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Welcome

Hello and welcome to your March edition of *Airliner World*. This month we've features from some of the biggest names in the American airline scene as part of our special US focus. From Dallas-based Southwest to New York's JetBlue, we examine the bold strategies being employed coast-to-coast to help reshape one of the world's biggest and most exciting air markets.

As a bonus treat, we're also giving you an extra bite of the Big Apple in partnership with our sister title, *Airports of the World*. Ahead of its planned demolition, we unlock the history of T7 at JFK, a pioneering complex which remains the only terminal operated by a foreign carrier at the New York hub. We hope you enjoy this sample of what we do in *Airports of the World*, a terrific bi-monthly publication created by the same editorial team as *Airliner World*. To celebrate the crossover, I've been able to negotiate a special discount code from the bosses for anyone interested in subscribing to the magazine – for full details of this exclusive reader offer, please turn to page 89.

Elsewhere in this issue, don't miss my exclusive interview with Martyn Holmes, CCO of Embraer Commercial Aviation. While 2020 was a year to forget for most of us, the Brazilian manufacturer found itself grappling with the fallout from a failed merger with Boeing, as well as navigating the impact of the COVID-19 pandemic.

As part of the far-reaching chat which kicks off on page 20, Holmes reveals how Embraer is piecing itself back together, before sharing his ambitions for the flagship E2 jets and providing the latest thinking behind the firm's much-anticipated turboprop project.

Other highlights in this edition include a beautifully illustrated deep-dive into the Carvair, one of the quirkiest aircraft to take to the skies above 1960s Britain. Developed by Freddie Laker's Aviation Traders, this four-engine mongrel – which utilised surplus Douglas examples – proved to be fairly popular with the likes of Aer Lingus and British United Air Ferries, which relied on the aircraft to transport bulky, but time-sensitive loads.

Finally, a heartfelt thanks to everyone who has been in touch in recent weeks to share their favourite photographs of Heathrow Airport through the ages. With the sheer number and quality of the entries far exceeding our wildest expectations, it was incredibly challenging to select just a few to make it into the pages of the magazine.

Wherever you are in the world, I hope you enjoy your March issue.

Gordon Smith
Group editor



COVER IMAGE • A Southwest Airlines Boeing 737-700, N907WN (c/n 36619), pictured at Atlanta/Hartsfield-Jackson in November 2020
AIRTEAMIMAGES.COM/RYAN PATTERSON

Airliner
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*In recent years
Alaska Airlines has
transformed itself
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ALASKA AIRLINES





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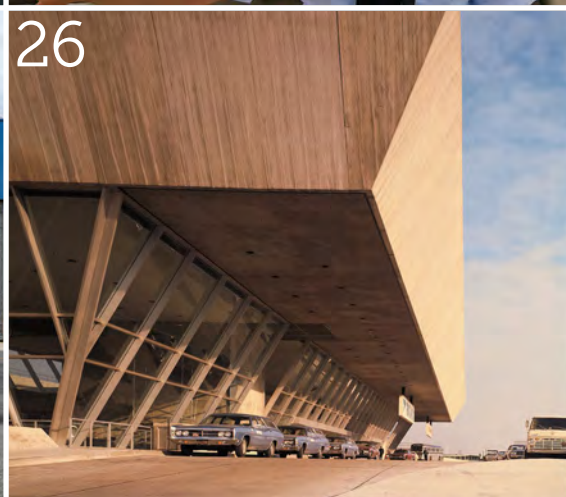
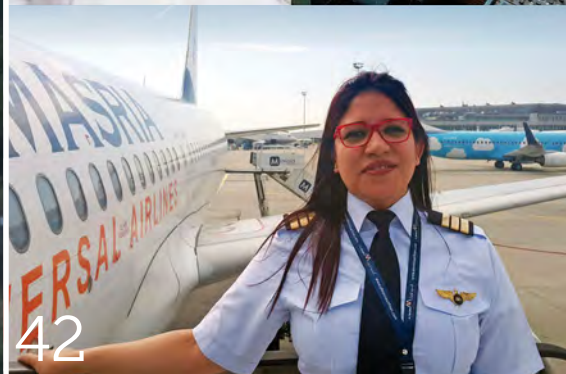
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News Review

AIRLINER WORLD'S COMPREHENSIVE COVERAGE OF WORLDWIDE NEWS

Long-haul rotations axed



OSLO-BASED NORWEGIAN Air has confirmed plans to terminate its long-haul flights stating they are “not viable” and attributing the decision to the ongoing coronavirus pandemic.

Long-haul bases across the UK, France, Spain, Italy and the US will close with more than 1,100 employees braced for redundancy at its London/Gatwick gateway alone. The British Airline Pilots' Association (BALPA) described the January 14 announcement as “more devastating news” for the air transport industry.

Norwegian Air is shifting “focus onto a European network” as it plans to use a 50-strong 737 fleet during this year and increase to 70 narrowbody jets by 2022. The firm also stated it will continually assess profitable opportunities as the pandemic eases.

CEO Jacob Schram said: “[This] robust business plan today will provide a new start for the company. By focusing our operation on a short-haul network, we aim to attract existing and new investors, serve our customers and support the wider infrastructure and

travel industry in Norway and across the Nordics and Europe.”

During Norwegian's long-haul tenure, it has flown a total of 37 Dreamliners across multiple subsidiaries, comprising both the two-class, 259-seat -8 and larger 338-seat -9 – the majority of the widebodies left the fleet between 2019-2020.

Additionally, before the 737 MAX grounding in March 2019, it operated the MAX 8 on connections between Scotland and Ireland to cities on the US Eastern Seaboard. Recent traffic

figures showed it carried just 129,664 customers in December with an average of nine aircraft.

On January 21, it was reported that the Norwegian government has “decided to support and contribute to the airline's funding of new capital, pending certain conditions”. The government is set to provide a hybrid loan as long as the carrier can raise 4.5bn Norwegian krone (£387m) from strategic and institutional investors, according to the *Financial Times*. (Photo Gatwick Airport Limited)

Montenegro ceases operations



MONTENEGRO AIRLINES has suspended all flights, citing the government's decision not to continue to support the flag carrier among reasons for the action.

A statement on the airline's website thanked all passengers for “years of trust, travel and friendship”, and apologised for disruption to the organisation of travel in coming days and weeks.

It continued: “Due to the new circumstances related to the decision

of the government of Montenegro not to support the existence of a national airline in the future, and which has a very negative impact on the safety of continued air traffic, we estimated [it is a] level of risk that Montenegro Airlines cannot accept.”

The Podgorica-based firm – founded in 1994 – flew to 20 cities in 12 countries, using a trio of Embraer E190s and a single Fokker 70.

Just ten days after Montenegro ceased operations on December

26, 2020 the country's government registered a new airline called ToMontenegro, which will likely salvage parts of its predecessor.

The move comes as those behind the venture act to preserve the carrier's slot allocations at major European airports.

Milojko Spajić, minister for finance, said it could take six to nine months to get the new carrier up and running. (Photo AirTeamImages.com/Matthieu Douhaire)

A330neo for Air Greenland

AIR GREENLAND has placed a firm order for a Rolls-Royce Trent 7000-powered Airbus A330-800. The new jet, scheduled to arrive “from the end of 2022”, is set to replace the carrier's sole ageing A330-200, OY-GRN (c/n 230). The widebody is primarily used on the link from Kangerlussuaq on the west coast of Greenland to Copenhagen.

CEO Jacob Nitter Sørensen said: “The A330neo is a fundamental part of Air Greenland's fleet strategy. The new aircraft will, for years to come, offer travellers to and from Greenland a unique inflight experience while leaving the lowest carbon footprint possible. The A330neo is a perfect fit for the very challenging task of providing safe and efficient passenger, cargo and freight service.”

Air Greenland joins an exclusive club following orders by Kuwait Airways (eight) and Uganda Airlines (two); commitments for a further four examples remain undisclosed.

European extinction for 717



SPANISH LOW-COST airline Volotea has retired its final remaining Boeing 717 after nearly a decade of scheduled operations. The early January retirement ends its scheduled use in Europe. The Barcelona-based carrier had planned to phase the jet out by 2022 and replace it with additional Airbus A319 aircraft, but brought its retirement forward a year.

Volotea operated 19 717s and took delivery of its first example on

December 22, 2011. All the jets were set up to seat 125 in a single class layout. Boeing Capital Corporation was responsible for leasing 15 of the narrowbodies, while the four most recently delivered aircraft were leased by UK-based Falko Regional Aircraft.

The airline's final five examples flew scheduled services for the last time on January 11, returning to the company's hub at Venice/Marco Polo airport in Italy. There are now just

three main operators of the 717 in the world, comprising Delta Air Lines, QantasLink and Hawaiian Airlines – each with a fleet of 85, 20 and 19, respectively. Delta plans to retire its 717s by December 2025, Hawaiian is expected to keep the type until the same year and Qantas is likely to fly them until 2026 after Cobham Aviation Services won a ten-year contract to operate the jets on the carrier's behalf.

(Photo Simon Murdoch)



Changes afoot at BA

BRITISH AIRWAYS (BA) has outlined plans to axe 15 long-haul routes from this year. The Heathrow-based carrier is cancelling services around the world including to North and South America, the Middle East, Asia and Africa. Routes to cities including Pittsburgh, Calgary and Charleston are affected, as well as Seoul, Kuala Lumpur and Osaka. The popular winter destination of Seychelles is also facing the chop.

Elsewhere, cities including Muscat, Jeddah, Abu Dhabi, Durban, Lima and

Dammam are set to be omitted from its 2021 long-haul roster. In addition, BA has confirmed that popular services to Sydney and Bangkok will remain suspended until October 30 of this year. Last October, International Consolidated Airlines Group (IAG), parent company of BA, reported a third quarter loss of €1.3bn.

In other BA news, the UK flag carrier is set to resume the London/Gatwick to Manchester domestic route on March 28 after an eight-year hiatus. At the

time of writing, this is due to coincide with the restart of short-haul links at the West Sussex gateway following COVID-induced suspensions.

Using an Airbus A319ceo, just one daily rotation is currently planned, aimed at people connecting to long-haul BA services from Gatwick. Flight BA2509 leaves Manchester at 7am, landing 8.15am. Returning, BA2508 departs Gatwick at 9.45am, landing 10.55am. (Photo Flickr Commons/Rafael Luiz Canossa)

in brief

Bosses at **easyJet** have said the firm will not accept any new aircraft this year. The company says it is readjusting its delivery profile to better fit demand amid continued COVID-19 disruption. Following talks with Airbus, the firm has agreed to move 22 delivery slots from the 2022-2024 financial year to the 2027-2028 period. In addition, there will be movement of 15 handover dates within the 2022-2024 cycle to more closely match forecast seasonal requirements. These changes will result in the Luton-based firm taking no aircraft this year, eight in 2022, seven in 2023 and 18 in 2024.

Cargo giant **DHL** has purchased eight examples of the Boeing 777F which are scheduled for handover by 2022. According to John Pearson, CEO at DHL Express, the investment took place after the company recorded a 40% growth in its e-commerce volume during Q4 of 2020 alone and this "unprecedented demand" is expected to continue well into the future. DHL last placed an order for the 777F in 2018 and has so far received ten from a 14-strong deal.

British holiday firm **Jet2.com** has suspended all operations until March 25 with flights to Iceland halted until April 26. The Leeds/Bradford-based carrier made the decision during "ongoing uncertainty" as England entered a third full lockdown in January after a significant rise in COVID-19 infections. All UK travel corridors were closed by the government and citizens prohibited from leaving their homes except for restricted travel reasons. The airline has a 90-strong fleet consisting mostly of Boeing 737-800s and operates from ten UK bases. (Photo Flickr Commons/Tony Hisgett)



West Atlantic Sweden ended its association with the Boeing 767-200F on December 31 after the type's five years of service. The final aircraft to be phased out was 37-year-old General Electric CF6-powered example, SE-RLB (c/n 22222), originally delivered to Delta Air Lines in June 1983 as N110DL. West Atlantic Sweden operated another three 767-200Fs, SE-RLA (c/n 22224), SE-RLC (22217) and SE-RLD (c/n 22788). As of mid-January, 'LA and 'LB are stored in Wilmington Air Park, Ohio while 'LC and 'LD have been acquired by Kenya's Astral Aviation and Mexico's MAS Air Cargo, respectively.

Italian-based start-up, **EGO Airways**, has officially unveiled plans ahead of a proposed spring 2021 launch. From March 28, the firm is earmarked to use a pair of Embraer E190s from two main bases at Forlì (in Northern Italy) and Catania (on the island of Sicily) as it aims to create a point-to-point network by "linking strategic cities". More Italian destinations are scheduled to follow and, by June 4, it expects to operate to: Parma, Firenze, Bari, Cagliari and Lamezia Terme. Furthermore, on the same date it has mooted the launch of a twice-daily (except weekends) Rome/Fiumicino-Milan/Bergamo connection.

