaturisation of electronics, we have very nearly got to the stage where if you can dream it, then you can make a drone do it!

Just like those people a decade ago who first managed to fit a camera to a RC mini drone and use it to spy on their neighbourhood (and their neighbours' daughters), the military initially thought of drones in terms of observation rather than attack, very much like the Royal Flying Corps in 1912 with their first aircraft. However, it wasn't long before the offensive capabilities of drones started to be dreamt up. First there were of course the aircraft sized drones in 1960s that were developed twenty years ago into Predator type drones, that fly at great height and at very long range, with the capability to read a car number plate at high altitude and destroy the vehicle without being seen. When Predator types were used against Daesh and Al-Qaeda they were fairly safe but more recently when used against 'nation states' they



have fallen victim of AA missiles. However, attention has turned to miniature versions of Predators (pictured) with an incredible range of 130 km (and cheaper than \$130m for a 'big one'). Now of course it is mini helicopter drones for offensive purposes that are all the rage! Now there are endless ideas under consideration for killer drones. I have already seen online demonstrations of small drones being fired in to the air singularly (photo below) and in multiple numbers out of mortars, whereby the drones are folded for firing in the canister but then once fired literally spring into life in the air before heading off in a predetermined direction. In such a manner an artillery 'barrage' could easily create a swarm of drones perhaps as high as a thousand in number, to

overwhelm the enemy. So, what would that swarm be able to achieve, I hear you ask? Well the simplest idea could be to have them act as aerial anti-personnel mines, by flying to an area en masse and after landing be self-armed to await a soldier's foot. With GPS, the landings would be accurate and allow the drone equipped army to establish 'safe' areas and 'kill zones' known only to their side, but not to the enemy. Accurate deployment would be so much more useful, as opposed to drones being dumped in one field, that could be cordoned off. As for payload, I have detonated a finger sized bit of TNT in the Royal Engineers and seen it blow a large hole in the ground, so even with a very small load, a small drone could certainly pack a punch. The swarm could be programmed to fly at low level to avoid counter measures, and after release receive very little of further communications, thus avoiding jamming. Such swarms could also have the ability to relocate to another area, though I guess some would fail, leaving hazards all over the place, for children and cattle to 'find' at a future date. While there is a moratorium on land mines, I know of none yet on military drones. The 'swarm' concept has been around for some time, but the key sticking point to date has been achieving the level of coordination and cooperation needed to enable large numbers of individual drones to act together as an integrated, cohesive unit. If a country like China was to solve that problem first, the technology 'offsets' which have for so long given the US and its allies an almost unassailable advantage over other armies could be largely swept aside, especially as the preeminent trend of the last 25 years has been for fewer but more advanced and expensive weapons systems. An F-35A currently costs about US \$94 million! Imagine how 'upset' the RAF would be if such an aircraft was to be lost at low level to a swarm of cheap drones!



In the future, sophisticated platforms could be overwhelmed by the sheer weight of numbers of very much cheaper drones, which though technologically inferior, are driven by intelligent software and superior algorithms. According to reports emerging from China, it seems to be the way at least some in Beijing are thinking, viewing swarm technology as the means to target high-value US assets, should the need ever arise. Given Chinese capacity to manufacture cheap electronic goods, and the kind of processor, networking, power and thermal management research currently rumoured to be being funded by military budgets, both directly and at arm's-length, it seems China is already gearing up for the 'swarm wars' to come.

Therefore, development continues apace with offensive drone weaponry, both with and without human control. With miniature radar, infrared or heat seeking equipment fitted to a small drone, it is now possible for an autonomous drone or rather drones, to lay in wait and attack people, when they pass by, day or night and in all weathers in which a drone can fly. Once developers have solved issues of extending the range, increasing the payload, communicating with a drone and adding protection from counter measures, the world will face a very daunting weapon. In the future rather than shelling a town like Raqqa for days trying to flush out Daesh a swarm of thousands of drones, will instead fly in to town, and hunt down the enemy on a very personal one to one level, perhaps by heat seeking individuals of a size larger than a child for visual inspection before elimination. Also, for every drome battered to bits by the enemy there would scores more drones waiting to have a go, but of course if a drone detonated after being hit that would do the trick in close proximity, so the only way to avoid them would be for the enemy to stay under cover. But 'under cover' would not be the same as being under cover when it rains, as kamikaze drones have the ability to blow entrance holes of buildings on behalf of other exploding drone 'comrades' who would then storm the building through doors and windows. Many of you may not be familiar with drone racing, but with live visual input drones may be flown remotely by the operators at speeds of up to 120 mph. With skilled operators it is truly amazing to see them avoid obstacles in an instant at speed. So, if killer drones entered a building it's unlike the enemy occupants would survive. If by chance the occupants were able to resist, it's likely that a 'Mother drone' used to relay comms to the killer drones, would electronically mark the target for a shell or a missile to destroy it from afar. 'Mother' drones might also be used to look for women and children or hostages and mark their position by GPS and prevent attacks from friendly forces or other friendly drones. It is perhaps small wonder then that the Pentagon has been rapidly upping its own research.

### **BOEING 737MAX UPDATE - VIA REUTERS**



At the Dubai Airshow, Boeing moved on Saturday, 16<sup>th</sup> Nov 2019, to ease tensions with regulators over the return to service of its 737 MAX, saying it was up to the US Federal Aviation Administration and its global counterparts to approve changes to the jet in the wake of two accidents. The FAA told its staff this week to take whatever time was needed to review the grounded plane after Boeing said it expected the FAA to certify the 737 MAX in mid-December 2019. "We put some targets out that still line up to December 2019 type certification," Stan Deal, chief executive of Boeing Commercial Airplanes, told reporters.

"The FAA has said they are not going to put a time frame on it, and we are going to track behind them on this," he told a news conference ahead of the Dubai Airshow. Boeing's mid-December 2019 estimate sent the plane maker's stock price soaring on Monday, though it also said it would not win approval for changes to pilot training until January.

Meanwhile, U.S. officials privately said this week that Boeing's timetable was aggressive - if not unrealistic - and was not cleared in advance by regulators. FAA Administrator Steve Dickson indicated that the FAA would decide in its own time whether to 'unground' the plane that has been involved in two fatal crashes in five months, killing 346 people in Indonesia and Ethiopia.

"This effort is not guided by a calendar or schedule," Dickson wrote in a memo seen by Reuters. Steve Dickson is due to attend the Dubai Airshow in November. Speaking on the eve of the show, the head of Boeing divisions spanning jetliners, defence and services expressed sympathy for the relatives of victims of the two crashes that led to the plane's worldwide grounding in March 2019. Realistically the Boeing 737Max is unlikely to fly until the spring of 2020 and until then, many of these Boeing 737Max aircraft will remain at Boeing Field Seattle, (*photo right*).



Strangely no account has been taken regarding any future passenger reaction to flying in an aircraft that they perceive as defective, which in turn will surely reduce future Airline orders or even for airlines not to want them back after modification! I certainly won't be booking next year's holiday with anyone who offers a flight in one, not even for a big discount! (LPH)



## **BOEING KC-46 PEGASUS PROBLEMS - VIA KEY AERO WITH ADDITIONS BY LAWRENCE HAYWARD**

The Boeing KC-46 (named Pegasus) is a military aerial refuelling and strategic military transport aircraft developed by Boeing from its Boeing 767 jet airliner. In February 2011, the tanker was selected by the United States Air Force (USAF) as the winner in the KC-X tanker competition, to replace older Boeing KC-135 Stratotankers. Allegedly Boeing got the contract, by undercutting Airbus which also bid for the contract. The first KC-46 aircraft was delivered to the USAF in January 2019 but it has run in to trouble as there are currently four 'Category One' deficiencies affecting the aircraft – classified as an identified risk that jeopardises lives or critical assets. Of particular concern are the problems relating to the remote vision system used to guide the refuelling boom. The current display offers limited acuity, reducing the boom operator's vision to 20/50 equivalent.



Another Category One deficiency emerged in early September when locks that keep cargo in place appeared to come unlocked during multiple operational test and evaluation flights. As a result, Air Mobility Command (AMC) prohibited the KC-46 from transporting cargo and personnel. Boeing has offered a two-step approach to address the problem, with an interim step of using tie-down straps to secure cargo before working on a permanent solution. Boeing is also working on a design change to the refuelling boom actuator to make it more sensitive to smaller receiver aircraft, another Category One issue. Earlier this year, the Pegasus was affected by issues with foreign object debris in the aircraft, but the latest delivery, the 19<sup>th</sup> aircraft was unaffected. These aircraft have now been delivered to McConnell AFB, Kansas; Pease ANG Base, in New Hampshire; and Altus AFB, Oklahoma. The latest two deliveries (the 18th and 19th) arrived at McConnell AFB on 29<sup>th</sup> August 2019.



To cope with delays, AMC is also considering slowing down retirements of the KC-135, which may be just as well, as some aircraft in NATO, still rely on flight refuelling from a hose, rather than a boom. In April 2014, the US Government Accountability Office (GAO) found that the KC-46 program was projected to underrun its projected cost estimate of \$51.7 billion by \$300 million. In May 2014, the Air Force estimated the cost of the development program, including the first four aircraft, could rise from \$4.4–4.9 billion to \$5.85 billion. In July 2014, Boeing recorded a \$272 million pre-tax charge to cover a redesign of the tanker's wiring, with 5-10% of the wiring bundles did not have sufficient separation distance or were not properly shielded to meet a USAF requirement for double or triple-

redundant wiring for some mission systems. In September 2014, it was confirmed that the wiring redesign would delay the first Boeing 767-2C flight and the following year in July 2015, Boeing announced that it had taken a further \$835 million pre-tax charge to pay for redesigns and retrofits required to address a faulty integrated fuel system.

Recently Boeing's KC-46A Pegasus tanker formally transitioned into its initial operational test and evaluation (IOT&E) phase with the US Air Force (USAF) on 22 October 2019. The IOT&E process is intended to test the KC-46A's effectiveness, suitability and capabilities for its three primary missions: air-to-air refuelling, cargo and passenger operations, and medical evacuation duties, says the USAF. As the service starts operational tests with the KC-46A, Boeing will continue to work in parallel on fixes to so-called Category One deficiencies in the 767-based aircraft's design. It decided to move forward with the activity despite the tanker's lack of full functionality, believing that in the long run this will be the fastest way to achieve full operational capability by 2022 or 2023. "Air force leadership remains concerned with Boeing's slow progress resolving issues limiting the KC-46's operational capability and continues to work with Boeing to ensure the KC-46 meets all essential mission requirements," the service says. In particular, Boeing is having difficulty improving the resolution of the KC-46A's remote vision system. Boom operators currently see images with degraded 20/50 vision and poor depth perception, the air force says. The camera also has struggled to adjust to sun glare, which causes the monitor to washout.



Boeing is also working to fix another Category One deficiency found by the USAF in September. During a recent mission, the service found that cargo floor restraints became unlocked in flight. These are used to hold pallets in place, preventing cargo from shifting or sliding around during flight: an event which might endanger the aircrew and aircraft. After discovering the problem, the USAF banned the KC-46A from carrying passengers and cargo, with a resumption yet to be announced. The USAF has said the KC-46A is “a great airplane”, but is frustrated by Boeing’s quality problems. The service is eager to see those shortcomings fixed and procure more of the type so it can retire its aged Boeing KC-135s. Boeing received a \$2.63 billion contract from the USAF for 15 additional KC-46As in September, taking the total number on order so far to 67 tankers, from a planned eventual total of 179. It has not been an easy time for Boeing, especially in relation to the recent problems with the Boeing 737Max, with a risk of huge reputation damage!

## **VOYAGER TANKER PROBLEMS – BY JOHN ROACH**



In January 2004 the Ministry of Defence announced that a variant of the A330 MRTT had been selected to provide tanking service for the RAF for the next 30 years under the Future Strategic Tanker Aircraft (FSTA) programme, replacing the RAF's existing TriStar and VC10 tankers. The Ministry of Defence then began negotiations with the AirTanker consortium. On 27 March 2008 the UK Ministry of Defence signed a deal to lease 14 aircraft under a private finance initiative arrangement from EADS-led consortium AirTanker, with the first aircraft to enter service in 2011. There are two versions, designated Voyager KC2 and Voyager KC3; the former will be fitted with two Cobham 905E under-wing refuelling pods, the latter with a Cobham 805E Fuselage Refuelling Unit in addition to the under-wing

pods. None of the RAF aircraft are fitted with the Aerial Refuelling Boom System (ARBS). Both versions of Voyager are powered by a pair of Rolls-Royce Trent 772B-60 engines. As of May 2014, nine aircraft had been delivered, completing the "core fleet" of RAF aircraft. By August 2014, ten had been delivered with one for civilian purposes. The remaining deliveries are to be a "surge capability", available to the RAF when needed, but otherwise available to Airtanker for tasks such as "release to the civil market, less its military equipment or to partner nations in a military capacity with the MoD's agreement" As of 14 March 2016, all 14 Voyagers had been delivered to the RAF. In November 2015, it was announced that an RAF A330 MRTT would be refitted to carry government ministers and members of the Royal Family on official visits. The refit would cost £10m but would save around £775,000 annually compared to the current practice of chartering flights. The aircraft, nicknamed "Cam Force One" by some in the media, will be fitted with 158 seats. The aircraft entered service on 6 May 2016, with the then Prime Minister David Cameron making his first flight on it to visit the 2016 Warsaw summit. Because the RAF's Voyagers are only capable of probe-and-drogue refuelling, they are unable to refuel current or future RAF aircraft that are fitted solely for refuelling from the flying boom, including the RC-135 Rivet Joint, C-17 Globemaster, E-7 Wedgetail and P-8 Poseidon. In April 2016, the RAF stated an interest in the idea of fitting a boom to at least some of the Voyager fleet, bringing the RAF's aircraft into line with other A330 MRTT operators around the world.



Fitting a boom would not only allow operation with those types in the RAF not fitted for probe and drogue, but would also extend the flexibility of the RAF Voyager fleet in aerial refuelling operations for other air forces that operate boom refuelled aircraft.

## **FT478 BEECHCRAFT 17 STAGGERWING IN FLEET AIR ARM SERVICE - BY JOHN R ROACH**



During my recent visit to the air show at Wittman Airfield, Oshkosh, in Wisconsin, I noted a Beech 17 Staggerwing in Fleet Air Arm colours. This particular example FT478 (US civil registration N582) has the following history; Built in 1944 as a Beechcraft D-17S (construction number 6704) it was initially assigned to the U.S. Navy with serial 23692 and then to the USAAF as serial 44-67727. It was lent to the UK under the Lend Lease Act agreement under contract number AC-31386, as a Traveller GB Mk.1 with the military serial FT478 was handed over to the Royal Navy on 4<sup>th</sup> March 1944 and then shipped from Newark, New Jersey to the UK on 14<sup>th</sup> April, after which it was allocated to 701 Naval Air Squadron and based at Heston from July 1944 to September 1945 as a light transport.

After VE-Day this particular aircraft returned to the US Navy in 1946, as serial number 32876 on 31st July 1946. However, the USN had no further use for it so it was sold onto the civil market as N1183V to Mr R.S. Gimablin, later becoming N582 in 1978/9. It was later sold to H.G. Peier of Zurich and ferried through Glasgow on 6<sup>th</sup> August 1988, for a Christie's sale at Duxford on the same date. It was then purchased by a US resident and returned to the USA. The Beech bi-plane was then restored to its original Fleet Air Arm configuration and livery, at the historic Flabob Airport in Riverside, California. The work began with Mark Lightsey of Aero Craftsman and was completed by Nando Mendoza of West Coast Air Creations. This beautiful airplane is owned by Granger Haugh, a former US Navy pilot. The restoration was completed in 2018 and won Best Light Transport at EAA Air Venture Oshkosh 2018 as well as a Silver Wrench for West Coast Air Creations.

During WW2, seventy-five 75 Traveller GB Mk 1s were delivered from Newark NJ via end Lend Lease arrangement with the United States (requisition number 41097) to the Fleet Air Arm, and allocated with the serial batch FT461 to FT535. They were all shipped to the United Kingdom from 16<sup>th</sup> February 1944 and the last of the batch being transported on 7<sup>th</sup> June 1944 namely FT524. Thirty one aircraft were ordered by the Royal Air Force (in three batches of 18,12 & 1) tragically one (serial FZ429) was written off in the USA prior to delivery and twelve (serials FL659-670) were lost at sea (on the *S.S Agurmonte*) on 10<sup>th</sup> June 1943 whilst being delivered to the UK, the net result was that RAF only received eighteen aircraft.



One notable example (FT505) was used by Cdr. J Sholto Douglas, whose later claim to fame was when he became the chairman of British European Airways. These Staggerwing bi-planes were operated by numerous squadrons including 701 NAS, 778 NAS and 78 NAS at many bases in England such as Heath Row, Heston, Lee on Solent and Lossiemouth and Donibristle in Scotland. The majority of Beech 17 Traveller Is were returned to USA and were sold to civil owners. But one frame remained in the UK becoming G-AIHZ (ex FT535) on 17<sup>th</sup> September 1946 and was exported to South Africa in June 1948.

**Credit:** Granger Haugh, Air Britain and various internet sites for wartime photos, which are quite rare.



## SEARCHING FOR A BELL HUEY COBRA - BY JOHN R ROACH.

Recently (September) I visited The Helicopter Museum at Weston-Super-Mare and met the owner namely Elfan Ap Rees. I had not been in contact with Elfan for about two years and it was a perfect opportunity to view the many new and fascinating subjects this museum has accrued over the years.

During our conversation I mentioned that I had recently been to the USA in July to visit the EAA air show at Oshkosh Wisconsin and that on our return to Chicago Robert Urquhart and I had visited the Russell Military Museum at Zion Illinois. This establishment calls itself a museum but to be honest 95% of the exhibits are in compound that can be only described as a scrap yard!

I mentioned to Elfan that in his museum he did not have a Bell AH-1 Huey Cobra, he told me that he had been looking for example for many years and would like to obtain one for the museum. So, when I informed him that at the Russell Military Museum there were four examples (see photos) of the Cobra, his eyes lit up. Below, photos of the Russell Museum; I leave you to judge whether you would call this a museum!!!!

*Below Left & Right; Russell Military Museum's line up of UH-1 Iroquois / HU-1 "Huey", just left outside and open to the elements*



*Above Left; What looks to be the remains of a Chance Vought A7 Corsair II, with a US made Infrared Xenon Searchlight parked in front and of the type once operated by CAS Club Secretary in the Royal Engineers. Above Right; This F-16 dual trainer was built in 1981 and it is amazing to think the type is still active around the world, the best part of 40 years later, and comparable to having a 1939 Spitfire still in service in 1979!*





*Above left; An engineless Grumman OV-1 Mohawk aircraft. Above Right; a large Sikorsky CH-34 Choctaw (S-58A) in a centre of a line-up of AH-1 Huey Cobras and UH-1 Iroquois / HU-1 Hueys.*

*Below; Other vehicles that are left out in the open, giving the impression that the Museum is actually a scrapyard with a museum attached or the other way around, but if they leave much of it out in all weathers then not much will be available in future years. I'm hoping some of it is available to buy as I'm hoping one of the two bright yellow M715 Kaiser Jeeps in the far end of the line-up will be equipped with the generator for the Xenon searchlight mentioned above; but will they both fit in John's hand luggage next year? Bottom Right; inside the museum is a collections of Jeeps & other vehicles.*



## THE BRISTOL BRIGAND - BY LAWRENCE HAYWARD



If there ever was an aircraft that thought it could 'dine out' on its predecessors' excellent reputation, the Bristol Brigand was not it, as it was not an improvement on the tough WW2 Beaufighter. The Brigand was conceived in 1942 to Air Ministry specification H.7/42 calling for a faster long-range torpedo / anti-shipping aircraft as a replacement for the Beaufighter then in service with Coastal Command. The Brigand was closely related to the Bristol Buckingham which was conceived in parallel as a greatly improved Bristol Blenheim, but by 1943 it was quite clear that the DH Mosquito was far superior, so Buckinghams were instead built in small numbers as Transports and Trainers. The Bristol Brigand TF.1 used the same wings and tail as the Buckingham and had a crew of three; the pilot,

navigator/bomb aimer and radio-operator/gunner who were grouped in the forward cockpit. It made its first flight late in the war on 4th December 1944, and by the time the first dozen aircraft had been tested for service at Development Units at Gosport and Thorney Island, it was May 1946 and Coastal Command had no use for such aircraft. The TF.1s (*above left*) were therefore returned to Filton and converted to B.1 light bombers, as were the remaining aircraft in the batch of 147 that were built. Subsequently B.1s were used by the RAF during the Malayan Emergency and in Kenya until replaced by the de Havilland Hornet (in Malaya) and the English Electric Canberra jet bomber elsewhere. The first B.1s were delivered in 1949 to 84 Squadron at RAF Habbaniya to convert from the Beaufighter and 5 Squadron in Aden, a Hawker Tempest unit. The first unit to convert from Beaufighters to the Brigand was 45 Squadron, based at RAF Station Tengah on the Island of Singapore, which operating in support of British forces against the Communist Guerrillas, engaged in an insurgency in Malaya. The first Brigand was flown to Tengah from RAF St Athan in November 1949, a trip of 16-days. Brigand B.1 was notable as both the first purpose-built multi-role bomber for the RAF and its last piston-engined bomber.