Rossiya livery graces SSJ100



ST PETERSBURG-BASED Rossiya, an Aeroflot Group subsidiary, has adorned its first inherited Sukhoi SSJ100 with its colourful paint scheme. Six-year-old RA-89043 (c/n 95074), which was spotted

on approach to the Sheremetyevo gateway on January 12, was transferred its parent company on New Year's Day. In 2020, it was revealed by the Aeroflot Group that Rossiya's future role would revolve

around domestic operations using indigenous-built types (see *Airliner World*, February 2020). At the time of writing, Rossiya had inherited nine PowerJet SaM146-equipped SSJ100s.

AIRTEAMIMAGES.COM/ARTYOM ANIKEEV

'Big Twin' inbound for Red Wings

IT HAS been confirmed that Russia's Red Wings is poised to introduce the Boeing 777 into its fleet in the first quarter of this year.

The trio of two-class, 371-seat -200ERs acquired by Red Wings are believed to be the former IrAero examples, VP-BLI (c/n 27250), VP-BMR (c/n 29325) and VP-BSJ (c/n 27251).

At the time of writing, it remained unclear on which routes the 'Big Twins' would be deployed. However, prior to the onset of COVID-19, Red Wings flew to popular holiday hotspots including Barcelona, Spain, and Antalya in Turkey, in addition to its strong domestic operations.

The type's acquisition is rumoured to form part of a larger fleet bolster. At the end of December 2020, Evgeny Klyucharev, general director of Red Wings indicated that the Moscow/Domodedovo-based firm was planning to acquire 20 aircraft, including more SSJ100 and Airbus A320 Family-type jets, effectively doubling its current fleet. All airframes are touted to arrive before the end of this year.

According to Belavia, the E195-E2 – which was inked in a deal with the lessor in February 2020 – brings significant environmental and economic benefits such as a 25.4% reduced fuel consumption per seat, and nitrous oxide and carbon dioxide emissions cut by 35% and 50%.

Upon delivery, the airline became the eighth operator to fly Embraer's E2 product. Belavia has a 28-strong fleet comprising 12 older E1 models: five E175s and seven larger E195s. (Photo Embraer)

New E2 comes into view



BELARUSIAN FLAG carrier Belavia has accepted its maiden Embraer E195-E2. The Pratt & Whitney PW1900G-equipped example, EW-555PO (c/n 19020042), arrived in the country on December 22.

The Minsk-based carrier has revealed the type will serve popular routes such as Barcelona, London/Gatwick, Munich, Nur-Sultan (Kazakhstan) and Sochi (Russia).

The jet was ferried from Embraer's

São José dos Campos factory in South America, making technical stops at Recife in Brazil, and Malaga, Spain. The aircraft is configured in a two-class, 125-seat layout and is set to be joined by two further E195-E2s, all on lease from AerCap.

Anatoly Gusarov, CEO of Belavia, said: "The E2 offers Belavia lower operating costs, as well as the lowest impact on the environment. At Belavia we like to keep our fleet young and fresh; with the addition of the E195-E2 we can take more passengers, further, in greater comfort and more efficiently – the E2 is the perfect fit".

Cesar Pereira, vice-president of Europe, Middle East and Africa, Embraer Commercial Aviation, added: "As airlines ramp up operations, the E195-E2 is perfectly positioned to right size routes previously operated by narrowbodies, keeping frequencies and adjusting capacity to new levels."

Rada fleet is quite a treat



MINSK-BASED RADA Airlines acquired a 26-year-old Antonov An-74-200, EW-286TL (c/n 36547098957) towards the end of December 2020, its first example of the type in the fleet. The twin-engine jet had previously flown for Armenia's South Airlines as EK-74957.

Additionally, just prior to the An-74's arrival, Rada took on a second

Ilyushin Il-62MGr, EW-505TR (c/n 4154535) after a stint with Bishkek, Kyrgyzstan-based Manas Airways. Since being built in 1992, the now rare aircraft had spent most of its working life with the Kazan Aircraft Production Association (KAPO Avia).

Rada Airlines is a cargo operator created in 2015. It started flights with a single Il-62MGr, EW-450TR, c/n 4546257 (pictured), which rolled off the production line in 1985 before

seeing service with the German Democratic Republic's flag carrier, Interflug, registered DDR-SET.

According to Rada, the Il-62MGr can fly a payload of up to 40 tons over 3,852 miles. As of January, it has a trio of aircraft – two Il-62MGr and a single An-74-200 – in its portfolio. (Photo Flickr Commons/Dylan Agbagni (CC0))

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E2 boost for Congo

KINSHASA-BASED CONGO Airways has placed a firm order for a pair of Embraer E195-E2s. The Brazilian-built airframes are to feature a two-class, 120-seat layout and are scheduled for delivery from 2022 onwards. The latest move comes after Congo placed an initial May 2020 order for two of the smaller E190-E2s (see *Airliner World*, August 2020), bringing the flag carrier's total E2 commitment to a combined US\$272m cost at list prices.

CEO Desire Bantu said: "We see an opportunity in our market and the crisis we are all facing for Congo Airways to emerge stronger, which is why we are not waiting to place this further order. These new jets will allow us to extend our passenger and cargo operations regionally to high demand destinations such as Cape Town, Johannesburg and Abidjan [Ivory Coast]."

At present, Congo fields a small inventory comprising a pair each of the Airbus A320ceo and De Havilland Canada Dash 8-400. (Photo Embraer)

Triple-Seven trio received



QATAR AIRWAYS Cargo took delivery of three factory-fresh Boeing 777Fs on New Year's Day, helping it to boost capacity for the distribution of vital COVID-19 vaccines.

The General Electric GE90-equipped freighters, A7-BFV (c/n 66340), A7-BFW (c/n 66341) and A7-BFX (c/n 66870; pictured) departed Boeing's Paine Field, Washington site in succession on December 31 and flew direct to Doha on the 7,365-mile journey. The Qatar handover also

marked a significant milestone for the US aircraft manufacturer as it reached its 200th 777F delivery.

Akbar Al Baker, Qatar Airways Group CEO, said: "With the arrival of these new freighters, we are injecting more capacity in the market, which is very much required during the pandemic. The added capacity will also enable us to support the logistics around the COVID-19 vaccination, which is projected to be one of the greatest logistical challenges for the industry."

Aside from the ongoing pandemic, the air freight sector is predicted to increase by more than 4% in the next two decades. According to Boeing, the 777F can transport a payload of 224,900lb over a range of more than 4,970nm. This, the airframer claims, results in significant savings for operators due to fewer stops and, in turn, reduced landing fees and cargo handling costs.

With the arrival of the latest 777Fs, it takes Qatar Airways Cargo's tally to

24 examples, alongside a pair of 747-8Fs, A7-BGA (c/n 37564) and A7-BGB (c/n 63199).

In other Qatar Airways developments, Al Baker revealed during a *CAPA Live* virtual conference on January 13 that the airline will immediately phase out five Airbus A380s, which account for half its super jumbo portfolio. The decision has been attributed to the type's environmental impact and overall efficiency.

(Photo v1images/Preston Fiedler)

Wizzing into service



AFTER SEVERAL setbacks, Wizz Air Abu Dhabi finally commenced fare-paying rotations on January 15 with an inaugural twice-weekly link to Athens, Greece. Flight 5W7007, operated by one of its four-strong Pratt & Whitney PW1100G-powered Airbus A321neos, A6-WZA (c/n 9503), departed Abu Dhabi/International at 1.15pm and landed in the Greek capital at 4.33pm local time.

Chairman József Váradi said: "The launch of Wizz Air Abu Dhabi [is] a bold new frontier for ultra-low fare

travel in the region. We welcome the opportunity to contribute to efforts to provide a new segment of travel in line with the UAE's socio-economic vision."

At the time of writing, the airline was poised to launch a second destination on February 4 with twice-weekly rotations to Thessaloniki, Greece. Additionally, a third city has been confirmed, with a daily service to Tel Aviv due to start on March 1 following a thaw in relations between Israel and the UAE thanks to the historic signing of the Abraham Accords deal (see

Airliner World, December 2020).

Originally, the Abu Dhabi-based carrier intended to commence operations in October last year with six routes – Kutaisi, Odessa, Alexandria, Athens, Larnaca and Yerevan – but this was impacted by COVID-19. According to Wizz Air Abu Dhabi's management, the airline will "rapidly expand" as destinations on its route map are added to the 'green countries list', which deems if a nation is safe to visit during the pandemic.

(Photo Wizz Air Abu Dhabi)

A freighter first



THIS SMART-looking ATR 72-500F, HB-ABS (c/n 711), pictured above is the newest addition and first freighter for the Afrijet Business Service, which is based in Gabon.

The 16-year-old ex-Canary Fly example was spotted in Malta on December 29 – after it arrived from

Basel, Switzerland – and performed a night-stop on the island ahead of its delivery to Central Africa.

The Franco-Italian-built turboprop is on wet-lease from Zimex Aviation.

Afrijet Business Service was formed in 2004 and currently operates domestic connections using a trio

of passenger-configured ATRs (comprising a single ATR 42-500 and a pair of ATR 72-500s).

It's understood that another aircraft, the Pratt & Whitney PW127M-powered ATR 72-600, 9M-FIH (c/n 1285), is bound for the carrier imminently. (Photo Ruben Zammit)

A super jumbo debut

DUBAI-BASED EMIRATES has deployed its maiden Airbus A380-800 fitted out with its new premium economy product on the flagship service to London/Heathrow.

On January 4, the Rolls-Royce Trent 900-powered super jumbo, A6-EVN (c/n 267), made its fare-paying debut on a return trip to the British capital as Flight EK003/004. The aircraft can carry 484 travellers in a four-class layout and includes 56 seats in a 2-4-2 arrangement for its

highly anticipated premium economy service, which features a 40in pitch.

A week after the Christmas Eve delivery of A6-EVN – its 117th example in the fleet – Emirates' president Sir Tim Clark revealed in an interview with *AirlineRatings* that the last-built A380 is scheduled to arrive with the carrier in May 2022. Before that, another four examples are due to be delivered during 2021 and 2022.

In other news, Emirates has earmarked a 2023 timeframe for

the introduction of its first Boeing 777X from an 126-strong order.

However, in a recent interview with *Reuters*, Clark hinted the 777X could potentially slide beyond that date given uncertainty over the development and certification of the type. The widebody will be the first new Boeing jet to gain certification following the 737 MAX. Nonetheless, Clark is confident the 777X will be a huge success for Emirates, building on the existing popularity of the 777-200 and -300.

in brief

Nigerian start-up, **Cally Air**, is billed to receive its first airframe imminently. At the end of December, a 1999-built Boeing 737-300, 5N-BYQ (c/n 30334), which previously served with airBaltic, was spotted in Ostrava, Czech Republic, sporting Cally Air's blue, white and red colour scheme. Once delivered, the aircraft is due to be joined at the full-service airline by another Classic 737, 5N-BYR (c/n 29266), also once part of airBaltic. Cally Air was set up by Nigeria's local Cross River State government in conjunction with the DANA Group and is mooted to offer domestic services from the port city of Calabar, in the country's far southeast.

The longstanding order for **Gulf Air's** ten Airbus A220-100s has been omitted from Airbus' latest order and deliveries table. Although not yet officially confirmed, this suggests the Bahrain-based flag carrier has cancelled its order for the type. The airline originally committed to a deal with Bombardier on June 20, 2011 for the CSeries CS100 – before the programme was eventually acquired by Airbus and re-designated as the A220.

Scheduled commercial flights have resumed between Egypt and Qatar after the former reopened its airspace to airlines operating to/from the Gulf nation. On January 18, **EgyptAir** flew the daily rotation between Cairo and Doha – Flight MS935 – which was piloted by one of the flag carrier's 29-strong Boeing 737-800s, SU-GEI (c/n 63801), on the two-hour, 20-minute link. Reciprocally, Qatar Airways resumed services from Doha to Cairo and Alexandria on January 18th and 25th, respectively. The move by Egypt comes after countries including Bahrain, Saudi Arabia and the UAE all reinstated ties with Qatar after initial diplomatic tensions arose in 2017. (Photo Flickr Commons/Aero Icarus)



It's been reported that **Azman Air** is poised to add a single Airbus A340-600, a trio of Boeing 737-800s and a further five smaller, yet undecided types. According to data by *ch-aviation*, the Kano, northern Nigeria-based firm is earmarked to use the A340-600 acquisition, which would join Azman's sole example, 5N-AAM (c/n 765), for new long-haul services to Dubai (UAE), Jeddah (Saudi Arabia) and Guangzhou (China). On the other hand, the 737-800s, joining a pair of -300s and four -500s, would boost domestic services within the central and western regions of Nigeria.