The first combat operation conducted by a Brigand, piloted by Flight Lieutenant Dalton Golding and crewed by radio/radar operator Peter Weston, in conjunction with four Beaufighters of No. 45 Squadron against guerrilla targets in the jungle west of Kluang, Malaya on 19<sup>th</sup> December 1949. The Brigand on this mission carried three rockets, one 500 lb (230 kg) and two 1,000 lb (450 kg) bombs. However, a fully loaded Brigand could carry either a 22 in (560 mm) torpedo under the fuselage with two 500 lb (230 kg) bombs beneath the wings, one 2,000 lb (910 kg) or two 1,000 lb (450 kg) bombs beneath the fuselage and had underwing racks for 16 RP-3 60 lb (30 kg) rocket projectiles. The first operation was successful, and No. 45 Squadron fully completed its conversion to the Brigand. Later 45 Squadron, was joined by 84 Squadron (*seen left in formation*) were routinely engaged in strikes against Communist Insurgent targets throughout Malaya, direct and in close support of ground forces, as well as providing air cover against possible ambushes of ground troops and convoys.



However, problems with the Bristol Brigand soon became apparent during operations in Malaya, with undercarriages failing to lower. This was traced to rubber seals in the hydraulic jacks that deteriorating in the hot, humid climate. Just as this problem was being resolved another problem arose, more serious because it led to fatalities; a propensity for aircraft damage and loss during strafing runs employing the four 20 mm cannon. An accumulation of gases in the long cannon blast tubes, which ran under the cockpit, were igniting through use of high-explosive shells. This in turn severed hydraulic lines, which would burn. This was cured by drastically reducing ammunition loads and using only ball rounds.

Worst of all the Brigand also had a tendency to shed a propeller blade, leading to complete propeller failure, which in turn often lead to the engine being wrenched off the wing (and sometimes the wing as well) leading to an inevitable crash. Such a situation was witnessed by CAS Member, Terry Coffey, while he was based at RAF Tengah in June 1951.



While working on a DH Hornet, Terry was first alerted by a change in an aircraft's engine note, as it began to overspeed and looking up he saw a dark object fall from a Brigand, which turned out to be the engine! The aircraft that crashed was RH811 of 84 Sqn (*the very same aircraft pictured above left*). According to 84 Sqn records, Sqn. Leader G.C. Unwin the CO who had also returning from a strike, told the pilot of RH811 to nurse the engine and if the vibration got worse to feather the props. However, as the pilot came around into Tengah circuit at around 500 ft (Terry remembers the aircraft being much higher) and when the pilot slightly increased the revs on the faulty engine, it tore itself off its mountings. The Pilot managed to parachute out of the aircraft, but his Navigator F/O R.E. Matthews was killed. The Brigand crashed near Tengah married quarters and burnt itself out. The problem was found to be corrosion in the propeller locking rings.



Sadly 45 Sqn, also based at Tengah with Brigands lost an aircraft (*VS857 coded 08-K seen left*) to the same cause at around the same time in June 1951 where it crash-landed in a nearby Kranji creek and overturned. The Pilot Sgt Martin was rescued by his Signaller Sgt Weston but sadly Sgt V Bowen the Navigator was killed. More frequent maintenance helped alleviate this problem and when everything was working properly the Brigand was considered by its pilots to be a good aircraft. The Brigand was pleasant to fly, having nicely balanced flying controls and a wide range of power in the two Bristol Centaurus engines. These features made the aircraft good for formation flying, which was important to the method of operation. The aircraft also

had sufficient range to reach targets all over Malaya from the Squadron's new base at Tengah, on Singapore Island. As the Brigand became subject to more restrictions both Squadron commanders had serious doubts about the continued use of the aircraft. It was decided to continue operating them, since as long as very thorough maintenance was carried out it was felt that nothing else could go wrong! But then another design flaw arose in the leather bellows used to deploy the air brakes during dives. In the tropical climate, the leather would rot, causing the brakes to fail. This led to Brigands losing wings in dives due to excessive airspeed or rotation as only one brake deployed. When this problem was discovered the air brakes of all Brigands were wired shut, decreasing the aircraft's dive-bombing capabilities. No. 45 Squadron converted to de Havilland Hornets in January 1952 while 84 Squadron was disbanded in February 1953. Soon after this, the Brigands were grounded and withdrawn from service. Brigands were also used operationally over Aden by 8 Squadron from 1950 to 1952, when it was found that the Brigand mainspars were suspect; the Brigands were replaced by de Havilland Vampires.

The RAF soon began looking for other less stressful on the airframe of the Brigand and it was decided that their use on meteorological flights might 'fit the bill' and take up a role for a type that the RAF was glad to be rid of. Consequently, a few aircraft were designated Brigand MET.3 (*See photo right*) and were issued to 1301 Flight RAF at RAF Luqa, Malta, from June 1949, until November 1951.



In 1950 another role was found; that of airborne radar trainer and nine Brigand's were adapted as T.4 radar trainers and were delivered to 228 OCU at RAF Leeming to train radar navigators on the use of Airborne Interception radar. A further variant

with a different radar installation was Brigand T.5 which were converted from B.1s and later all the T.4s were also modified to T.5 standard. The last operator was 238 OCU at RAF North Luffenham which disbanded in March 1958. **With thanks to Terry Coffey.**



## QANTAS FLIGHT - FROM LONDON HEATHROW TO SYDNEY WITH NO STOPS

A Qantas Boeing 787-9 Dreamliner set off on 14<sup>th</sup> November 2019 on an ultra-long-haul flight from London to Sydney as part of a trial for a potential commercial route. The test flight, as part of Qantas's Project Sunrise, saw the Dreamliner carry just 40 people – including crew – to the other side of the world in approximately 19 hours. The flight left London at 6 am and arrived into Sydney around lunchtime on Friday, a Qantas spokesman said. Dreamliners can usually carry between 230 and 300 people, depending on its interior set-up. Currently it is impossible to fly an aeroplane at full capacity of both passengers and cargo from London to Sydney or other cities on the east coast of Australia, without stopping to refuel. It is possible to fly non-stop from London to the city of Perth in Western Australia as it is 1,600 miles closer but the prize is London to Sydney in one 'hop'. Those on board will be mostly Qantas employees and will be fitted with monitors to track their sleep patterns, food and drink intake, lighting, physical movement and in-flight entertainment.

The data will be assessed by researchers from the Charles Perkins Centre – a medical institute at the University of Sydney – to assess the impact of the flight on their health, wellbeing and body clock. A team from Melbourne's Monash University will work with pilots and crew to monitor melatonin levels before, during and after the flight. Melatonin is the hormone that regulates sleep cycles. Pilots will wear a device that tracks brainwave patterns and monitors alertness, Qantas said, to gather data on the best work and rest patterns for long-haul services. The airline said the data on crew wellbeing and alertness will be shared with Australia's Civil Aviation Safety Authority to inform future regulations for ultra-long-haul flights. Qantas will also gather general feedback from passengers on food choices, stretching and wellbeing zones and in-flight entertainment. The airline's chief executive Alan Joyce said previously: 'Ultra-long-haul flying presents a lot of common-sense questions about the comfort and wellbeing of passengers and crew. 'These flights are going to provide invaluable data to help answer them.' It will be the second aircraft to fly the route non-stop – the first touched down in August 1989. Qantas did fly a Dreamliner non-stop from New York to Sydney last month as part of Project Sunrise, although the route is around 1,000 miles shorter. It is due to make a final decision on the viability of Project Sunrise as a commercial flight route by the end of the year. **Credit Metro and Facebook**



## THE FOOTBALL WAR – BY LAWRENCE HAYWARD



So, the saying goes in Central America (and possibly Wycombe Wanderers ground on a bad day) a game of football is not a matter of life and death, it's more important than that! This is exactly how El Salvador and Honduras considered the game in the 1960s and probably still do! Consequently, the Football War (also called the Soccer War or the 100 Hour War), broke out between El Salvador and Honduras on 14<sup>th</sup> 1969, and apart from fighting on the ground, there was also a short air war. To outside observers it seemed a bit extreme to start a war over soccer, but in truth football was not the main reason and is best considered as the 'spark' or the 'last straw' in tensions between the two countries that coincided with rioting during a 1970 FIFA World Cup qualifier, with each country desperate for their team to attend the 1970 World Cup in Mexico.

Two years prior to the Football War, increasing problems developed between Honduras and El Salvador. In May and June 1967, a series of incidents along the border aggravated tensions considerably. One incident involved the capture of two Salvadoran officers and thirty-nine

enlisted men whose truck convoy had penetrated several kilometres into Honduras. The Salvadoran troops were finally returned over a year later, but the tensions continued to mount. Although Honduras was much larger than El Salvador, it had a much smaller population. Conversely El Salvador was very overpopulated and over many decades peasants from El Salvador had crossed the border and farmed large areas of western Honduras, without any interference. However, Oswaldo López Arellano, the President of Honduras, (and former head of the Military Junta) with the typical over '90% approval rating' from the electorate, started blaming the deteriorating Honduran economy on immigrants from El Salvador, but he failed to mention he really wanted them out to allow a major US Banana supplier to take ownership of immigrant's land and grow the fruit on an industrial scale. He neglected to declare the millions he received in bribes. The relationship reached a low when El Salvador met Honduras for a three-round World Cup football elimination match in June 1969. This match was held in the capital of Honduras; Tegucigalpa. To ensure El Salvador lost the match, local Hondurans staged an all-night riot outside the El Salvadorian Team's hotel to ensure they got no sleep and El Salvador lost 1-0. In addition, there was violence between Hondurans and El Salvadorian peasants in western Honduras. A week later Honduras faced El Salvador, this time in San Salvador. Rather unsurprisingly the people of El Salvador got their own back by making so much noise outside the Honduran Teams hotel, such that Honduras lost 3-0 to El Salvador and Honduras lost again 11 days later by 2 goals to 3 for El Salvador. However, by this time El Salvadorian peasants were suffering more vicious attacks and even rape and murder in Western Honduras and were then threatened with expulsion. In the end as many as 130,000 Salvadorans were forcibly expelled or fled from Honduras. By this point in time the El Salvadorian Government lost patience with Honduras and invaded on 14<sup>th</sup> July 1969, ostensibly to save El Salvadorian peasantry. When the war began, the Salvadoran military launched an attack against Honduras which had a weaker army, allowing the El Salvadorian's to advance far into Honduras, threatening the capital.

To support their ground forces each side deployed their small air forces, which at that time, were equally equipped with WW2 era aircraft of U.S. origin including piston engined Cavalier F-51D Mustangs, F4U-1, -4 and -5 Corsairs, T-28A Trojans, AT-6C Texans and Douglas C-47 Skytrains converted into bombers.

The Salvadorian Air Force were first to launch attacks using their C-47 Skytrains with homemade bombs or explosives that some accounts say were thrown out of the cargo door or strapped to the undersides for attacking targets inside Honduras. The Salvadoran air-raid targets included Toncontin International Airport, which was a failure but left the Honduran Air Force slower to react, as Toncontin was their main air base, one of just two airfields in Honduran Air Force.