Ghana's **PassionAir** has received a de Havilland Canada Dash 8-300 on lease from Avmax. The 30-year-old turboprop, 9G-TIA (c/n 216), has a single-class, 50-seat layout and is expected to debut on PassionAir's domestic services. The airline's website reports it flies to Takoradi, Kumasi and Tamale from its Accra base. It joins the sole 78-seat, Pratt & Whitney Canada PW150A-powered Dash 8-400, 9G-DIA (c/n 4052) that joined the fleet in August 2018.



Fresh Breeze in Costa Rica

THE FIRST aircraft adorned with the striking livery of US start-up Breeze Airways (minus the titles) was spotted in San José, Costa Rica. Pictured on December 29, the Embraer E190,

N90NA (c/n 19000070), performed test sorties shortly after its painting. The ex-Air Canada airframe is currently owned by lessor specialist Nordic Aviation Capital and is

expected to be handed over to Breeze soon. Data provided by ch-aviation states the fledgling firm will launch scheduled operations this March, initially using first-generation E-jets

before a maiden Airbus A220-300 from its 60-strong order in August. (Photo Juan Pablo Muñoz Sánchez)



An ultra long-haul saviour

TO PROTECT its citizens against the effects of COVID-19, the government of Argentina has used the country's flag carrier to transport the Russian-made Sputnik V vaccine from Moscow.

Using its inventory of Airbus A330-200s, Aerolíneas Argentinas flew two separate ultra long-haul

missions on December 24 and January 14. As the Sputnik V vaccine requires a continuous low temperature storage, the airline opted to fly the Buenos Aires/Ezeiza to Moscow/Sheremetyevo flight direct.

The distance between the cities is just over the published maximum

range for the A330-200 at 8,343 miles.

According to the airline, the operational logistics required an onboard crew of 20 people for the 40-hour round trip – made up of two 18-hour flight legs and around four hours on the tarmac at the Russian capital. Both trips each successfully

delivered 300,000 Sputnik V vaccines.

Aerolíneas Argentinas is no stranger to ultra long-haul rotations. Last August and September it flew between the Argentine capital and Cyprus as part of a United Nations peacekeeping mission (see *Airliner World*, September and October 2020 editions).

MAX gets Canadian greenlight



IN A major boost for Boeing, Transport Canada cleared the MAX for commercial service within the country's airspace from January 20. However, the aviation regulator has issued a new airworthiness directive for operators of the type which indicate the required modifications, covering design and maintenance, needed ahead of the resumption of fare-paying rotations within Canada. For example, one Canadian-led design change includes an option for pilots to disable an intrusive stick shaker warning if erroneously activated by the failure of the angle of attack system.

In December, Transport Canada independently validated design changes to the MAX which had previously been certified by the US Federal Aviation Administration (FAA). This, in turn, paved the way for the modifications to be incorporated onto Canadian-registered airframes. Additionally in December, the regulator approved a revised pilot training syllabus for each of the three Canadian MAX operators: Air Canada, WestJet and Sunwing Airlines. Throughout Transport Canada's evaluation of the Boeing 737 MAX, the regulator has spent more than 15,000 hours reviewing the type.

Canada's transport minister Omar Alghabara commented: "Over the last 20 months, Transport Canada's civil aviation safety experts, by their rigour and thoroughness, have ensured that the safety concerns the department had identified have been addressed. Canadians and the airline industry can rest assured that Transport Canada has diligently addressed all safety issues prior to permitting this aircraft to return to service in Canadian airspace."

In response to the news, WestJet resumed services with its contingent of CFM International LEAP-1B-powered MAXs, initially operating three

rotations per week between Calgary and Toronto/Pearson.

At the time of writing, the airline's MAX schedule is expected to stay in place for four weeks while evaluating further routes and frequencies. Elsewhere, flag carrier Air Canada was due to restart flights using its 24-strong inventory of MAX 8s on February 1 from its Toronto/Pearson base. Initial destinations comprise: Edmonton, Halifax, Montréal/Trudeau, Ottawa and Winnipeg. Details of Sunwing's MAX reintroduction are awaited. (Photo AirTeamImages.com/Derek Macpherson)

Look **blue's** arrived!



JETBLUE AIRWAYS accepted delivery of its maiden Airbus A220 on New Year's Eve. The Pratt & Whitney PW1500G-powered -300, N3008J (c/n 55099), departed Airbus' Mobile, Alabama production site at 4:34pm, climbed to 41,000ft and landed two hours later at New York/JFK at 7:35pm local time. JetBlue has another 69 examples on order to replace its existing fleet of 60 Embraer E190s.

JetBlue's CEO Robin Hayes said: "The

A220 is a next-generation aircraft our customers and crew members will love, featuring impressive range and superior economics to support critical financial and operating priorities along with new network planning flexibility. The A220's significant reduction in per-seat emissions supports our ongoing commitment to carbon neutrality for all our domestic flights and moves us closer to achieving our pledge of net-zero carbon emissions

across all operations by 2040."

The airline anticipates the A220 fleet will have 40% lower maintenance costs per seat than the E190. The carrier's A220-300 has 140 seats in a 2-3 configuration, each featuring a 10.1in HD screen. The type's entry into fare-paying services is scheduled for mid-June on the Boston/Logan-Fort Lauderdale-Hollywood connection. *For more on this story see pg.98-104.* (Photo Airbus)

Bulk buy for Amazon



IN A first for the e-commerce giant, Amazon has purchased its own aircraft as it reacts to a growing customer base. The acquisitions, exclusively of Boeing 767-300 aircraft, include seven examples from Delta Air Lines and four from Canadian carrier, WestJet.

Sarah Rhoads, vice-president of Amazon Global Air, commented: "Our goal is to continue delivering for customers across the US in the way that they expect from Amazon, and purchasing our own aircraft is a natural next step toward that goal.

"Having a mix of both leased and owned aircraft in our growing fleet allows us to better manage our operations, which in turn helps us to keep pace in meeting our customer promises," added Rhoads.

The four widebodies procured from WestJet (see *Airliner World*, November 2020) are currently undergoing passenger-to-freighter conversion at Lake City Gateway Airport in Florida; they are expected to join Amazon Air's fleet this year.

These are to be followed by seven

ex-Delta twinjets due for arrival from next year after being converted.

The company says the fleet additions will ensure added capacity in Amazon Air's network for years to come, although the firm will continue to rely on third-party carriers – such as Atlas Air, Air Transport International and Southern Air – to operate them. Amazon's fleet currently comprises 68 airframes, but is likely to grow dramatically as demand for its service increases.

(Photo Flickr Commons/formulanone)

in brief

Venezuelan carrier **Conviasa** has bolstered its long-haul inventory with the arrival of a second Airbus A340. The Toulouse-built -300, YV3507 (c/n 199), was delivered to the firm's Caracas base on New Year's Eve. The quad-jet, powered by CFM International CFM56 engines, was originally delivered to Air China in 1999 and subsequently served with Cathay Pacific and Avior Airlines. Conviasa's other A340, YV1004 (c/n 031), is an early build -200 model. The major difference between the A340-200 and -300 is the length at 195ft and 208ft, respectively, with the latter also able to fly a further 690 miles in range.

Paramaribo-based **Surinam Airways** has finally secured extended range twin operations (ETOPS) certification for its sole Boeing 777-200ER, PZ-TCU (c/n 32336). This comes after the South American carrier received the ex-Air New Zealand widebody in December 2019 to replace its Airbus A340-300, PZ-TCR (c/n 242). Without ETOPS approval for PZ-TCU, direct routings across open ocean on its link to Amsterdam were prohibited and, in turn, would lead to increased flight times on the 4,660-mile leg. While ETOPS certification was taking place, Surinam had wet-leased aircraft from operators including Air Belgium.

Eastern Airlines has started a new twice-weekly service between Miami/International and the Paraguayan capital, Asunción. The rotations are operated by the Greensboro, North Carolina-headquartered firm's six-strong contingent of Boeing 767-300s. At present, the route joins Eastern's existing Miami links, which comprise Guayaquil (Ecuador) four times weekly, Montevideo (Uruguay) twice-weekly and Guatemala City weekly. The airline is set to add services linking the Ecuadorian capital, Quito, and Brazil's Belo Horizonte this spring. (Photo Miami-Dade Aviation Department)



The chief executive of **Grupo Viva** has hinted at the creation of a third carrier alongside existing low-cost firms **Viva Air Colombia** and **Viva Air Perú**. Talking online in *Routes Reconnected*, Felix Antelo said the new airline could be introduced in 2022 and would focus on domestic rotations. It would be located within Central or South America but more specific detail is yet to emerge.

US start-up **Global X** took delivery of its maiden aircraft on January 19 in the form of a 15-year-old Airbus A320ceo, N276GX (c/n 2695). The 180-seat airframe, which is set to be joined by another example shortly, will be based at Miami/International. It is scheduled to be deployed on charter flights in the US, Caribbean and Latin America once Global X is granted certification by the Federal Aviation Administration, due in Q1 2021. Additionally, the charter firm is entering the cargo market (see *Airliner World*, December 2020) and is expected to receive its first A321P2F (passenger-to-freighter) in Q3 of this year.

Dreamliner takes the baton



AUSTRALIAN FLAG carrier Qantas has set a July 2021 resumption of international links after it reopened bookings on several long-haul routes. In a major strategic change, the majority of the firm's flagship routes will now be operated by its 11-strong fleet of three-class Boeing 787-9s, while its Airbus A330-300s are to be deployed on connections within the Asia-Pacific region.

According to *Executive Traveller*, Dreamliners will replace A380-800s on routes such as Sydney-Dallas, Sydney-Singapore-London and Sydney-Los Angeles. This comes after Alan Joyce, Qantas Group CEO, revealed last year that its 12 Rolls-Royce Trent 900-powered super jumbos could remain in storage for up to three years (see *Airliner World*, November 2020).

Elsewhere, Qantas has outlined a joint venture with fellow oneworld member, Japan Airlines (JAL). Subject to regulatory approval, the five-year partnership would begin in July and provide a much-needed boost to the recovering tourism sector of both countries plus New Zealand. Benefits include an increase in new codeshare destinations – Qantas customers would get access to 14 cities in Japan,

with JAL travellers connected to 15 destinations in Australia/New Zealand – plus optimised flight schedules and enhanced frequent flyer benefits.

JAL president Yuji Akasaka said: "A joint business with Qantas will make for a quicker recovery between both countries, providing more customer choice and travel growth opportunities." (Photo Flickr Commons/Mertie)

Enter the E-jet



MYANMAR AIRWAYS International (MAI) has started its maiden revenue flights with the Embraer E190. At the time of launch on December 21, the airline used its sole General Electric CF34-equipped example, XY-ALO (c/n 19000529) – leased from CDB Aviation – on four return services from Yangon. Two days later, it was joined in the South East Asian nation by a second Brazilian-built airframe, XY-ALP (c/n 19000556). A further two E190s are set to join the fleet soon.

Following the type's introduction, the E190 has been deployed on nine destinations across the Yangon-based firm's domestic network. The jets will take over the routes previously operated by the eight-strong fleet of ATR 72-600s used by MAI's sister company, Air KBZ.

Saravanan Ramasamy, chief executive at MAI, commented: "The operation of the E190 marks yet another important milestone in MAI's fleet expansion strategy and domestic jet network growth. As the demand grows, we plan to scale up the frequency of our E190 operations to eight flights a day."

Prior to the E-jet's arrival at MAI, the carrier's pilots undertook initial flight training in Zhuhai, China in September 2020, while Embraer conducted a course for maintenance personnel. The airline has opted for the Brazilian airframer's pool programme which, among other benefits, provides unlimited access to spare components.

In addition to its E190s, MAI operates four Airbus A319ceos and a single A320ceo. (Photo Embraer)

Big ambitions for India

INDIA'S NEWEST airline, flybig, began operations on December 21 between Delhi and Shillong. According to data by *ch-aviation*, the fledgling firm initially wet-leased a De Havilland Canada Dash 8-400 from SpiceJet to operate the rotations. On January 3, flybig's first aircraft, an ex-Virgin Australia ATR 72-500, VT-FBA (c/n 955), entered service. Two further examples of the Franco-Italian-built turboprop will join the start-up soon.

According to flybig's website, the carrier was created to boost Indian

regional connectivity as part of the country's UDAN initiative – a government-led scheme aimed at developing under-served markets. The airline reports that it will focus on destinations not previously served by air.

As *Airliner World* went to press, flybig added a pair of thrice-weekly flights from its base at Indore to Ahmedabad and Raipur, while an Ahmedabad-Bhopal link (also thrice-weekly) was due to begin on February 1.