However, the Honduran Air Force did manage to strike the Salvadoran Ilopango Airbase on the morning of 16<sup>th</sup> July. When the bombs began to fall, Salvadoran anti-aircraft artillery started firing, repelling some of the bombers. The bombers also had orders to attack the Acajutla Port, where the main oil facilities of El Salvador were based and the minor oil facilities at Cutuco. By the evening of 16<sup>th</sup> July, huge pillars of smoke arose in the Salvadoran coastline from the burning oil depots that had been bombed.



The following day, 17<sup>th</sup> July, a Honduran Air Force Vought F4U-5NL No. FAH-609 Corsair flown by Capt. Fernando Soto, and his wingman Captain Edgardo Acosta engaged two Salvadoran TF-51D Cavalier Mustang IIs which were attacking another Corsair while it was strafing targets south of Tegucigalpa. Soto entered a turning engagement with one Mustang and blew off its left wing with three bursts of 20 mm AN/M3 cannon, killing pilot Captain Douglas Varela when his parachute did not fully deploy. Later that day the same pair spotted two Salvadoran FG-1D Goodyear Corsairs. They jettisoned hard point stores before climbing and made a diving attack; Soto set one Corsair on fire only to find its wingman on his tail. An intense dogfight between them ended when Soto entered a Split-S, giving him a firing position, which

he used to shoot down Captain Guillermo Reynaldo Cortez, who died when his Corsair exploded. One other Corsair and a C-47 are listed as probables. The war was the last conflict in which piston-engined fighters fought each other. Captain. Fernando Soto's Corsair is now on display at the Museo del Aire in Tegucigalpa, Honduras. Amazingly El Salvador continued to fly its surviving Corsairs until 1975 and Honduras did not retire its fleet until 1979. Many of the surviving Corsairs such as this camouflaged ex-El Salvadorian example pictured below, were snapped up by the war bird collectors and are still airworthy today.

As for the war the Organization of American States (OAS) negotiated a cease-fire on the night of 18 July (hence "100 Hour War"), which took full effect on 20<sup>th</sup> July. Salvadoran troops were later withdrawn from Honduras but not straight away and actually left on 2<sup>nd</sup> August. The persuasive pressures included the possibility of OAS economic sanctions against El Salvador and the dispatch of OAS observers to Honduras to oversee the security of Salvadorans remaining in that country. The actual war had lasted just over four days, but it would take more than a decade to arrive at a final peace settlement.



Both sides of the Football War suffered extensive casualties. Some 300,000 Salvadorans were displaced; many had been forcibly exiled or had fled from war-torn Honduras, only to enter an El Salvador in which the government was not welcoming. Most of these refugees were forced to provide for themselves with very little assistance. Over the next few years, more Salvadorans returned to their native land, where they encountered overpopulation and extreme poverty. El Salvador suffered about 900 mostly civilian dead. Honduras lost 250 combat troops and over 2,000 civilians during the four-day war, but true figures are hard to establish. The war resulted in a 22-year suspension of the Central American Common Market; a regional integration project that had been set up by the United States largely as a means of counteracting the effects of the Cuban Revolution. Most of the war was fought on Honduran soil and thousands more were made homeless. Trade between Honduras and El Salvador had been greatly disrupted, and the border officially closed. This damaged the economies of these nations tremendously and threatened the Central American Common Market.

As for the World Cup, Honduras never qualified and El Salvador's hopes of winning in 1970 were dashed when they were eliminated from the World Cup in the first round after losing their first three matches!





*Above Left; The Corsair flown by Cap. Fernando Soto is now on display at the Museo del Aire in Tegucigalpa, Honduras. Above Right; an F-51 Mustang on the Salvadorian Air Force in typical camouflage colours. Below right; a Salvadorian Air Force Corsair in camouflage in comparison to Honduran AF that retained the USN blue of the WW2 era or overall white as an alternative! However rather confusingly El Salvador also had Corsairs in the same blue and white colours!*



*Above Right; A Salvadorian T-6 Texan. Above Left; The Salvadorian C-47 that opened the four-day war with Honduras (depicted) by flying a tricky solo bomb run over Toncontin airport in an attempt to destroy the enemy's pursuit planes parked out in the open. This plane was never designed as a bomber and it was no wonder that their mission failed, considering that they had to roll the 100-pound bombs out by hand through a cargo door!*



*Photo left; A North American FAH T-28D Trojan 216 of the Honduran Air Force in 1969. The part they played in the Football War is unclear but the type was capable of acting as a strike aircraft equipped with machine guns and rockets. As the conflict was started in a rush without prior preparation, it was common for aircraft not to carry any camouflage.*

*Photo Right; one of the slightly more modern aircraft in the conflict was the Cavalier F-51 Mustang that was a modernised version of the wartime P-51 Mustang. The new aircraft had a revised wing and wingtip fuel tanks to extend its range. Later Cavalier proposed a turboprop version for poorer air forces of the world, replacing the original V-12 inline engine used in this Salvadorian AF example*



## A WINTER'S TAIL – BY BRIAN A L JONES



By chance, I recently came across the set of three British Airports Authority photographs, reproduced here, which record the results of an extraordinary event at Heathrow on 15<sup>th</sup> January 1973. It involved one of the BOAC fleet of Boeing 707-436 airliners, G-APFP (c/n 17717). This aircraft first flew on 29<sup>th</sup> November 1960 and was delivered to BOAC on 22 December 1960. While running a check on its Rolls-Royce Conway 508 engine mounted in No.1 position on the port wing, there was a catastrophic disintegration and accompanying fire, which destroyed the engine, much of the wing. The aircraft was located at an attenuator (noise reduction) rig, to conform with ground running requirements, and this was also seriously damaged (see photos below). The BAA Fire Brigade attended the incident and the photos reproduced here were probably taken or directed by Arthur Kemsley, pictured on the right-hand side of the group in the first photo. Arthur would later become BAA's Chief Photographer. What appears to be snow in the photo is, in fact, residual fire-fighting foam.

Despite the scene of comparative devastation, the Boeing was rebuilt at Heathrow, utilising a wing from a Trans World Airways aircraft that had been taken out of use and G-APFP was returned to service on 3<sup>rd</sup> April 1973, after a test flight the day before, subsequently becoming a British Airways airliner on 1st April 1974, with the change of company titles. In British service it had completed approximately 51,000 hours of flight. G-APFP was delivered to Boeing on 27<sup>th</sup> May 1975 in part exchange for the cost of the new Boeing 747-236B aircraft fleet then on order. The story did not end there, as Boeing donated the 707 to the Franklin Institute in Philadelphia, Pennsylvania, later in 1975. Complicated logistics resulted in the aircraft being cut into three sections to allow it to be floated on a barge down the Schuylkill River into the City centre, unloaded and re-erected outside the Institute. There it remained, connected to the Building's interior by bridge connections, until it needed to be removed to allow for a building extension.





In 1987 the Franklin Institute offered to gift the Boeing 707 G-APFP to any organisation or person that could arrange removal by Jan 1988. Despite more than 100 expressions of interest according to 'The NY Times' of 29<sup>th</sup> December 1987, the cost of removal defeated the proposals and the aircraft was scrapped by October 1988.



While only remotely related to the above story, it is perhaps worth mentioning that the Franklin Institute, is in fact a museum with a leaning towards scientific matters, and has hosted another historic aviation artefact, again positioned outside, for a much longer time than the Boeing 707.

The aircraft on display is, however, the Budd Pioneer, pictured left. This 1930s amphibian was the first aircraft to be constructed of stainless steel, which has allowed it to be displayed outside, but with some renovation in 1969 to overcome some deterioration caused by local air pollution.



Interestingly, the locally based company Budd, probably better known for construction of railway rolling stock, particularly passenger carriages, also dabbled in aircraft construction, culminating in the fascinating Conestoga WWII cargo plane, produced in small quantities. **Acknowledgements;** Bill Robinson, ex-Pan American Airways, who had saved the fire photos for many years, and to Andrew Rossi, for his photo of the Budd Pioneer above. **References;** *The Boeing 707, 720 and C-135* by Tony Pither – Air-Britain Publications (1999)



## THE ITALIAN MACCHI C.202 'FOLGORE' OF WW2 – BY LAWRENCE HAYWARD



In the 1930s the Italian Air Force (*the Regia Aeronautica*) had a preference for open cockpit radial engine bi-plane fighters such as the Fiat CR32 (*photo left*) which was very manoeuvrable and performed well in the Spanish Civil War. From that Fiat developed the CR42 bi-plane roughly equivalent to a Gloster Gladiator which was still used by the Italians in front line service up to 1942. However, even by 1941 it was apparent that such types were very much out of date compared to Allied fighters such as the Spitfire Mk V and the German's very own Messerschmitt Bf 109E or F. While Fiat and other Italian firms still made monoplane fighters after the CR42, the open cockpit still prevailed as the pilots still preferred to be out in the open and have an unrestricted all-round view. Perhaps this also suited the

Mediterranean weather at low to medium altitude! Ultimately such aircraft were deemed too antiquated for front line combat, and in any case, most had been made with insufficient armament, right back to the CR32; all were equipped with just two forward firing machine guns. The *Regia Aeronautica* therefore needed to play a game of catch up. One such type they considered was the Macchi C.202 *Folgore* (Italian for "thunderbolt") developed and manufactured by Macchi Aeronautica. It was operated mainly by the *Regia Aeronautica* from 1941. According to aviation author David Mondey, the *Folgore* has been considered to be one of the best wartime fighters to serve in large numbers with the *Regia Aeronautica*. The C.202 was designed by a team headed by the company's chief of design, Italian aeronautics engineer Mario Castoldi. As per company tradition, Macchi aircraft designed by Mario Castoldi received the "C" letter in their model designation, hence the *Folgore* is commonly referred to as the C.202 or MC.202 (*photo below*). While most Italian fighters of WW2 might be considered as mediocre, what made this aircraft different was that it an Italian-built version of the German Daimler-Benz DB 601Aa engine mated to the earlier radial engine C.200 Saetta (*photo right*), though it did feature a redesigned fuselage for greater streamlining. The improvement in performance has been likened to that of the NA Mustang having its Allison engine replaced by a Packard Merlin.