Jumbo farewell flight

TAIPEI-BASED CHINA Airlines was set to operate a farewell flight for the Boeing 747 on February 6 as *Airliner World* went to press. The carrier is retring its remaining passenger-configured jumbos. The 15-year-old -400, B-18215 (c/n 33737), was expected to fly 350 fare-paying guests on a special five-hour, 40-minute trip.

The farewell rotation, flight CI2747,

was due to depart Taipei/Taoyuan at 11.30am before heading to Japan for a sightseeing flyby over Mount Fuji, returning to Taiwan at 5.10pm local time. Passengers will receive a goodie bag containing a key ring, model aircraft and a commemorative certificate. China Airlines introduced the 747 in 1975 and continues to operate a fleet of 18 747-400Fs. (Photo Flickr Commons/lkarasawa)





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2020 delivery figures revealed

THE WORLD'S biggest aircraft manufacturers, Airbus and Boeing, have disclosed their delivery figures for 2020.

Boeing handed over 157 aircraft, with the 787 Dreamliner being the most successful at 53 airframes. This was followed by the 737 with 43 examples while the 767, 777 and 747 recorded 30, 26 and five deliveries respectively. In comparison, Boeing delivered a total of 380 aircraft in 2019. The corporation's most successful period was the fourth quarter, after regulators recertified the 737 MAX in the US, Brazil and Mexico. As a result, the airframer delivered a combined 59 jets, including 31 737s alone.

Greg Smith, Boeing executive vice-president of enterprise operations and chief financial officer, said: "Through the pandemic, we took meaningful steps to adapt to our new market, transform our business and deliver for our commercial, defence, space and services customers in 2020. As we continue navigating through the pandemic, we're working closely with our global customers and monitoring the slow international traffic recovery to align supply with market demand across our widebody programmes. In 2021, we'll continue taking the right actions to enhance our safety culture, preserve liquidity and transform our business for the future."

Meanwhile, Airbus performed better during the year as it handed over 566 commercial jets to 87 customers, despite the COVID-19 crisis, which saw it adapting its production and delivery plans. The A320 Family dominated, with 446 examples making their way to customers. The A350 was the next most popular with 59 delivered, while 38 A220s and just four A380s were supplied. Total handovers were 34% lower than in 2019 and the busiest month was December, during which 89 aircraft were delivered.

Airbus CEO Guillaume Faury said: "Working hand-in-hand with our customers allowed us to navigate a difficult year. The Airbus teams, customers and suppliers truly pulled together in the face of adversity to deliver this result. Based on our 2020 deliveries we are cautiously optimistic as we look into 2021, although challenges and uncertainties remain high in the short-term."

Last year, Airbus recorded 383 new orders. The A220 won 64 of them, while 296 fresh contracts were placed for the A320 Family including 37 A321XLRs. In the widebody segment, the Toulouse-based giant won 23 orders including two A330s and 21 A350s. After 115 cancellations by the end of 2020, Airbus' backlog stood at 7,184. (Photo Airbus)



Boeing Deliveries



Qatar Airways received a trio of Boeing 777Fs on December 31, increasing its tally of the twin-engine widebody freighters to 24. BOEING

Boeing delivered the following aircraft in December:

737 MAX 8	27	American Airlines (10); CIT Aerospace (4); Copa Airlines; Private Customer; SMBC Aviation (3); United Airlines (8)
747-8F	1	UPS
767-300F	4	FedEx Express (3); UPS
777F	4	China Airlines; Qatar Airways (3)

Airbus Deliveries



Uganda Airlines accepted their first of a pair of Airbus A330-800s during December. The Rolls-Royce Trent 7000-powered airliner, 5X-NIL (c/n 1977), is understood to be the first passenger-configured widebody to be placed on the Ugandan register. AIRBUS

Airbus delivered the following aircraft in December:

A220-300	6	Air Canada (2); airBaltic (2); Delta Air Lines; JetBlue
A319ceo	1	Tibet Airlines
A320neo	27	AerCap (Loong Air); AerCap (Tianjin Airlines) (2); Air Lease Corporation (Peach) (2); Air Calin; Aviation Capital Group (Viva Air) (2); BOC Aviation (Uzbekistan Airways); British Airways; CALC (Air Travel); China Eastern Airlines (4); Frontier Airlines (2); GECAS (Colorful Guizhou Airlines); ICBC (Jazeera Airways); IndiGo; Juneyao Airlines; Loong Air (2); Lufthansa; SkyExpress; Swiss; Volaris
A321neo	39	Aegean Airlines; Air China; Air Lease Corporation (Aer Lingus); Air Lease Corporation (Air Macau); All Nippon Airways (2); American Airlines (3); Avolon (Beijing Capital Airlines); Cathay Pacific; CDB Leasing; China Southern Airlines (2); GECAS (Jetstar Japan); GECAS (Starlux Airlines); ICBC (China Southern Airlines) (5); ICBC (Chongqing Airlines); IndiGo (3); JetBlue; Lufthansa; Middle East Airlines (2); Pegasus (2); Turkish Airlines; Aircompany North-west (2); Vietjet Air (2); Wizz Air; Wizz Air Abu Dhabi (2)
A330-800	1	Uganda Airlines
A330-900	3	Avolon (Azul); BOC Aviation (Lion Air) (2)
A350-900	6	Air China (2); Asiana; China Eastern Airlines; Japan Airlines; K5-Aviation
A350-1000	2	British Airways; Qatar Airways
A380-800	3	Emirates (3)
Total	88	

Final jumbos Atlas-bound

CHICAGO-BASED BOEING has secured a home for its final quartet of 747s due to roll off the production line next year. Atlas Air Worldwide inked the purchase agreement for the -8Fs with the US manufacturer, which is looking to "capitalise on strong [and future] demand".

Stan Deal, president and chief executive officer of Boeing Commercial Airplanes, commented: "Atlas Air began operations 28 years ago with a single 747 and it is fitting

that they should receive the last 747 production [airframe]... With the global air cargo fleet expected to grow by more than 60% over the next 20 years, we look forward to delivering these airplanes and supporting Atlas Air's Boeing fleet well into the future."

Atlas Air Worldwide Holdings, which owns six subsidiaries including Polar



Air Cargo, Southern Air and Atlas Air, boasts a fleet of 52 jumbos, comprising 42 -400s and ten -8s. It first received delivery of the next-generation variant back on May 29, 2012.

Boeing's 747 programme has

produced 1,560 aircraft since launching the jumbo jet more than 50 years ago. In July 2020, the firm announced its decision to complete production of the 747-8 in 2022. (Photo Flickr Commons/Masakatsu Ukon)

Rolls-Royce to shelve UltraFan

THE CHIEF executive of Rolls-Royce has acknowledged the company is to pause its UltraFan powerplant programme in 2022.

In a recent interview with the *Financial Times*, Warren East said that once testing is completed, the Derby-based company will temporarily cease further investment until aerospace manufacturers launch new aircraft, which could be “several years away”.

The longevity of the coronavirus pandemic means demand for future air travel is unclear. This may lead to aircraft manufacturers scaling back their own future plans until the sector fully recovers, having a knock-on effect for powerplant providers.

The UltraFan programme was launched in 2014 as Rolls-Royce sought to reduce emissions from gas turbines as part of its sustainability strategy. The UltraFan is designed to be “scalable” and available for both narrow and widebody aircraft types, offering a 25% fuel-efficiency improvement over the first-generation Rolls-Royce Trent engines. Key design aspects of the engine include a geared construction to deliver efficient power at high bypass ratios, a carbon titanium fan

blade system and a new engine core architecture, all aimed to improve fuel burn, reduce weight and lower emissions.

Last August, Rolls-Royce conducted testing on low-emissions technology at its Derby facility using an advanced low emissions combustion system (ALECSys). The tests provided useful data as it constructed the first UltraFan demonstrator – it’s been reported that the UK engine manufacturer has invested approximately £500m into the project.

On January 14 this year, the company revealed it had performed a maiden engine run at its new £90m, 80,729sq ft Testbed 80 site in Derby using a Trent XWB engine (which powers the Airbus A350). Ground testing of the UltraFan demonstrator is due at the complex before the end 2021.

Due to the dramatic impact of COVID-19 on Rolls-Royce finances, a £5bn recapitalisation package was completed last November. According to East, this “increased its resilience” and “strengthened its balance sheet”. Furthermore, the company aims to deliver £1.3bn in cost savings by next year. (Photo Rolls-Royce)



Radical ‘pod’ concept unveiled



AS PART of its latest research and development into future zero-emission, hydrogen-powered aircraft, Airbus has unveiled its most recent ZEROe concept: a ‘scalable pod configuration’.

The design comprises six stand-alone pods that are driven by hydrogen fuel cell technology. This works as the fuel cells are supplied with air and hydrogen to create an electric current before being converted to power by electric

motors. This, in turn, rotates each of the eight-bladed composite propellers – these are also shaped to provide more thrust during take-off and climb. Each individual pod is designed to be easily assembled and disassembled, making maintenance turnaround times rapid as well as simplifying the logistics of hydrogen refuelling at airports in the future.

Glenn Llewellyn, vice-president of zero-emission aircraft, Airbus, commented: “This ‘pod’ configuration

is a great starting point to nurture further inquiry into how we can scale up hydrogen technology to commercial aircraft. This is one option, but many more will be conceptualised before we make a final selection, a decision that is expected by 2025.”

The ‘podded’ concept is not new, but Airbus’ use of hydrogen cells is a first, requiring a “unique approach” over ordinary propulsion systems.

With the European Union committed to accomplishing climate neutrality

with no net greenhouse emissions by 2050, Airbus unveiled its hydrogen-powered ZEROe concept in September 2020 (see *Airliner World*, December 2020) with three initial concepts as the airframer aims to lead the way in the “decarbonisation of the entire aviation industry”.

It has mooted the introduction of a zero-emission commercial aircraft into fare-paying service by 2035. (Photo Airbus)



First Praetor 500 upgrade in Europe

BRAZILIAN MANUFACTURER Embraer has completed the first upgrade of a Legacy 450 to Praetor 500 standard in Europe. The change, performed under the terms of an Embraer engineering Service Bulletin, confers an additional 440nm of range and includes replacing the fuel tank level

sensor harness in each wing, the repositioning of over-wing gravity fuelling points, reinforcing the internal wing structure to accommodate the increased weights and installing Praetor 500-style winglets.

Johann Bordais, president and CEO of Embraer Service and Support, said:

“These conversions are only made possible by the expertise of structures and avionics specialists, mechanics, logistics teams, and engineers from Embraer operations around the globe. Per Embraer’s strategy for the future, we are consistently investing in and expanding our portfolio, focused on

offering our customers the industry’s best services and support.”

The Praetor 500 features an enhanced vision system (E2VS) in which pilots are provided a synthetic and enhanced vision via the HUD (heads-up display). The manufacturer also stated the type is the only mid-size business jet to have a full fly-by-wire flight control and turbulence reduction capability.

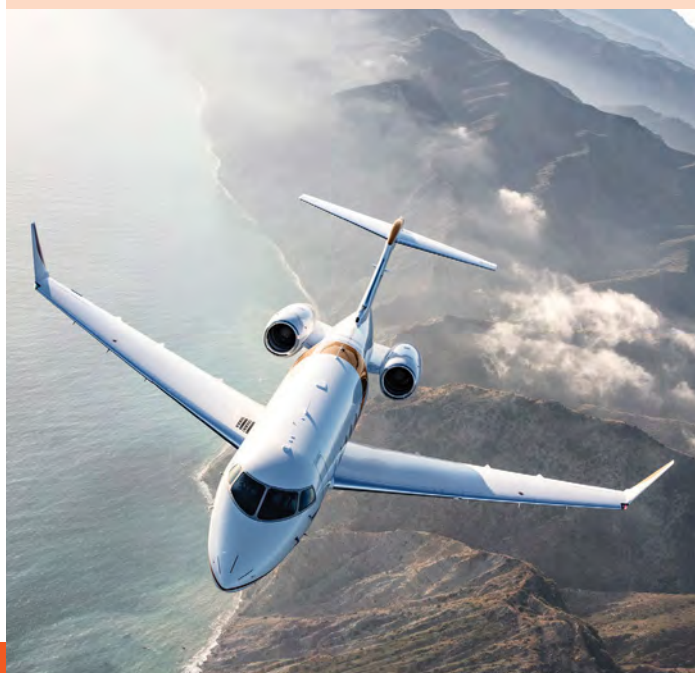
The conversion, for an undisclosed customer, was undertaken at Embraer Executive Jets’ service centre at Paris/Le Bourget. The upgrade to Praetor 500 standard can also be carried out at the firm’s other worldwide facilities. These comprise Windsor Locks, Connecticut and Fort Lauderdale, Florida in the US, and Sorocaba in southeast Brazil.

Overall, Embraer has now performed a total of 11 conversions from the Legacy 450 to Praetor 500.

(Photo Embraer)

BUSINESS NEWS BY NIGEL PITTAWAY

Bombardier order book boost



BOMBARDIER FINISHED 2020 on a high note with a firm commitment for ten Challenger 350 business jets from an undisclosed operator. The deal, valued at US\$267m at 2020 list prices, was announced by the Canadian manufacturer on December 23 and, it reports, represents one of the largest orders for business aircraft types.

Éric Martel, Bombardier president and CEO, said: “This order highlights the tremendous value customers place on the unmatched capabilities of our aircraft. Bombardier’s newly refreshed portfolio and growing service network position the company well to respond to growing interest in private aviation and the enhanced safety it provides.”

In other Bombardier news, the company has completed the acquisition of its service centre in Berlin, which had previously been jointly owned by Lufthansa Technik and ExecuJet Aviation Group. The announcement

on January 4, 2021 marks the transfer of ownership to Bombardier following notification of the company’s intent to establish a full OEM (original equipment manufacturer) service facility in the German capital. The 160,000sq ft site is located at Brandenburg Airport.

The facility will provide a full suite of Bombardier’s MRO expertise and capabilities for the business aircraft operated by its customers in Europe, Russia, Africa and the Middle East.

Chris Debergh, Bombardier’s vice-president OEM parts and services, said: “We welcome the highly talented employees of the Berlin Service Centre to the Bombardier service network.

“We value their expertise and customer focus. As part of the Bombardier team, they will continue to provide best-in-class aircraft maintenance services to our valued business jet operators.”

(Photo Bombardier)

Maiden EASA-certified G600 handed over



AN UNDISCLOSED customer has taken delivery of the first Gulfstream G600 example to be certified by the European Union Aviation Safety Agency (EASA) after it arrived in the region in December 2020.

Gulfstream Aerospace president Mark Burns said: “We are glad our customers in Europe can now register their G600 on the continent and easily experience the advanced technology and cabin comfort of the aircraft. With the latest range increase – the third for the G600 – customers in Europe and around the world will get even more out of their aircraft.”

According to the US-based manufacturer, the most recent increase in range now renders the G600 capable of flying 6,600nm at its long-range cruise speed of Mach 0.88, or 5,600nm at Mach 0.9, the aircraft’s high-speed cruise figure.

Gulfstream has also looked back at last year’s highlights, including the announcement of a new service centre at Fort Lauderdale, Florida and a similar facility in Farnborough, UK as well as an upgrade to its complex in Palm Beach, Florida which is shared with Jet Aviation.

(Photo Gulfstream Aerospace)

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Back in the game

Following the dramatic collapse of talks with Boeing, Embraer has dusted itself off with renewed vision and vigour. **Gordon Smith** caught up with **Martyn Holmes**, the new CCO of Embraer Commercial Aviation, to learn more about the firm's bold new strategy

Starting a new job is often a fraught affair, but when your role is to sell aircraft and supporting services in the middle of a global pandemic, it certainly adds an extra level of spiciness to opening proceedings. This most challenging of assignments has been handed to Martyn Holmes, chief commercial officer of Embraer Commercial Aviation, who started his new role last August as part of a wider restructuring of the senior management team. At least memorising the names of new colleagues didn't feature on his to-do list – Holmes joined the Brazilian manufacturer almost a decade earlier, with his previous remit covering Europe and Central Asia.

In rather diplomatic introductory

comments, Holmes describes the economic backdrop to his appointment as "interesting", adding that there are challenges evident across the worldwide supply chain as well as at individual airlines. The CCO started his career with a 15-year tenure at Rolls-Royce and was an engineer before moving into the sales end of the industry. "I gravitated towards working with customers, and being able to work with them closely in this crisis brings people together and it makes the job so much more rewarding," he told *Airliner World* from Embraer's Amsterdam office. "Underlying that is the fact you don't come out of this [COVID-19] unless you are at one with the customers, so you're working with them to see how they're going to be coming out of it,

how do they manage their cash?

"We talk about creativity and innovation – one of the great things about this role is the need to constantly look at yourself and ask the simple questions. What does the customer need? How do we help them solve their issues? How have their challenges changed from the beginning of COVID? Now we're working on solutions with customers to help them plan so that they come out of this strongly. It's been busy, but it has been extremely rewarding and I'm really excited by the leadership team that Embraer has assembled."

Stormy skies

While 2020 was a turbulent year for organisations across

Helvetic Airways took delivery of its first E2 example in October 2019
HELVETIC AIRWAYS





**Belarusian flag carrier
Belavia became the latest E2
operator in December 2020**
EMBRAER

the aviation sector, it was particularly tricky for Embraer. In December 2017, the industry was rocked by a *Wall Street Journal* report that claimed Boeing and the Brazilian firm were in previously undisclosed talks about a possible joint venture. Within hours, the scoop was confirmed by the relevant parties and it set the scene for more than two years of boardroom discussions about the precise nature of a possible deal. The potential prize for Boeing was the cementing of its status as the world's biggest airframer and reinforcing its arsenal following Airbus's emerging interest in Bombardier's C-Series narrowbody programme. For Embraer, the benefits were less clear cut, but still tangible. After all, who wouldn't want to jump into bed

with the biggest name in the aircraft manufacturing business, right?

Alas, 2020 was the year that the divorce papers arrived before the wedding vows were even confirmed. The collapse of the proposed deal sent shockwaves through an industry that was only just coming to terms with the scale of the coronavirus crisis.

Despite some rather frosty public comments made by both firms, the aftermath of the failed deal for Embraer was hugely complex. As Holmes explained: "To be frank, carving Embraer Commercial Aviation out [of the parent group] to be ready to go into Boeing was a hugely time-consuming, costly and complex exercise. In hindsight, if we knew that COVID was going to come along in March 2020, would we really

have stopped production in January and February? No, we would not.

"On the bright side, it means that we can start again. [The Boeing deal] is behind us and we're focusing forward. We always looked at the Boeing deal as making sense, but it wasn't 'Plan A'. We existed as Embraer before, so we always knew that we could go back to Embraer again. And that's what we're doing."

Ever the optimist, Holmes suggested that amidst all of the upheaval of 2020, the combination of the failed partnership talks with Boeing and the COVID-19 crisis had generated a certain energy and renewed momentum within the business: "It really has been an opportune time to carve back in. We've always been agile – we're a smaller company >>





A rendering of Embraer's E2-Jet family of aircraft EMBRAER

than some of our major competitors – but that size gives us an agility and intimacy with [airline] customers and a real sense of purpose and I'm really excited by that."

Pressed on how much needs to be done to bring the commercial aviation division of Embraer back into the fold, Holmes confirmed the bulk of the work has already been completed: "We've made great strides and had our heads down over recent months, working on our strategy for the coming decade and the reintegration to make sure it's right."

Irrespective of when the formal reintegration is completely finalised, some analysts have pondered what sort of company will emerge from the fog of the failed merger. While Boeing is still on the back foot following the MAX crisis and a tsunami of allegations regarding its wider processes and procedures, Airbus is in a relatively stronger position,

buoyed by better demand for its new generation of narrow and widebody jets. Where does this leave aviation's jilted bride? "I see our sector relevance really increasing with the need for airlines to have an adaptable fleet," noted Holmes. "We now know that 'black swan' events [those that come as a surprise and yield major impact] come around at a relatively regular frequency. So what we offer at below 150 seats is flexibility for airlines to have different capacities and manage their strategy, and that's before you consider our efficiency and sustainability on top of that."

"You have to remember that Embraer has a product offering that we've never had before. We now go up to 146 seats – it was previously closer to 124. The E195-E2 – which was only certified in 2019 – offers 25% operating cost savings relative to a larger narrowbody. In the past, there would have been a compromise on

seat cost, but that is now virtually eliminated. We now provide a tool for airlines in their fleet and network planning which means that they can have all that, combined with the very low trip costs of the E190-E2 and even down to the E175-E2. This flexibility and adaptability with an aircraft family that is the most efficient, quietest and cleanest narrowbody family out there. We're giving airlines the ability to plan for profitability, and that is going to be key as we move forward in this new world. If you can be flexible, adaptable and environmentally conscious with the right sustainable aircraft and hunt down profit – that is an exciting time for us and our relevance."

The air apparent

The E2 is the flagship product for Holmes and the wider Embraer Commercial Aviation team, and it is immediately clear upon speaking

KLM is expected to receive its first E2 jet later this year. In time they will replace the existing E1 examples KLM



to representatives from the firm that hopes for the jet are sky high. The announcement by KLM at the 2019 Paris Air Show for upwards of 30 examples of the largest E195-E2 variant was no doubt welcome within the four walls of Embraer's São José dos Campos headquarters, but Holmes believes the impact will be felt elsewhere too: "It was very important, especially from an external perspective. We speak to a lot of airlines and they know the credibility of the aircraft, but there's nothing quite like getting those deals and the aircraft into service. It is about getting the message out there that the world has never seen an aircraft quite like this, and KLM is going to be great at helping us promote it."

"We already have great [airline] customers on the platform, but I have no doubt that when we sit down in 12 months' time we will be talking

about other customers that will join the E2 family."

With the 2019 KLM order arguably one of the last significant commitments for the E2 series, there were questions even before the onset of the coronavirus crisis about customer interest in the aircraft. Did the long-running Boeing negotiations subdue commitment to the new jet? "It definitely added an element of uncertainty for some airline executives – they wanted to see how things worked out and if they'd end up doing a deal directly with Boeing," confirmed Holmes. "Had it not been for the pandemic, coming out of [the Boeing deal] would've been a good catalyst to re-engage some of that earlier dialogue. Although it's worth remembering that the conversations [with potential customers] continued, but it was whether people wanted to go to 'the final line'."

Talking turboprops

One product that certainly has got the industry talking in recent months is the prospect of a new Embraer turboprop. The firm tweeted a rendering in October 2020 which resulted in already fevered speculation about the manufacturer's propeller-powered ambitions being cranked up to 11. While Holmes would not go into detail on the company's plans, he did confirm that discussions with potential suitors are ongoing: "A new platform such as the turboprop would be on a partnership basis. Obviously, we haven't launched it yet, but it could be an exciting prospect and we're openly discussing it."

Asked to further define what Embraer was looking for in a potential partner, he said possible synergies were paramount: "We've undertaken 20 or so platforms as Embraer over the past 20 years. We're very, very good at developing programmes and delivering them on time, on spec and to budget. Our ambition is to grow, and to give customers solutions that really add value. So if we see something, such as the turboprop, which we believe could be very interesting, our next step is to talk to those in the industry where our combined forces could bring this to market. The reality is that different parties can bring different things. It is looking at where we could combine certain synergies and strengths, as well as risk and revenue sharing. We know that these programmes take a lot of investment, so we're looking at working with people on that."

When we suggested that Embraer's potential foray into the turboprop >>

The OEM also has a strong presence in the defence and executive markets EMBRAER

British Airways' Embraer fleet is critical to its London/City operation BRITISH AIRWAYS/NICK MORRISH



market was an acknowledgement that jet aircraft aren't suited to every mission, the CCO was clear: "For certain routes, sector lengths and airfields, the turboprop can be a more efficient run, but anyone who says that a [particular] larger narrowbody, turboprop or a regional jet fits all journeys is not treating the audience with enough respect. You could imagine a turboprop that's got the same fuselage as the E-Jet, so there's passenger comfort but also the ability to carry on baggage. Then there are considerations around advanced technology, so the aircraft is much quieter than passengers have been used to. And, let's be honest, [current] turboprop technology is dated. The market is crying out for what we could possibly have to offer and the economic savings are quite eye-watering. They really are the type of thing that will make airline executives say 'OK, when can you do this?' We've talked to a number of airlines and shown them what the potential could be, and their question is often 'When?' rather than 'If'. When we speak to potential partners, they're excited as well, so watch this space..."

While Embraer's turboprop programme is still in its infancy, could the green agenda – which was gaining serious momentum before the pandemic – be falling down the list of priorities for airlines, passengers and manufacturers in a post-COVID world? Not so, according to Holmes, who highlighted the fundamental economics of fuel efficiency: "I see the environment as being core to our offering going forward. Our new aircraft family is 20% more fuel efficient than the E1. Being green is very much front and centre of

An Embraer EMB-110P2 Bandeirante delivered to Air Littoral in France in 1977
EMBRAER



our thoughts, and we're talking to a number of technology innovators globally about our pipeline. But this doesn't have to diverge from airlines talking about profitability – it is actually part of it. Lower fuel burn means, of course, lower CO₂, but also lower cost. We're looking at the turboprop, but we're also looking at the future, when electrification and hybrid technology is ready to come to the market. We put the technology in when it's ready. What we're doing now is talking to a whole supply chain of innovators, from those [with products] that are far from being ready, through to those nearing completion in the near-term. We're making sure that, when the tech is ready, we're getting it in as quickly as we can."