During July 1941, the *Folgore* went into service with the *Regia Aeronautica*. In combat, it very quickly proved itself to be an effective and deadly dogfighter against its contemporaries. During its service life, the C.202 was deployed on all fronts in which Italy was involved. During late 1941, it commenced offensive operations over Malta and in North Africa, where Italian and German forces were engaged in heavy combat against British and later American operations. The C.202 continued to be used in North Africa as late as mid-1943, by which point the type was withdrawn to the mainland to support defensive efforts in Sicily and the Italian following their invasion by Allied forces. It also saw limited use on the



Eastern Front. Following the 1943 Armistice with Italy, the type was mostly used as a trainer aircraft. The type was also operated by Croatia. The Australian ace Clive Caldwell, who fought a wide variety of German, Italian and Japanese fighters during 1941–45, later stated that the C.202 was "one of the best and most undervalued of fighters". However, the C.202 also had its defects: like its predecessor, the C.200, it could enter a dangerous spin if not handled properly. The radios were unreliable, routinely forcing pilots to communicate by wagging their wings and Western historians regard the C.202 as insufficiently armed, being furnished with just two 0.5 inch and two 0.303

machine guns that had a tendency for jamming. Still in mid-Summer 1942, in North Africa, the *Folgore* achieved a ratio kill/loss better than that of the Messerschmitt Bf 109s.

During 1940-41, the Folgore was put into production using imported DB 601Aa engines, while Alfa Romeo set up production of the engine under license as the RA.1000 R.C.41-I Monsone (Monsoon). Due to initial delays in engine production, Macchi resorted to completing some C.202 airframes as C.200s, powered by Fiat-built radial engines. Nevertheless, by late 1942, *Folgore*s outnumbered all other fighter aircraft in the Regia Aeronautica. The first units selected to be equipped with the C.202 Series I was the 17° and 6° Gruppi, from 1° Stormo, based at the airfield of Campofornido, near Udine, and the 9° Gruppo of 4° Stormo, based in Gorizia. Their pilots started to train on the new fighter in May–June 1941, at Lonate Pozzolo (Varese), the airfield of the Macchi.



Although first deployed in mid-1941, the C.202 did not see action until later that autumn; this delay came as a consequence of the many defects that were discovered upon the first fighter deliveries. Some defects appeared similar to those on the early C. 200 version: on 3 August, during a mock dogfight, Sergente Maggiore Antonio Valle – an experienced pilot, credited with two kills in Marmarica and recipient of a Medaglia di Bronzo al Valor Militare (Bronze Medal of Military Valor) – at a height of 4,000 meters entered in a flat spin and could not recover or bail out, losing his life. The oxygen system was also regarded as being inefficient, causing, at least during the first sorties, up to 50/60 per cent of the pilots to abandon their missions and in some cases having been determined to have caused fatal accidents. By November 1941, the C.202 had appeared on the Libyan front. However, according to aviation author Gianni Cattaneo, the type may have been more of a hindrance than help in that theatre, attributing this to the pilots flying it only being semi-trained, which was in turn caused by the type being rushed into service as Axis air superiority had faded in North Africa, and a lack of spares to maintain it with. The C.202 had a better time on the home front, where supplies were more plentiful and units had more time to prepare and familiarise themselves with the type. The type was quickly put to use outside of North Africa, seeing limited service against the Soviet Union on the Eastern Front where, between 1941 and 1943, together with C.200s, the fighter reportedly achieved an 88 to 15 victory/loss ratio. However, according to authors Jeffery Ethel and Pietro Tonizzo, that ratio refers only to the Macchi C.200 "Saetta".



The Folgore first saw service during the Siege of Malta on 29 or 30 September 1941; their first mission was the interception of British Hurricanes over Sicily. From early October 1941, the Italian units commenced extensive operations over Malta, which provided many opportunities for encounters with RAF fighters. From its initial combat missions, the C.202 displayed marked superiority over the Hawker Hurricane II, which formed the island's main form of aerial defence at the time. However, the Macchi's main weakness, its weak armament, proved to be a problem even at this stage. Over the skies of the besieged island, the new Macchi fighter was not only used to conduct fighter

operations, but also for performing ground attack runs and aerial reconnaissance missions. Among the pilots who flew *recce* C.202s on Malta was Adriano Visconti, later to become a famed ace and credited with at least 10 air victories. The presence of the *Folgore*s in Maltese skies was to last only until the end of November, when most of the unit was transferred to the deteriorating North Africa front. The 4° Stormo returned to Sicily at the beginning of April 1942, with 10° Gruppo, to Castelvetrano. The airport was already the base of Gruppi 7° and 16° from 54° Stormo equipped with some C.202s besides the Macchi C.200s and Fiat CR.42s. The 4° Stormo C.202s flew the first sortie, on 21 April, claiming a Spitfire V, while escorting three more "recce" Macchis from 54° Stormo. The 4° Stormo flew its last mission on Malta on 19 May before moving back to North Africa. In the meantime, the 16° Gruppo had started to re-equip with the C.202s at the end of 1941. During May 1942, the Macchis of 51° Stormo and 23° Gruppo (3° Stormo) also arrived. During Operation Harpoon, one of two simultaneous Allied convoys sent to supply Malta in the Axis-dominated central Mediterranean Sea in mid-June 1942, C.202s were involved in clashing with Sea Hurricanes.

However, it was during this time that the Axis had to abandon their plans for the invasion of Malta (known as Operation C 3) due to the aircraft and men being necessary elsewhere. On 7 March 1942, the carrier USS Wasp delivered the first Spitfires to Malta, and the Axis' air-superiority started to shift in favour of the Allies. At the end of June, however, about 60 C.202s could be mustered in Sicily to operate against Malta, which had been receiving the Spitfire Mk. V in ever-increasing quantities. The Macchi could out-turn the Spitfire, but the *Folgore*s suffered from the lack of a more powerful armament, as four machine guns was often not enough. Nevertheless, the C.202's pilots achieved many successes against RAF Spitfires. The top scoring Italian pilots in this theatre included Capitano Furio Niclot-Doglio (a 7 kills ace, shot down and killed on 27 July 1942 by RAF ace George "Screwball" Beurling) and Sergente Ennio Tarantola. Both pilots flew with 51° Stormo C.T., the most successful Italian unit over Malta, having reportedly achieved a score of 97 aircraft destroyed for the loss of only 17 *Folgore*s.



Meanwhile, in North Africa, on 29<sup>th</sup> July 1941, the three first operational C.202s of 4° Stormo, 97<sup>a</sup> Squadriglia, landed in North Africa. On 26 November, during Operation Crusader, 19 Macchis of 9° Gruppo, 4° Stormo were sent to Africa, and by the end of the month the whole 1° Stormo was in Libya, both units taking part in the last stages of the British offensive that led to the raising of the siege of Tobruk, and the retreat of Italian and German troops in Cyrenaica in December. During its initial combats over the Western Desert, the *Folgore* was quite a surprise to British pilots

and it remained a respected adversary. Squadron Leader Dennis Harry Clark, D.F.C. and A.F.C., in his book "What were they like to fly" (1964), stated: "Sleek, supremely fast the 202 was capable of out-turning our P-40s with ease; but the majority would pull away effortlessly into a climbing roll off or a roll off the top when things became at all hectic... Their aircraft was superior to ours on all counts." In the desert war, incursions by the SAS behind enemy lines were often aimed at destroying aircraft on the ground. Macchi 202s of 1° Stormo based at Uadi Tamet had been transferred from Italy one month before and recently relocated from Bir el Merduma because the airbase was too exposed to SAS attacks. 1° Stormo had 60 fighters, 17° Gruppo around 30. In a month of combat, the latter lost a total of eight fighters to raids. On the night of 28<sup>th</sup> December 1941, the SAS managed to destroy a further nine aircraft. After this attack the Italians were forced to move their remaining aircraft well away from the front lines to avoid incurring further losses to such raids. During 1942, Bf 109F/Gs and Macchi C.202s fought against the Allied air forces in North Africa. At the time of Rommel's offensive on Tobruk, 5<sup>a</sup> "Squadra Aerea" ("Aviation Corps"), based in North Africa, had three Macchi wings: 1° Stormo had 47 C.202s (40 serviceable), 2° Stormo had 63 C.200s (52 serviceable) while 4° Stormo had 57 (47 serviceable). This coupled with the 32 Cant Z.1007s tri-motor bombers, was the most powerful fighter force that the Italians fielded in the war, and constituted almost a tenth of the overall *Folgore* production. During April 1942 the 4° Stormo solved the frequent problems to the oxygen masks by adopting the German Dräger "oxygen apparatus" that equipped their Bf 109s.

During the Battle of Bir Hakeim, the C.202s performed successfully against the assorted fighters of the Desert Air Force, typically using "dive and zoom" tactics, similar to those of Luftwaffe fighters. In the morning of 26 May, about 60 *Folgore* from 1° and 4° Stormo attacked Gambut airfield destroying and damaging many Allied aircraft surprised while taking off. Even if often outnumbered, the C.202s achieved 22 confirmed air victories against Hurricanes and P-40s for the loss of just five of their number, a kill/loss ratio of 4,4/1, bettering the Bf 109s' (3,5/1). On 23 December 1942, the Regia Aeronautica authorized the use of under-wing jettisonable tanks on the C.202s of 6° and 7° Gruppo based in Pantelleria, significantly boosting their endurance. By the end of the year, the growing strength of the Allied forces was overwhelming and after the defeat in the skies over Malta as well as El-Alamein the last operational Axis units lost their air superiority in the Mediterranean. The Germans and the Italians succeeded in establishing a bridgehead in Tunisia.





In later in December the *Regia Aeronautica* transferred four fighter squadrons there; the 5<sup>a</sup> Squadra Aerea, which had left Libya and retreated to Tunisia, had previously repatriated all unserviceable aircraft to Italy. By early 1943, Regia Aeronautica had only 54 serviceable C.202 across 12 squadrons. By 21 February 1943 the 5<sup>a</sup> Squadra Aerea still had the 6<sup>o</sup> Gruppo C.T. with three squadrons of C.202s at Sfax and Gammarth in the northern sector, and in the southern sector, 3<sup>o</sup> Stormo with six squadrons of C.200s and C.202s at El Hamma. Although these forces were insufficient, they nevertheless achieved notable successes. On 6–7 March 1943, C.202 pilots claimed 19 RAF and two USAAF aircraft, for the loss of two *Folgore*. Pilots of 16<sup>o</sup> Gruppo Assalto, an attack unit, downed no fewer than 10 aircraft. The Macchis continued fighting while retreating to Tunisia and then in the defence of Sicily, Sardinia and Italy against an increasingly stronger opponent. The Macchis of two groups at Korba were forced to concentrate 40 C.202s (both 7<sup>o</sup> and 16<sup>o</sup>, 54<sup>o</sup> Stormo), and on 8 May 1943, almost all their C.202s were destroyed on the ground by marauding Spitfires. Only eleven aircraft were repaired by 10 May 1943 and retreated to Italy. Because no transport aircraft were available every surviving fighter had two men inside, a pilot and a mechanic. At least one was destroyed, and the two crewmen wounded after crash-landing on a beach near Reggio Calabria. In all, the Italians lost a total of 22 C.202s in the air and 47 on the ground.



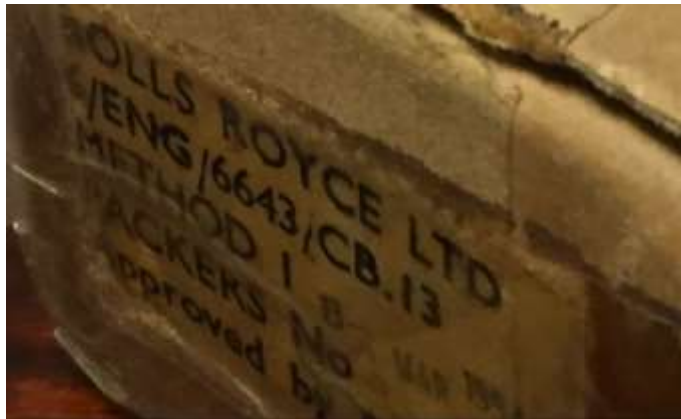
The MC.202 also operated on the Eastern Front, and during May 1942, the 22<sup>o</sup> Gruppo Caccia, that had reached its operational limit, was replaced by the newly formed 21<sup>o</sup> Gruppo Autonomo C.T. composed of 356<sup>a</sup>, 382<sup>a</sup>, 361<sup>a</sup> and 386<sup>a</sup> Squadriglia. This unit, commanded by Maggiore (Major) Ettore Foschini, brought new C.202s and 18 new Macchi C.200 fighters. During August 1942, at the beginning of the German offensive, they were deployed at the Stalino, Lughansk, Kantemirovka and Millerovo airfields, typically performing ground attack strikes against the Red Army positions along the east Don river during October–November 1942. In this theatre, the fighters were

operated under adverse climate conditions (40° to 45° below zero and heavy snowstorms) as well as frequently coming under heavy harassment from Russian fighter-bombers. As a consequence of these operational circumstances, 21<sup>o</sup> Gruppo which had 17 C.202s on strength were rarely able to conduct sorties; as such, only a total of 17 missions were flown with *Folgore* on the Eastern Front during a four-month period. When they were able to conduct combat operations, the C.202 were frequently flown as escorts alongside their older C.200 siblings for Fiat BR.20M and Caproni Ca.311 bombers in attacks against Soviet columns, during which they would typically be facing aerial opposition from great numbers of Soviet Air Forces fighters. The C.202 were also regularly used to escort Cant Z.1007bis during the latter's reconnaissance missions, as well as for German transport aircraft. During one such mission, on 11 December 1942, which involved the escorting of several Junkers Ju 52s en route to Stalingrad, Tenente Pilota Gino Lionello was shot down and forced to bail out from his *Folgore*. After the abandonment of advanced airfields between December 1942 – January 1943 at Voroshilovgrad, Stalino and Tscerkow, the Italian air units were operated in a series of defensive actions against a more potent Soviet air offensive, consisting mainly of Ilyushin IL-2s *Sturmovik* and Petlyakov Pe-2s. During March 1943, the Corpo Aereo Italiano was detached to Odessa airbase, joining Reggiane Re. 2000 Héja I of the Hungarian MKHL 1 and 2/1 Vadászszázad, as well as IAR 80C and Bf 109E/G of Romanian FARR 4 and 5 detached at the same base and Saki (Crimea) in a holding action against the Soviet armada of 2,000 aircraft, at a time when the Axis air forces only countered with 300 operative aircraft, which were further constrained by having very small quantities of fuel, munitions and equipment available. On 17 January 1943, the last effective operation of Corpo Aereo Italiano in Russia occurred, when a single mixed formation of 25 surviving Macchi fighters (out of a remaining total of 30 C.200s and nine C.202s) attacked several Red Army armoured and motorized infantry columns in support of German and Italian units that were encircled in Millerovo. The C.202s played a significant role in the defense of Sicily and Southern Italy against bombing attacks launched by the USAAF, however, by the time of Allied invasion of Sicily during July 1943, their effectiveness had been diminished considerably as a result of attrition, which had reduced the number available. Furthermore, it was increasingly recognised that 20 mm cannons were required in order to cause enough damage, thus a mixture of Bf 109F/Gs, Macchi MC.205s and Fiat G.55s were deployed to replace the remaining C.202s as soon as possible. Mixed units (such as the 51<sup>o</sup> Stormo, Sardinia) were formed with C.202s, yet were often serving with C.205s as well. By the signing of the 1943 Armistice with Italy, there were only 186 *Folgore*s remaining, of which roughly 100 aircraft were still considered to be in a serviceable condition. Several C.202s served with the Allied-aligned Italian Co-Belligerent Air Force, and some of these were subsequently reconstructed into C.205s or C.202/205 with the Veltro's engine. Others served as trainers in the Axis-aligned Aeronautica Nazionale Repubblicana (National Republican Air Force) of the Italian Social Republic (RSI) and the Luftwaffe (German Air Force). With thanks to Vic Aperia

## LETTERS TO THE EDITOR

**Dear Sir,**

Hi, my name is **Andy Sheldon**. I'm not a CAS member but I am writing to see if you may be able to assist. I'm searching for some balance pipes for a Rolls Royce Derwent engine or possible a Nene engine. I think the part number may be BL 14894 but I'm not 100% sure. I've attached a couple of pictures if that helps. Do you happen to have any in your stores at all? Any help would be greatly appreciated. See photos attached. Best regards, **Andy**, email [funkblaster@hotmail.com](mailto:funkblaster@hotmail.com)



**Dear Sir,**

Hi, my name is **Lee Mangan** and I am after some information on a Spitfire crash at Henley on Thames c. 1942; Many years ago, (early 1970s) I attended an air show at Denham where your society had a stall. I purchased some small pieces of Spitfire wreckage from the stall along with a scrap of paper, now lost, which stated that the debris (a piece of crumpled fuselage skin, a piece of crankshaft (?) and fragments of windscreen) was from the Spitfire Mk V which crashed as stated above, the pilots name, I believe, was a Sgt Benson. I've searched several sites for any info on the aircraft / crash, fate of the pilot etc but have drawn a blank. I wonder if CAS members may have any further information in your archives that could be shared? Any help that you can give would be much appreciated. PS. I no longer have the aircraft bits and pieces but I'm sure that there were no visible serial numbers visible. Regards, **Lee Mangan** via [leemangan@btinternet.com](mailto:leemangan@btinternet.com)

**Dear CAS Members,**

The Biggin Hill Heritage Hangar is the largest centre for Spitfire activity in the World. Our guided tours allow visitors to see our engineers working on Spitfire restoration projects and observe wing building, engine maintenance, flight and control system installation on a variety of airframes. We also hold a maintenance contract with the Battle of Britain Memorial Flight so have visiting aircraft from their collection, currently we have Hurricane PZ865 (MKIIC) 'The Last of the Many' in for scheduled works. Other aircraft under restoration include: MJ755 'The Greek Spitfire', LZ842 MKIX in desert colour scheme, PT879 'The Russian Spitfire' and our newest addition from the USA TE308 2-seater T9. You can also view airworthy aircraft in our second hangar including Hurricane AE977, MKIX Spitfire TA805 'Spirit of Kent', MKXVI Spitfire RW382, Bf109 'White 14', T9 Spitfire MJ627, T9 Spitfire MJ772, MKVIII Spitfire MT818 Prototype 2-seater, L4H Grasshopper/ Cub and Harvard II. Our Heritage Tours last 2 hours and are priced at £39 pp, however we are able to provide tailored tours to suit particular interests e.g. our evening 'Technical Tours RRP £149' are hosted by a pilot and engineer and allow behind the scenes access to the restorations and aircraft and include a Spitfire start up and fish and chips. Sit in a Spitfire, Photographic sessions, board room facilities, catering and Spitfire flight experiences can also be provided. If your society are looking for an amazing away day or evening activity - please get in touch and we'll be happy to help. Our tours can be viewed via YouTube below. Kind Regards, **Joan at the Spitfire Office**, Biggin Hill. Email [Office@bigginhillspitfire.com](mailto:Office@bigginhillspitfire.com) Video; <https://www.youtube.com/watch?v=lvOdbcKroUU&feature=youtu.be>

**Dear Members,**

the last issue of Airwords, stated that Oshkosh was a 100-mile drive *south* from Chicago. However, the *Ed's* wish to point out to us that this could not be further than the true heading of 100 miles *north* of Chicago. We thought it was important should any member wish to attend Oshkosh, and blame us for being 200 miles away off course! Yours sincerely Ed's

**Appeal;** The CAS Club Secretary is looking for photos of RAF vehicles from 1939-45 period so if you have any, I'd appreciate being able to copy them from your records or any other source.

## **AIRLINE AND AIRLINER NEWS FOR SEPTEMBER AND OCTOBER 2019 - BY JOHN R ROACH**

**Aigle Azur** was liquidated as of midnight Sept. 27 after a French commercial court rejected the remaining rescue offers under consideration for the already-grounded airline.

Dedicated Boeing operator **Alaska Airlines** continues to be coy about whether it will hold onto any of its Airbus aircraft acquired in its **Virgin America** purchase, but one of the airline's top executives acknowledges the A321neo has advantages not found in the 737 family.

On Sept. 4 **Air India** Airbus A320neo landing on an under-construction runway at Velana International Airport, was caused by inadequate airfield markings, combined with insufficient preparation and coordination by the pilots.

**American Airlines** made its last MD-80 revenue flights and held a retirement fete for the iconic 1980s aircraft, the workhorse affectionately nicknamed Mad Dog.

**Air Canada** continues to reveal little about its plans for **Air Transat** beyond keeping the leisure airline's brand and Montreal headquarters, but a senior executive said that getting its aircraft flying more often will be a near-term focus.

UK long-haul airline **Virgin Atlantic** wants changes to London Heathrow's slot regime that would allow it to grow from 30 to 160 slots when the third runway is built.

**Lufthansa** no longer sells the last row of seats on its Airbus A320neos due to concerns about the aircraft's centre-of-gravity limitations.

**Virgin Australia** and **Virgin Atlantic** have been granted draft approval for their proposed partnership in the Australia-UK market.

**Frontier Airlines** was the most fuel-efficient US carrier in 2017-2018, boosted by large investments in Airbus A320neo aircraft, according to a study released Sept. 12 by the International Council for Clean Transportation.

Express-cargo start-up **CargoLogic Germany** has secured its air operator's certificate from the German CAA and is ready to begin commercial operations with two converted Boeing 737 freighters.

A deadline for would-be investors in **Alitalia** to present their business plan for the relaunch of the bankrupt Italian flag carrier has been pushed back once again until at least the 15th October. As of the middle of November no organisation has come forward to re-finance the bankrupt Italian airline.

Airbus' move to increase the A220's range even more has to be seen in the context of its wider strategy against Boeing.

**Icelandair** has reached an interim compensation agreement with Boeing to cover losses incurred by the Boeing 737 MAX grounding, which has already had a \$140 million impact on the airline.