The recent publication of Embraer's ten-year market outlook outlined the company's forecast for the global aviation landscape, but what about the prospects a little closer to home? Unsurprisingly, Holmes believes Embraer's fortunes are on the up, as the benefits of being part of a

wider business are leveraged: "We've defined a strategy from 2021-2025 as we reintegrate commercial aviation into the rest of the group. You've got defence, executive, you've got EmbraerX – our innovation centre – as well as services and support.

"This isn't a sprint, and I have ultimate confidence on where we are going to end up. We have an excellent product and the services and support for it. On top of that we have teams which are recognised globally for their customer focus and a company that is fully behind it. Embraer is very special – we love to bring in customers because once they get a taste of the 'special sauce', when they meet the people and see what we can do, it really is something that is quite compelling. I think we're very strong competition and I think we'll do very well. Ultimately, I think many airlines want to see competition in the marketplace and want to see that drive for innovation. We're already the leader in the sector below 150 seats. We intend to maintain that." 

Is this the shape of aircraft to come for Embraer? EMBRAER





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FEATURE

JFK

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THE EVOLU

Before the pandemic, British Airways operated up to 20 flights a day from JFK Terminal 7

Dong An

The master plan for New York International Airport – known as Idlewild until December 1963 when it was renamed John F. Kennedy International – was unique, with an unprecedented degree of airline involvement in terminal design and construction. Each of the major US airlines had the opportunity of commissioning its own unit terminal

and that privilege was also granted to British Overseas Airways Corporation (BOAC) as the largest foreign operator.

In 1963, BOAC was offered a lease on a 26-acre site by the Port Authority. The British carrier signed up TCA/Air Canada as a sub-tenant (Trans-Canada Air Lines was using the bilingual 'Air Canada' tagline in its marketing and officially changed its name in 1964) and

commissioned London-based architects Gollins, Melvin, Ward & Partners (GMW) for the project.

At the time of the commission an architectural fashion for brutalism was sweeping the UK, and many cities were blighted by poorly executed projects. For BOAC, GMW interpreted the style with a defter touch by designing the main level of the board-marked

TION OF T7

The first terminal to be built and operated by a foreign airline on US soil will close next year prior to demolition. **Mark Blacklock** recaps the twists and turns in the curious history of JFK's Terminal 7



concrete building as pavilions with slanted aluminium and glass curtain walls sitting on a broad deck. This formed the roof to the lower level and featured a landscaped terrace on the western and northern sides.

The main level was for departures, with the lower area recessed slightly below ramp level for arrivals including the Federal Inspection Services (FIS).

The arrivals lobby extended beneath the departures roadway.

The main lobby was contained in a double-height pavilion with a 10ft deep roof slab supported by two concrete shafts 180ft apart. The roof was designed to serve as a heliport with passenger access via elevators inside the support shafts. Landside, the roof projected 45ft to protect the

departures plaza, while a mezzanine deck extended from the lobby towards the airside, topped by a lower pavilion.

The plans were unveiled in April 1965, the same month that BOAC introduced the Vickers Super VC10 on the New York to London and Bermuda routes. The terminal was designed to handle 11 of the new flagships plus three Air Canada Vickers Vikings or

An aerial view, taken in 1977 when Concorde started operating to JFK, shows the wrap-around pier and the original gate layout with a BWIA Boeing 707-320, BA Concorde, Boeing 747-100 and Super VC10, Air Jamaica DC-8-61 and Boeing 727-200 and an Air Canada DC-9-30
BAE Systems/
British Aerospace
Heritage Collection

Before the advent of Concorde and the Boeing 747, BOAC highlighted the benefits of the VC10 for New York customers
AviationAncestry.co.uk

Douglas DC-9s. BOAC was to have two piers, the west with six gates and the east with five, while Air Canada's provision was on the northern face of the terminal between the piers. A special weather shield was designed for BOAC's Gate 1, which would have allowed light maintenance or de-icing to be carried out under cover. In all the design offered 300,000sq ft and construction was intended to start in early 1966 and take two years.

Best laid plans

The impending launch of the Boeing 747 forced BOAC to request a complete rethink of the gate layout in February 1966. A wrap-around pier was designed, separated from the terminal by a 30ft-wide service road, with the western and northern sides for BOAC and Air Canada's three gates on the eastern elevation. This improved aircraft manoeuvrability on the ramp and reduced the average walking distance for passengers, while offering larger gate lounges.

Initially, the idea was to organise the BOAC area into eight narrowbody stands (seven contact gates and one remote) with the flexibility to convert at a later date to handle five widebodies, but finally it was decided to install three 747 gates with two boarding bridges each and three VC10 gates with one. The boarding bridges at these international stands were connected to luffing bridges, which moved between the arrivals and departures levels at the terminal interface and ensured separation of passengers without the need for additional sterile corridors. All passenger traffic for Air Canada's gates was handled on the second level with arriving passengers then taking an escalator to reach domestic baggage reclaim (Canadian arrivals being pre-cleared at the origin airport) and the arrivals hall on the lower level.

Unfortunately, such flexibility was ruled out landside where BOAC's check-in desks were fixed concrete structures arranged in channels facing the entrance with dedicated links to the



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BOAC VC10
AND BOAC CUNARD

underfloor baggage handling system. Its successor, British Airways, was to pay dearly for this when the terminal was first redeveloped in 1984-86.

The BOAC check-in area was on the western side of the lobby with a small concession arcade and nursery behind it. Air Canada's offering was on the eastern side (served by a

conventional linear baggage belt) with its Maple Leaf Lounge situated behind along with the Piccadilly Terrace coffee shop and Mayflower pub. BOAC's Monarch Lounge for first class passengers was on the mezzanine together with a cocktail bar, the Princess Room restaurant, press room, offices and a VIP suite. The

 Airport Statistics	
	<p>IATA: JFK</p> <p>ICAO: KJFK</p> <p>Location: 40°38'23"N / 073°46'44"W</p> <p>Elevation: 13ft / 4m</p> <p>Runways: 04L/22R 12,079ft x 200ft / 3,682m x 61m 04R/22L 8,400ft x 200ft / 2,560m x 61m 13L/31R 10,000ft x 200ft / 3,048m x 61m 13R/31L 14,511ft x 200ft / 4,423m x 61</p> <p>Passengers (2019): 62,551,072</p> <p>Frequencies: Tower: 119.1 MHz Approach: 125.7 MHz Ground: 121.9 MHz</p> <p>Website: www.jfkairport.com</p> <p><small>Copyright © 2021 Jeppesen All rights reserved. The charts are available to the flight simulation community via Navigraph Charts, https://www.navigraph.com. (Not for airborne/operational use)</small></p>



lower level accommodated the FIS, separate baggage rooms for BOAC and Air Canada, the public arrivals lobby with domestic baggage reclaim at the eastern end, offices, crew and plant rooms, a staff canteen and the terminal's main kitchen. There was an observation deck atop the north gate concourse, but the concept of a rooftop heliport was scrapped. Ostensibly this was due to the increasing weight of helicopters; in reality BOAC simply could not justify the subsidy that would have been necessary to induce New York Airways to operate additional, dedicated services.

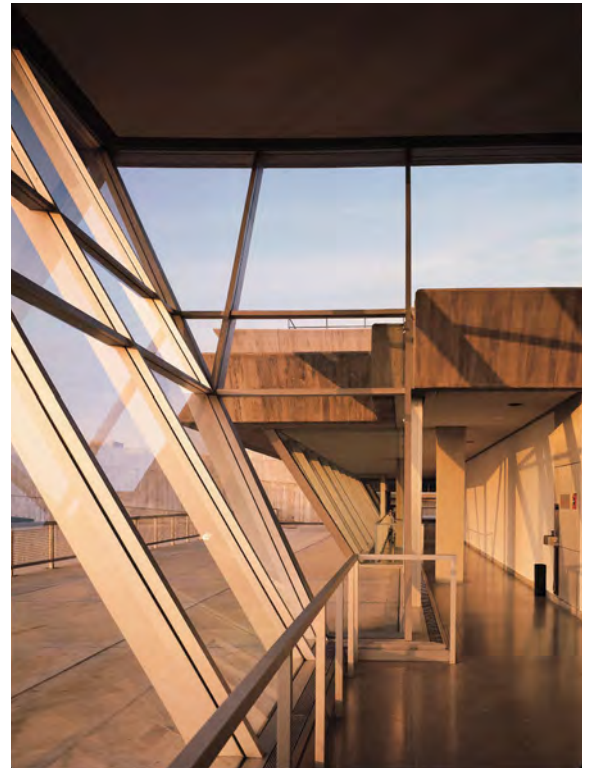
After the redesign, which increased the floor area to 335,000sq ft, construction started in January 1967, but was delayed by industrial disputes and several fires including an arson attack. The terminal finally opened on June 30, 1970 with a total price tag of US\$44m. The honours for the first flight went to Air Canada. Just weeks after the first scheduled service arrived there, there was a second arson attack on August 26, causing US\$1m of damage and the closure of three gates, although the rest of the terminal remained open during repairs.

The terminal was officially dedicated by HRH Princess Alexandra on September 24, who unveiled a commemorative plaque and an installation of three stones symbolising the air bridge between New York and London. The lower stones were taken from Brooklyn Bridge and London Bridge, while the cross-piece was from Signal Hill in Newfoundland, the point from which Marconi transmitted the first transatlantic wireless signal and close to the point from which Alcock and Brown took off on the first nonstop transatlantic flight.

In 1971, GMW received the annual award of the US Concrete Industry Board for the BOAC terminal for the originality and application of concrete in design and construction.

All change

The terminal was not to bear the BOAC identity for long as it merged with British European Airways (BEA) to form British Airways in 1974. BA inherited the BOAC handling contracts and over the years managed an ever-changing selection of airlines. It also inherited BOAC's order for Concorde and, together with Air France, launched supersonic services



at JFK in November 1977. A dedicated lounge for supersonic passengers was created at Gate 1.

In 1979 Air Canada started moving some flights to neighbouring LaGuardia and by winter 1981 had withdrawn from JFK completely (although it was to return in the 2000s for a time).

Capitol Air later became a sub-tenant as it required more space through developed scheduled services following deregulation; however the carrier ceased operations in November 1984. USAir was the next sub-tenant and renovated the domestic areas of the terminal before moving over from the TWA terminal in April 1985.

Meanwhile, British Airways had begun work on a two-year phased redevelopment, which concentrated on the international areas of the main building. The gate lounges were also renovated to provide more seating and the Concorde lounge was moved to Gate 5.

The scrapping of the channel check-in system and its replacement with two rows of check-in desks served by a new baggage handling system came at a major expense. The new desks (30 in total) were at right angles to the

ABOVE: BOAC's check-in was a two-stage process arranged in channels. Sixteen baggage drop points with individual conveyor links to the baggage hall fronted eight horseshoe-shaped ticket islands of terrazzo-faced concrete, each with two counters
Scott Brownrigg

ABOVE LEFT: This landside picture, taken shortly after opening, shows the terminal's original bare concrete finish
Scott Brownrigg

TOP: Looking out of the western end of the main lobby the distinctive slanted windows are highlighted
Scott Brownrigg



ABOVE: Boeing 747 and 777 widebodies dominated the BA gates at JFK prior to the COVID-19 crisis
Dong An

ABOVE RIGHT: In the mid-1980s a white fascia was fitted to the edge of the main roof slab
James Leynse/Corbis via Getty Images

TOP: A pair of Concorde jets lined up at Terminal 7 in the early 1990s
Joe Sohm/Visions of America via Getty Images

old ones and ran south-north with the existing shops relocated. The incoming baggage system was also replaced with larger carousels in the customs hall, while the immigration area was also renovated. Some of the board-marked concrete interiors were painted white at this stage and externally the edge of the main roof slab was covered by a white fascia to which the new British Airways logo was applied. The carrier had introduced a new corporate identity in readiness for privatisation in 1987.

The following year it began work on a second redevelopment of the terminal that concentrated on expanding airside capacity. The original 25-year lease (from the date of beneficial occupancy) was extended until November 2015 and William Nicholas Bodouva & Associates (WNB+A) was commissioned. The aircraft stands were rearranged and a 120,000sq ft extension built to the northern side of the pier to add three gates, bringing the total to 12.

The new areas had coffered ceilings and custom-designed light fittings, while externally WNB+A paid attention

to matching the concrete finish of the pier and won the Concrete Industry Board's 1991 award for the work.