UK carrier **Flybe** is pulling out of another regional airport Doncaster/Sheffield, a week after announcing it was closing its base on the Isle of Man.

After months of uncertainty and numerous attempts to secure funding or sell parts of the company, **Thomas Cook Group** entered compulsory liquidation on 23<sup>rd</sup> September.

**SAS Scandinavian Airlines** has unveiled a new livery as it prepares to receive its maiden Airbus A350. The corporate identity is a modest revision to its current colours.

The US Office of Special Counsel has substantiated a whistle blower complaint alleging that FAA safety inspectors who served on the Boeing 737 MAX Flight Standardization Board were not properly credentialed.

**Qantas** subsidiary **Jetstar** plans to end regional turboprop services in New Zealand, although the LCC will continue flying trunk domestic jet routes in that country.

Slovenian carrier **Adria Airways** has had two Bombardier CRJ900s recalled by their lessor and is "intensively looking for solutions" to stabilize operations. Insolvent Slovenian carrier **Adria Airways** left Star Alliance Oct. 2, becoming the second member airline in a month to leave the alliance because of bankruptcy.

**Stansted** airport aims to provide up to half of the London area's total long-haul aviation growth over the next decade.

Airbus started flight tests 12<sup>th</sup> Sept of the first of 52 UPS Airlines A300-600 freighters undergoing major flight deck upgrades designed to keep the fleet operating until at least 2030.

**Lufthansa** no longer sells the last row of seats on its Airbus A320neos to address concerns about the aircraft's centre-of-gravity (CG) limitations.

Final loads testing on **Boeing's 777-9** has been suspended after the failure of a cargo door during pressurization evaluations on the static test airframe at Everett, Washington.

**The FAA** is working with Boeing to finalize an inspection order on higher-time 737NGs after cracks were discovered in fuselage frames and related parts on three 737-800s being converted to freighters.

LATAM Group says it expects to maintain its partnership with **Qantas** after it withdraws oneworld and forges a joint-venture with **Delta Air Lines**.

U.S. pilots who have tested the new **Boeing 737 MAX** flight-control software have given it positive reviews and some carriers are beginning to finalize step-by-step MAX return-to-service plans, suggesting that Boeing's notional time line of getting FAA approval by year-end may come to fruition.



A project to convert the nine-passenger **Britten-Norman Islander** to hybrid-electric propulsion for short-haul flights has kicked off in the UK. Project Fresson is led by Cranfield Aerospace Solutions (CAeS), which plans to obtain and market a supplemental type certificate (STC) for the conversion.

A French court ruled Oct. 4 that insolvent airline **XL Airways** should be liquidated, ending hopes that a last-minute takeover offer could save part of its operations, in the second casualty to hit the French air transport sector in a week. Low-cost, long-haul carrier **XL Airways** had suspended flights as of Sept. 30, citing competition from **Norwegian Air**. The European Commission (EC) will investigate whether the joint venture between Boeing and Embraer could reduce competition in the commercial aerospace business.

**ATR** is targeting customers operating out of space-constrained airports with the formal launch of a STOL (short take-off and landing) version of the ATR 42-600, for which it has secured 20 commitments. The Toulouse-Blagnac headquartered manufacturer hopes the type will expand its addressable market by 25%.

Airlines have inspected 810 older **Boeing 737NGs** for cracked fuselage parts and turned up issues on 38 aircraft as of Oct. 9, the company said, adding it is working with customers to develop plans and procure parts for aircraft with discrepancies. Boeing is analysing its customers' inspection findings and is 'actively working' with those that have airliners with inspection issues to develop repair plans, provide parts and technical support as necessary.

Indian Ocean equity partners **Air Austral** and **Air Madagascar** are to take six Airbus A220s, unifying their short and mid-haul fleet renewals, starting with an initial firm order from **Air Austral** for three A220s.

**Flybe** will be rebranded as **Virgin Connect**, reflecting its new ownership. The 40-year-old Exeter-based carrier was bought earlier this year by **Connect Airways**, an acquisition vehicle made up of **Cyrus Capital** (40%), fellow UK regional airline **Stobart Group** (30%) and long-haul specialist **Virgin Atlantic** (30%). **Flybe**, Europe's largest regional airline, has a fleet of 70-plus aircraft largely based around fifty-four DHC Dash 8-400 plus five ATR 72 turboprops, together with six Embraer E195 and eleven E175 regional jets. **Virgin Connect**, plans to ultimately consider larger aircraft once things have settled under its new ownership.

**Swiss International Air Lines (SWISS)** decided to return its entire fleet of 28 Airbus A220s to home base to make engine checks following another engine-related diversion on Oct. 15.

The British government plans to introduce reformed airline insolvency legislation in a bid to strengthen consumer protections and provide more oversight of distressed airlines.

**Titan Airways** is set to introduce an Airbus A330-200 as part of a wider effort to transition to an all Airbus fleet. The five-year-old airliner (**ex-Avianca** c/n 1508) is to enter service with the charter and airline sub-charter specialist in April 2020. The carrier's new acquisition will replace a 16-year-old Boeing 767-300ER, G-POWD (c/n 30847)

Airbus has celebrated the delivery of the 1000th airframe of its A320neo Family. The aircraft, VT-IUH (c/n 8968) was produced at the firm's Hamburg facility

**Etihad Aviation Group** and **LCC Air Arabia** will form a new Abu Dhabi-based joint venture (JV) LCC—called **Air Arabia Abu Dhabi**—to tap into the growing demand for low-cost air travel in the Gulf.

Airbus confirmed it is offering a version of the A350-1000 in the **Qantas** ultra-long-haul competition around "Project Sunrise" that would enable the airline to open nonstop flights from Australia's East Coast to London and New York, among other locations.

**FedEx** and **Wing Aviation** on Oct. 18 completed the first scheduled package delivery by drone to a house in Christiansburg, Virginia, FedEx announced.

**Turkmenistan Airlines** has been granted permission to resume services to and from the European Union (EU), following an eight-month ban.

**Qantas** has retired another Boeing 747-400 registered VH-OJU, but instead of being scrapped it has been acquired by Rolls-Royce for conversion to a flying testbed as part of preparations for developing the RR Ultra Fan and other next-generation commercial jet engines.

An **American Airlines** Airbus A330-300 (registration N273AY) made an unscheduled landing in Dublin, Ireland, after two cabin crew momentarily fell unconscious from cleaning fluid fumes. The incident occurred on October 21 operating the AA 729 from London Heathrow to Philadelphia.

**CSA Czech Airlines** has ordered four Airbus A220-300s and upgraded a previous order for three A320neos to A321XLRs.

Indonesian investigators have concluded that a series of factors, primarily the design of the Boeing 737 MAX manoeuvring characteristics augmentation system (MCAS) system, pilot training and maintenance practices, combined to cause the crash of **Lion Air**, a year ago.

Scottish regional airline **Loganair** plans to build a fleet of around 20 ATR 42-500 turboprops over the next several years as it begins to replace its long-serving Saab 340s and 2000s.

## HISTORIC AVIATION NEWS FOR NOVEMBER & DECEMBER 1969, 1979 & 1989 - BY JOHN R ROACH

### 1969

**November 4** - Two hijackers commandeer a Lanica BAC One-Eleven during a flight from Managua, Nicaragua, to San Salvador, El Salvador, demanding to be flown to Cuba. Instead, the airliner diverts to Grand Cayman Island in the Cayman Islands.

**November 4** -- Six hijackers take control of Varig Flight 911, a Boeing 707-345C (registration PP-VJX) during a flight from Buenos Aires, Argentina, to Santiago, Chile, with 101 people on board and force it to fly to Cuba. Boeing 707 (PP-VJX) was hijacked again later the same month.

**November 8** – During a refuelling stop at Pajas Blancas Airport in Córdoba, Argentina, a man forces his way aboard an Austral Líneas Aéreas BAC One-Eleven 420EL (registration LV-IZR) preparing to continue its flight to Buenos Aires, Argentina, with 62 people on board. He hijacks the airliner and forces it to fly to Montevideo, Uruguay, where he requests political asylum.

**November 10** – Fourteen-year-old David Booth pulls out a butcher's knife in the terminal building at Cincinnati/Northern Kentucky International Airport in Hebron, Kentucky, takes 18-year-old ballet dancer Gloria Jean House hostage as she passes by, and forces his way aboard Delta Air Lines Flight 670, a Douglas DC-9 preparing to depart for Chicago, Illinois, with 73 people on board. He demands to be flown to Sweden. The pilot taxis the airliner away from the gate before revealing to Booth that the plane lacks the range to fly there. After 90 minutes of negotiations during which Booth demands to be flown to Mexico instead, he releases House and surrenders to police.

**November 12** -- Fiat Aviazione (except for its engine manufacturing section) merges with Aerfer and Salmoiraghi to form Aeritalia, owned equally by Fiat and IRI–Finmeccanica. Aeritalia will become fully operational in January 1972.

**November 12** -- A hijacker commandeers a Cruzeiro do Sul NAMC YS-11A-202 (registration PP-CTL) during a domestic flight in Brazil from Manaus to Belém and forces it to fly to Havana, Cuba.

**November 12** -- Two hijackers attempt to take control of a LAN Chile Sud-Aviation SE-210 Caravelle during a domestic flight in Chile from Santiago to Puerto Montt and demand that it fly them to Cuba. The airliner instead lands safely at Antofagasta, Chile.

**November 13** – Six passengers hijack Avianca Flight 637, a Douglas DC-4 (registration HK-728) making a domestic flight in Colombia from Cúcuta to Bogotá with 62 people on board and demand that it fly them to Cuba. After a refuelling stop at Baranquilla, Colombia, the airliner flies to Santiago de Cuba in Cuba.

**November 19** – Mohawk Airlines Flight 411, a Fairchild Hiller FH-227B (registration N7811M) , crashes into Pilot Knob Mountain near the Town of Fort Ann in Washington County, New York, killing all 14 people on board.

**November 20** – Two hijackers commandeer a LOT Polish Airlines Antonov An-24B (registration SP-LTB) flying from Wrocław, Poland, to Bratislava, Czechoslovakia, with 22 people on board and force it to fly them to Vienna, Austria.

**November 29** – A hijacker takes control of Varig Flight 827, a Boeing 707-345C (registration PP-VJX) flying from Paris, France, to Rio de Janeiro, Brazil, and forces it to fly to Havana, Cuba. It is the second time during the month that Boeing 707 PP-VJX has been hijacked.

### **December**

The United States Air Force flies its last Douglas AC-47 Spooky fixed-wing gunship mission of the Vietnam War. South Vietnam's Republic of Vietnam Air Force and Laos's Royal Lao Air Force fly all future AC-47 missions during the Southeast Asian conflict.

**December 2** – A hijacker commandeers Trans World Airlines Flight 54, a Boeing 707 with 28 people on board flying from San Francisco, California, to Philadelphia, Pennsylvania, and forces it to fly to Cuba.