As expansion progressed there was also a change in sub-tenants. USAir moved back to the TWA terminal following its merger with Piedmont, which had facilities there and a codeshare agreement with TWA, while United Airlines gave up its unit terminal to lease six gates from British Airways. United moved over in May 1989 and the redevelopment was dedicated in April 1991.

New connections

By 1997, work started on a third redevelopment of what was now Terminal 7 under the Port Authority's new numbering system for JFK's terminals. This coincided with the construction of the airport's AirTrain system and followed agreement with the Port Authority to revise the central terminal area's road system to create dedicated access.

British Airways commissioned Corgan Associates to lead the project team, with the first part of the redevelopment

involving the creation of a new Concorde Room in December 1998. Designed by Conran & Partners and built adjacent to Gate 1 by extending the pier's departures level out over the internal service road, this was also used by first class passengers. Since the withdrawal of Concorde in October 2003 it has been dedicated to BA's most premium passengers while retaining the supersonic moniker.

The Terrace Lounge for business class passengers and members of British Airways Executive Club followed in April 2001. Designed by FutureBrand and covering 28,000sq ft on the mezzanine, it had different areas for working, relaxing and dining. Highlights included a travel spa and shower suites – elements which are commonplace nowadays but were impressive for the time. Additional space was created by building over the west court that had originally been left between the main lobby and the mezzanine pavilion.

Meanwhile, the arrivals level of the terminal was extended 40ft out towards the AirTrain tracks with additional departures roadways on



top and a parking deck which added to the capacity available. The separate domestic and international baggage claim areas were combined into one large space with five reclaim units and a flexible partition allowing one or two units to be separated from customs for domestic use.

Further extensions were made at the landside departures level by covering the northern terrace and at the pier departures level by building out over the service road. The landside departures area was dedicated to check-in with four rows of desks arranged in two islands. An atrium space replaced the former tube connector that linked to the pier (there is a level change of 8ft) and the concessions were moved to the departures level of the pier. In all, the terminal was increased in size by 80,000sq ft bringing it to 535,000sq ft.

Towards closure

A proposal to create a new premium check-in area with a dedicated kerbside drop-off was a high-profile casualty of the 2008 recession, although the terminal's retail area was upgraded and, following an extension of the lease

for seven years to November 2022, the latest redevelopment started in 2017. BA brought back Corgan for a US\$64 million project to increase baggage handling capacity and install an in-line screening system and to refurbish the check-in, security, retail, gate and lounge areas.

The First Wing concept, which was originally inaugurated at Heathrow, was introduced, the Concorde Room was refreshed, while a new First lounge (for elite frequent flyers) opened in October 2018 and the main lounge was transformed into the Club Lounge in April 2019.

Following United's withdrawal from JFK in October 2015, Alaska Airlines became a major sub-tenant in October 2017. The Seattle-based firm refurbished the former United Club space for its own lounge designed by TPG Architecture and it opened in April 2018. Interestingly, it appears that United later regretted the decision and as *Airliner World* went to press, the carrier was due to return to JFK – and T7 – on February 28, 2021.

The terminal closed temporarily on March 25, 2020 at the beginning of the pandemic and the handful of



flights continuing to operate switched to American Airlines' Terminal 8. The closure was relatively short-lived, with the facility reopening on May 18.

While traffic is still down on pre-COVID levels, the terminal continues to call a curious patchwork of airlines home. In addition to BA and Alaska, carriers from around the world – including Aerolíneas Argentinas, All Nippon Airways, Iberia, Icelandair, LOT Polish Airlines and Ukraine International – rely on the building as their bolthole at one of the world's most prestigious hubs.

A radical future

That said, and having just marked its 50th birthday, what we know today as Terminal 7 will soon be no more. Hugely ambitious redevelopment plans of the wider JFK estate are gathering pace, with British Airways due to move into Terminal 8 by November 2022, and smaller occupants scattering elsewhere. This will unlock the opportunity for a radical rationalisation of the terminal infrastructure at New York's busiest airport, which will see terminals razed to the ground as JFK embarks on the next chapter in its endless evolution. ✉

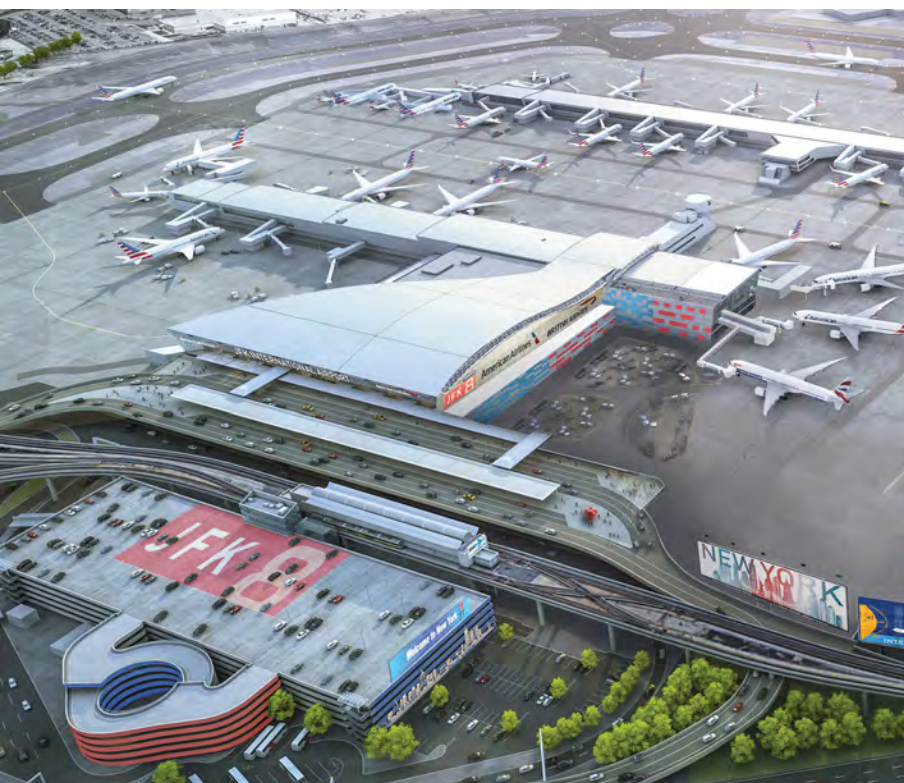
ABOVE: The Concorde Room is found only at JFK Terminal 7 and London/Heathrow's Terminal 5

British Airways

ABOVE LEFT: Refurbishment plans outlined by British Airways in 2017 for the check-in area at JFK T7

LEFT: American Airlines and BA have a joint business partnership across the Atlantic, providing up to 70 flights a day between London and the United States in pre-pandemic times

American Airlines



Info

Mark Blacklock is a former editor of *Airports International* and the author of *Recapturing the Dream: A Design History of New York's JFK Airport*.

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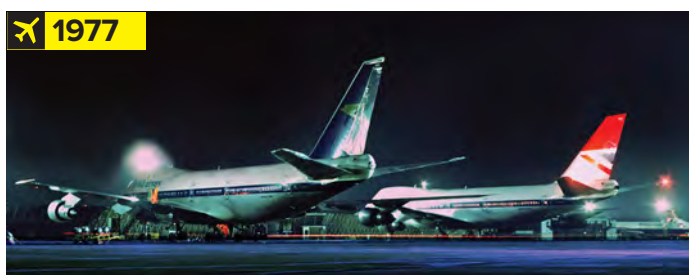
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Readers at the 'row

To celebrate London Heathrow's 75th anniversary, we asked you – the *Airliner World* readership – to submit your pictures of the UK's biggest airport. You heeded the call...

Eagle Airways' longest serving Douglas C-47, G-AMYB (c/n 33346), on turnaround at Heathrow in August 1956 while on lease to British European Airways (BEA). The former 78 Squadron aircraft was acquired from the RAF in 1953 and spent four years with Eagle before being sold to Sudan Airways in 1957
Bob O'Brien

BELOW British Overseas Airways Corporation (BOAC) and British European Airways merged in April 1974 to create British Airways. Three years later, the carrier was still in the midst of transition as Boeing 747-100s G-AWNC (c/n 19763) and G-AWNC (c/n 20273) show
Richard Vandervord



ABOVE RIGHT A trio of British Overseas Airways Corporation de Havilland Comet 4s – G-APDP (c/n 6417), G-APDS (c/n 6419) and G-APDF (c/n 6407) – at rest at the carrier's Heathrow maintenance base in May 1966. All three examples later found work with the military as XX944, XW626 and XV814 respectively
Gerry Manning

CSA Czech Airlines aircraft made regular scheduled appearances at Heathrow until 2010. The Austin A40 parked in front of this Tupolev Tu-104A, OK-LDA (c/n 76600503), highlights just how close enthusiasts could get to aircraft at Heathrow in the 1960s. The Tu-104 still survives and is preserved at Kbely Aviation Museum near Prague
Melvyn Morley



✈ 1990s



Before amassing its current 14-strong VIP fleet of Airbus A319s, A320s, A330s, A340s and Boeing 747-8 BBJs, the Qatari Amiri Flight ferried the country's royalty around on this Boeing 707, A7-AAA (c/n 21334) *Simon Murdoch*

✈ 2013



The Bahrain Royal Flight's Super 27, A9C-BA (c/n 21824), was one of remarkably few Boeing 727s to have continued to visit the West London gateway well into the 21st century. It is shown on finals over Myrtle Avenue in March 2013, less than 12 months before being retired in January 2014 *Martin Needham*

✈ 2013



British Airways' maiden Airbus widebody, A380-800 G-XLEA (c/n 095), is framed against Hatton Cross tube station as it arrives at London/Heathrow on delivery *David Reeves/High Level Photography*

✈ 2016



This Colombian Air Force BBJ transported the South American nation's then-president, Juan Manuel Santos, to and from London in November 2016 for a meeting with the UK's Deputy PM *Nick Clegg James Ronayne*

Swiss's maiden Boeing 777-300ER, HB-JNA (c/n 44582), on a visit to Heathrow in February 2016. Delivered new to the carrier less than a month earlier, this rotation had added significance for Heathrow-based dispatcher and photographer Alan Lippitt as it was his first time overseeing the turnaround and departure of a widebody at the London hub *Alan Lippitt*

BELOW RIGHT British Airways' eighth widebody type, the Airbus A350-1000, made its Heathrow debut in July 2019, initially operating services to Madrid before stretching its legs on longer routes to Dubai and Toronto *Thomas de Quincey*



ABOVE Icelandair has earned a reputation for offering enthusiasts at Heathrow and elsewhere the opportunity to capture striking special liveries, such as this Aurora Borealis-inspired colour scheme worn by Boeing 757-200, TF-FIU (c/n 26243) *Rocco Bolandrin*

Heathrow's second carrier, Virgin Atlantic, has flown from the West London hub since 1991 following the abolition of the London Air Traffic Distribution Rules. The airline has subsequently made Heathrow's Terminal 3 its biggest hub, deploying Airbus A330s, A340s, A350s and Boeing 747s and 787 Dreamliners to a host of global destinations *Owen Kirk*



✈ 2019



A 2019 view of Heathrow's Terminal 3 and air traffic control tower from the starboard side of a Eurowings Airbus A320 Family jet departing from Runway 27L
Atsushi Yoshioka

✈ 2020



Highlighting Heathrow's ever-changing collection of airlines, aircraft and liveries, Middle East Airlines has recently pressed seven Airbus A321neos into service and is due to accept two more in the coming months
Wael Al-Outub

BELOW Without doubt the most iconic airliner to call Heathrow home. Concorde flew revenue services for British Airways from January 21, 1976, until October 24, 2003
Andrew Morley

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✈ 1995



RETURN TO BUSINESS



Almost two years since the FAA's grounding order, the MAX is back in revenue service.

Chris Sloan was on board the first US flight with fare-paying passengers since 2019

From its November 2017 service entry, I flew the Boeing 737 MAX 8 twice a month on one of American Airlines' most profitable routes: Miami to New York/LaGuardia. Sure, I've had my fair share of interesting excursions on the MAX – Norwegian Air Shuttle's first delivery flight from Seattle to Oslo, Southwest's fleabitten MAX inaugural where the jet went tech and United Airlines' MAX 9 debut. But, for me, air travel didn't get any more pedestrian than on the MAX.

Overall, American Airlines' CFM LEAP-1B-powered jets were a small step forwards in passenger

experience, but it was all very mundane, if not bordering on the trivial. There was praise for its quiet cabin, green credentials, voluminous overhead bins and lightning-fast ViaSat Wi-Fi, but there was loathing for its Lilliputian lavatories, knee-crushing 31in-pitch economy seats and ergonomically disjointed first class cabin.

My new normal quickly became a thing of the past when the Federal Aviation Administration (FAA) grounded the type in March 2019 following the loss of two 737 MAX 8s and 346 lives within five months.