**December 3** – Trans World Airlines opens the Breech Academy – also called the Breech Training Academy – in Overland Park, Kansas, for the training of flight attendants, ticket agents, and pilots.

**December 4** – The Tokyo Convention – officially the "Convention on Offences and Certain Other Acts Committed on Board Aircraft" – goes into effect. It establishes that at least one state, specifically the one in which the aircraft is registered, will take jurisdiction over the suspect in the event of an in-flight criminal offense that jeopardizes the safety of an aircraft or people on an aircraft during international air navigation or an intention to commit such an offense, and it provides for situations in which other states may also have jurisdiction. It also recognizes certain powers and immunities of the pilot in command, who on international flights may restrain any person or persons he or she has reasonable cause to believe is committing or is about to commit an offense liable to interfere with the safety of persons or property on board the aircraft or who is jeopardizing good order and discipline aboard the aircraft, the first time this has been recognized in international aviation law.

**December 9** – An Egyptian Air Force MiG-21 (NATO reporting name "Fishbed") shoots down an Israeli Air Force F-4 Phantom II for the first time.

**December 11** – A North Korean agent hijacks a Korean Air Lines NAMC YS-11 with 50 other people on board and forces it to fly to Söndök Airfield near Wonsan, North Korea. North Korea returns 39 of the passengers to South Korea 66 days later, but never returns the crew of four or the other seven passengers, which is viewed in South Korea as an example of North Korean abductions of South Koreans.

**December 12** – Thirty minutes after an Ethiopian Airlines Boeing 707 takes off from Madrid, Spain, bound for Athens, Greece, Eritrean Liberation Front member Hamed Shenen gets up from his seat with a handgun and orders the flight crew to fly the plane to Aden in South Yemen. The pilot explains that the plane will have to refuel at Rome, but does not receive permission to land there, and a plainclothes security guard then enters the cockpit and shoots Shenen, after which a second security guard shoots Shenen six more times, killing him. Shenen's accomplice Mahmoud Suliman rushes toward the cockpit armed with a knife, and the security guards shoot him to death as well. It is the first time that aircraft hijackers have been killed aboard a plane in flight. The plane's 15 passengers celebrate the hijackers' deaths by drinking champagne, and the airliner lands safely in Athens. The Eritrean Liberation Front claims responsibility for the hijacking, saying that the hijackers merely intended to hand out propaganda leaflets to the passengers.

**December 18** – The England-Australia Commemorative Air Race is flown in commemoration of the 50th anniversary of the Smith brothers' flight. It is won by W. J. Bright and F. L. Buxton in a Britten-Norman Islander.

**December 19** – A hijacker commandeers a LAN Chile Boeing 727-116 with 96 people on board making a domestic flight in Chile from Santiago to Arica and forces it to fly to Havana, Cuba.

**December 20** – The highest-scoring North Vietnamese ace of the Vietnam War, Nguyễn Văn Cốc, scores his final victory, claimed as over an AQM-34 Firebee unmanned aerial vehicle but possibly over an OV-10 Bronco. The North Vietnamese Air Force credits him with nine victories, while the United States confirms seven.

**December 21** – Three members of the People's Front for the Liberation of Palestine are caught trying to board a Trans World Airlines Boeing 707 at Athens, Greece, for a flight to Rome and New York City with guns and dynamite in their hand luggage. They had planned to hijack the airliner, divert it to Tunis in Tunisia, and blow it up to protest the support of the United States for Israel.

**December 22** – An explosion in the lavatory of an Air Vietnam Douglas DC-6B (registration B-2005) in mid-flight damages the braking system. When the aircraft lands at Nha Trang Airport in Nha Trang, South Vietnam, it goes off the end of the runway and strikes a concrete pylon, dwellings, and a school, killing 10 of the 77 people on board and 24 people on the ground, and injuring many more.

**December 23** – A hijacker takes control of a LACSA Curtiss C-46 Commando during a domestic flight in Costa Rica from Puerto Limón to San José and forces it to fly to San Andreas, Cuba.

**December 26** – A hijacker commandeers United Airlines Flight 929, a Boeing 727 with 32 people on board flying from New York City to Chicago, Illinois, and forces it to fly to Cuba.

## 1979

**November 4** – The Iranian hostage crisis begins as Iranian students take over the United States Embassy in Tehran. The United States quickly halts all spare-parts shipments and technical assistance to the Iranian Air Force and imposes an embargo on Iran, and the United Kingdom also cuts off most military shipments to Iran.

**November 11** – Hawaiian Airlines celebrates 50 years of accident-free air passenger service.

**November 19** – An Ecuadorian Army IAI Arava (serial T-201) crashes on take-off from Camilo Ponce Enriquez Airport in Loja, Ecuador, killing all 16 people on board. General Rafael Rodríguez Palacios and his wife and daughter are among the data.

**November 23** – Armed with a plastic knife and a bottle opener, a 25-year-old male passenger hijacks a Japan Air Lines Douglas DC-10-40 with 356 people on board during a domestic flight in Japan from Osaka to Tokyo's Haneda Airport and demands to be flown to the Soviet Union. To refuel, the airliner diverts to Tokyo's Narita International Airport, where the hijacker is overpowered and arrested before refuelling is completed.

**November 24** – A hijacker commandeers American Airlines Flight 395 – a Boeing 727 with 74 people on board flying from San Antonio to El Paso, Texas – and demands to be flown to Iran. Police storm the airliner and arrest the hijacker at El Paso.

**November 26** – A flight attendant reports a fire aboard Pakistan International Airlines Flight 740, a Boeing 707-340C (registration AP-AWZ) , 18 minutes after take-off from Jeddah International Airport in Jeddah, Saudi Arabia. The fire spreads rapidly, causing panic in the passenger cabin and incapacitating the flight crew and the aircraft crashes, killing all 156 people on board.

**November 28** -- A Douglas DC-10-30 (registration ZK-NZP) operating as Air New Zealand Flight 901 crashes on Mount Erebus in Antarctica during a sightseeing flight, killing all 257 people aboard.

**November 30** – First flight of the Piper Malibu

**December 2** – First flight of the Gulfstream III



**December 12** – A Commercializadora Aérea Mixta Boliviana (CAMBA) Martin 4-0-4 cargo aircraft (registration CP-1440) crashes after take-off near Apolo Airport in Apolo, Bolivia, killing all 10 of the 11 people on board.

**December 12** – First flight of the SH-60 Seahawk serial number 161169

**December 14** – First flight of the Edgley Optica registration G-BGMW

**December 18** – A SATENA Douglas C-54D-10-DC Skymaster (registration FAC-1106) crashes into the mountain Cerro Toledo between Arauca and Cúcuta, Colombia, at an altitude of 11,145 feet killing all 21 people on board.

**December 22** – A Peruvian Air Force de Havilland Canada DHC-5D Buffalo (serial FAP-348) crashes into the jungle near Puerto Esperanza, Peru, killing all 29 people on board.

**December 22** – First flight of the Aérospatiale Epsilon

**December 23** -- A Douglas Airways GAF Nomad N.22B (registration P2-DNL) crashes during a runway overshoot at Manari Airport in Manari, Papua New Guinea, killing all 16 people on board.

**December 23** -- The Turkish Airlines Fokker F28-1000 Fellowship (registration TC-JAT) crashes into a hill near Kuyumcuköy in the Çubuk district of Ankara Province while on approach to Esenboğa Airport in Ankara, killing 41 of the 45 people on board.

**December 25** -- The Soviet–Afghan War begins as Soviet Air Force Antonov An-12s (NATO reporting name "Cub") and An-22s (NATO reporting name "Cock") airlift the first Soviet troops into Afghanistan, bringing in 5,000 troops in the first 24 hours.

**December 25** -- A Soviet Air Forces Ilyushin Il-76M (registration CCCP-86036) transporting paratroopers of the Soviet Airborne Troops to Bagram Airfield in Afghanistan, crashes into the top of a mountain 22.5 miles from Kabul at an altitude of 16,404 feet while descending toward Bagram at night, killing all 43 people on board. At the time, it is the deadliest aviation accident in the history of Afghanistan.

## 1989

**November** – First flight of the Westland Battlefield Lynx, later the Westland Lynx AH.9

**November 8** – A McDonnell Douglas KC-10A Extender tanker aircraft refuels a Northrop Grumman B-2 Spirit bomber in the air. It is the first aerial refuelling of a B-2.

**November 12** – California Polytechnic State University flies the first human-powered helicopter.

**November 15** – Midway Airlines begins operating its second hub, located at Philadelphia International Airport in Philadelphia, Pennsylvania.

**November 21** – A British Airways Boeing 747 narrowly misses crashing into the Penta hotel near Heathrow Airport

**November 27** – Five minutes after take-off from El Dorado International Airport in Bogotá, Colombia. a bomb planted by the Medellín drug cartel in an attempt to assassinate Colombian presidential candidate César Gaviria Trujillo explodes aboard Avianca Flight 203, a Boeing 727-21 (registration HK-1803), while it is over Soacha, Colombia. All 107 people on board die in the resulting crash, as do three people on the ground. Gaviria is not on the plane.

**December 10** – California Polytechnic State University's Da Vinci III makes the first flight by a human-powered helicopter, remaining airborne for 7.1 seconds and reaching an altitude of 20 cm (8 inches).

**December 15** -- All four engines of KLM Flight 867, a Boeing 747-406M (registration PH-BFC) with 245 people on board, shut down when the plane flies through a cloud of volcanic ash from Mount Redoubt during descent to a landing at Anchorage International Airport in Anchorage, Alaska. After descending more than 14,000 feet without power, the crew manages to restart the engines and land the plane safely. This accident is similar to British Airways Flight 9 that occurred in 1982.

**December 15** -- Atlantic Coast Airlines begins flight operations. It operates as United Express for United Airlines.

**December 20** – The United States invasion of Panama, Operation Just Cause, begins with over 300 U.S. military aircraft participating. The U.S. Air Force's F-117A Nighthawk stealth fighter and the U.S. Army's AH-64 Apache attack helicopter make their combat debuts. One of the first U.S. operations is an air assault by the 1st Battalion (Airborne) of the U.S. Army's 508th Parachute Infantry Regiment which secures Fort Amador.

**December 24** – Major combat operations in Operation Just Cause conclude.

**December 26** – United Express Flight 2415, a BAe Jetstream 31 (registration N410UE) operated by North Pacific Airlines, crashes on approach to Tri-Cities Airport at Pasco, Washington, in the United States, killing all six people on board.

**December 30** – Air Dolomiti is founded. It will begin flight operations in January 1991.

**December 31** – U.S. airlines complete their worst year for baggage handling. Nearly eight suitcases per 1,000 passengers are reported lost, damaged, or misdirected during 1989.

**December 31** – First flight of the Sukhoi Su-30 (NATO reporting name "Flanker-C")