The MAX was Boeing's golden goose, racking up more than 5,000

More than half of American Airlines' 2,700 737 pilots have been retrained on the MAX
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STEVEN MARQUEZ

orders and a runaway success for the 52 airlines that had placed it into service. The transition from hero to zero was rapid and painful for the Chicago-based manufacturer, with issues surrounding the Maneuvering Characteristics Augmentation System (MCAS) prompting a recertification effort that revealed issues with wiring looms and leading edge slat tracks.

Boeing's reputation was in tatters. Its bottom line fared no better with direct costs estimated at \$20bn and indirect costs triple that amount. To compound financial pressures, Boeing has agreed to pay a further \$2.5bn to settle a criminal charge it conspired to defraud the FAA.

Legal claims, reworking and re-engineering costs, airline compensation, the storage and maintenance of 450 undeliverable aircraft, a halted production line at the Renton factory and strangled cash flow all contributed to an annus horribilis



ABOVE • On December 29, American Airlines deployed a Boeing 737 MAX on a revenue service for the first time in more than 22 months
AIRTEAMIMAGES.COM/
STEVEN MARQUEZ

Leeham News and Analysis, explained: "Recertifying the MAX is a critical milestone for Boeing. Before the grounding, the 737 accounted for about 40% of The Boeing Company profits and a major portion of its cash flow. Pre-COVID, the A320 line was sold all the way to 2030. If an airline wanted an aircraft

and hadn't ordered, it either had to lease an A320 or order a 737, which had many more delivery positions available from 2024 than Airbus had for the A320.

"Clearly, Boeing was running full speed – remember, it was ready to go from 52 to 57 aircraft a month in 2019. This meant suppliers were running full speed, too. Spirit Aerosystems, which builds the fuselages, has been decimated by the grounding – I think the 737 represents more than 50% of its revenue. All the way down to the widgets, recertification is important."

With the FAA's lifting of the grounding, the 737 MAX's original customer, American Airlines, seized the mantle as the first US carrier – and only the third operator in the world – to bring the MAX back from its forced exile. Brazil's GOL and AeroMexico were first to reintroduce the MAX back into service earlier in December, however the aviation sector's glare was fixed on the world's largest airline and second largest MAX operator, American, to bring the beleaguered Boeing back 657 days after it was grounded, beginning with the flight AA 718 Miami to LaGuardia.

All aboard

Arriving at Miami International Airport, I was surprised to see that the return of the MAX was a genuine mainstream news event – a raft of journalists and photographers were present to document the flight. >>

for Boeing that it will likely take years, if not decades, to recover from.

Rehabilitation

The long road to recovery began on November 18 with the FAA's

recertification of the type and the issuing of design changes required for the aircraft to return to service. The significance of this can't be understated for the vast number of MAX stakeholders. Scott Hamilton, founder of industry analyst firm

BELOW • American Airlines was the first US carrier to return the MAX to revenue service. However, two other airlines – Brazil's GOL and AeroMexico (pictured) – reintroduced their examples ahead of the Fort Worth, Texas-based company
AIRTEAMIMAGES.COM/
MEHRAD WATSON





Rightfully so, but 'the event' stopped there. The celebratory mood usually associated with a milestone flight such as this was nowhere to be seen. In its place, a quiet confidence.

Robert Isom, American Airlines president, and Chris Hurrell, the company's 737 fleet captain, faced a phalanx of probing media. After nearly 22 months, the wrenching MAX story was hopefully reaching the beginning of the end with the seemingly routine act of returning the plane to service.

At the press conference, Isom revealed that, as of the end of 2020, American will have re-activated all 24 of its delivered MAXs and accepted a further ten from the manufacturer. More than half of the company's 2,700 737 pilots have been retrained and MAX type certified in accordance with the revised guidelines, with the rest due to be up to speed by March.

This was to be American's 18,963rd MAX flight from its launch in December 2017. However, despite the wealth of prior experience and confidence in the recertified jet, its comeback was not going to be rushed or the subject of huge fanfare. It began on December 29, a quiet Tuesday sandwiched in the no man's

The Texas-based carrier has orders for 100 737 MAX 8s and holds options for a further 60
AIRTEAMIMAGES.COM/
BASTIAN DING

land between Christmas and New Year, with a single round trip.

Airline data provider Cirium reported that American rostered up to 588 flights in January and 1,864 in February (up 91 departures a day) connecting the Miami hub with Boston, Washington/Reagan, New York/JFK, Tampa, St. Thomas, San Juan, St. Croix, and Orlando as well as LaGuardia. Farther-flung destinations in Latin America are to be added next. This is a far cry from the 2,500 plus flights the MAX operated for AA in its last month before the grounding. In a statement the carrier reported it safely flew more than 2.5 million passengers during 46,400 operating hours before the FAA grounding.

American ramped up quickly after a first week's modest return-to-service. When asked why it was the first to phase the MAX back into mainline service, Isom said: "We're confident it's ready to go." Chief operations officer David Seymour reaffirmed the message: "We're not going to build trust just sitting on the ground."

Going nowhere

Isom – along with other AA employees and executives including CEO Doug Parker – have been taking

'flights to nowhere' designed to build confidence in the MAX. American also held a 'show and tell' flight for members of the press in December (see *Airliner World*, January 2021).

The Fort Worth, Texas-based carrier is currently operating at around 45% capacity, but given the MAX's efficiency and versatility, the jet is being brought back as other aircraft are retired.

Other MAX operators have given the airliner their vote of confidence. According to Cirium, United's 737 MAX-9s were due to re-enter service on February 11, with 198 flights scheduled to depart its Houston hub during the first month.

Elsewhere, Transport Canada has also just signed off the narrowbody, with WestJet restarting passenger service between Calgary and Vancouver on January 21.

Boeing received a further shot in the arm when, just days before Christmas, Alaska upped its order from 45 to 68 737-9s, while boosting its options by 15 to 52.

At the same time, the carrier confirmed it would retire its entire Airbus A320 fleet. Alaska Airlines, the first new post-grounding 737 MAX operator, is jumping in feet first



American Airlines president Robert Isom talks to members of the media ahead of the carrier's first revenue flight since the grounding was lifted. As a demonstration of his confidence in the MAX, Isom was on board the Miami-LaGuardia service
CHRIS SLOAN



American Airlines 737 fleet captain Chris Hurrell speaking before the December 29 flight
CHRIS SLOAN



with 248 flights from its Portland and Seattle hubs in the month following its maiden delivery in March.

To no one's surprise, Southwest, the world's largest 737 MAX operator and launch customer, remains committed to the MAX. It anticipates that its jets will be back in the air in late March or early April, although as *Airliner World* went to press, the exact dates, fleet size and destinations had yet to be formally announced.

Presently, 737 MAX jets are only being delivered to carriers who had placed the type into service prior to the March 13, 2019 grounding order. Alaska Airlines is due to be the first new airline to receive a MAX, its maiden example is expected to join the company in March
AIRTEAMIMAGES.COM/
STEVEN MARQUEZ

In an interview on pages 57-60 of this issue, Southwest's chief commercial officer Andrew Watterson discloses that the carrier's entire pilot cadre has to be trained before the MAX returns. The long and short of it is, the MAX has to work. It is one half of a global duopoly where 150-200 seat airliners share roughly 25% of the world's commercial traffic. The stakes of successfully returning the MAX couldn't be higher.

For all operators, the key is winning confidence. Isom insists: "We haven't seen any evidence that people are booking away from the MAX." He continues that "the MAX has heightened the intensity for dedication to safety." When asked if the adage 'If it's not Boeing, I'm not going' still held water given the Boeing's quality control issues, Chris Hurrell, AA's 737 fleet captain, responded on message that Boeing >>





and the Texas-based airline had learned a lot and made all of the necessary changes.

Passenger perception

American, along with its MAX brethren, are being very transparent that passengers are booking and flying on the MAX. In the immediate term, should passengers choose not to fly on the previously grounded jet, the airline is offering rebooking changes or cancellations at no charge for AA travel credits. The carrier has also pledged to alert passengers via text and app notification should there be an equipment swap for a MAX.

As we were boarding, the gate agent announced that we would be flying on a 737 MAX 8 – this is part of a new airline policy and has been rolled out across its network, presumably to avoid singling out the MAX.

None of the passengers we spoke to were uncomfortable with the aircraft type. “I trust the plane. It will be much better now that it’s been revised,” said Vilma Maldonado, who was travelling to see her daughter. My seatmate, Eduardo Fernandes, who flies every week, commented: “It’s been tested and looked at now more than any other plane in history, so I feel completely safe.” As to be expected, others we spoke to had no idea what

Both members of flight deck crew, Captain Sean Roskey and First Officer Moraima Maldonado, had family members on board the Miami-New York/LaGuardia connection
CHRIS SLOAN

aircraft they were flying nor did they care. “As long as it gets me there safely,” said one passenger.

However, not every passenger is comfortable with the return of the MAX. AA frequent flyer Richard Ginsburg, a corporate CEO who routinely flew the MAX before its grounding, commented: “I’m very disappointed with how Boeing handled this and, until I see a strong track record of incident-free flights and pilot confidence, I’m choosing other equipment to fly on.

“I think it’s good that they are being transparent with their customers, but I would be more comfortable if it was more of a co-ordinated effort, with all North American carriers like Southwest and others rolling out the plane simultaneously. Why should American Airlines customers be the guinea pigs?”

No one speaks more starkly against the MAX than the relatives of those onboard Lion Air flight 610 and Ethiopian Airlines flight 302. Ike Riffel of Redding in California lost both his sons, Melvin and Bennett, on ET302. In a statement from Clifford Law Offices, he said: “The 737 MAX is a flawed airplane. The airplane is aerodynamically unstable due to the placement of the larger engines.

Instead of fixing the problem, Boeing decided to compensate for this defect by adding software to the flight control system that would take control away from the pilots and hopefully stabilise the airplane. The pilots had no training on how to deal with a failure of this system or even any knowledge that the system existed at all. Needlessly 346 people’s lives were cut short – mothers, fathers, children, entire families lost because Boeing tried to patch an unstable airframe with software. In a rush to get this plane certified, Boeing hid this patch from the regulators, the airlines, the pilots and the public, even though they knew that there were flaws in the system. The two 737 MAX air disasters were not accidents – they were the result of a calculated gamble that Boeing took on the flying public and we all lost. No families should ever have to go through this hell. This plane is inherently unstable and should never have been certified until it can be made safe without the aid of flight control software. What is Boeing not telling us now? Do not let this monster out of its cage again.”

Back in the air

The day had arrived and American Airlines’ eighth MAX 8, N314RH (c/n 44455), was handed the honours.



American Airlines now informs its customers of the aircraft type they are due to fly ahead of boarding. This policy affects all flights so as not to single out the 737 MAX CHRIS SLOAN



Just 96 of the 172 seats on the LaGuardia-bound service were allocated CHRIS SLOAN

During the grounding it was initially stored at Roswell, New Mexico, before being transferred to the carrier's Tulsa maintenance facility.

Save for the presence of the airline's president in an economy class seat and a host of news crews, boarding was nothing out of the ordinary. With bottoms in 96 of its 172 seats, the sparsely populated airliner's light load was prompted by reduced

travel during a pandemic and a cold, quarantine-restricted New York as our destination. Conversely, the return leg to sunny Florida was oversold.

Once on board, it felt like any other flight – or, at least, as normal as normal can be during a pandemic. Our captain Sean Roskey, a 29-year veteran, thanked his American and Boeing colleagues for their hard work in bringing the MAX back to service,

adding: "I feel so confident about the plane that I brought my mother along for the trip". As the inaugural flight coincided with his 29th wedding anniversary, his wife Ann was along for the ride, too.

Moraima Maldonado, unrelated to Vilma but sharing the same surname, added to the family affair. A Miami-based 737 first officer in the right-hand seat for the rotation, she had her mother aboard as well. The cabin erupted into applause with these sentimental announcements.

As we pushed back for departure six minutes early, the ground crew stopped, took some selfies, and waved us off before we began our taxi to Runway 8R. I could sense no real anticipation or celebration among the passengers and crew – this was business as usual.

The Boeing 737 MAX 8's hushed take-off noise signature was interrupted by a few isolated claps, but the flight was even more pedestrian than I expected. Our lightly loaded MAX reached a cruising altitude of 39,000 in 24 minutes. The two-hour, 48-minute flight up a completely clear Eastern US seaboard was very smooth and uneventful, with only minor bumps as we descended into a gusty Big Apple. We touched down smoothly on LaGuardia's Runway 31 at 1:08pm and four minutes later were on gate ahead of schedule.

As we alighted the aircraft, a rush of press representatives were ready to interrogate us, as if we were returning heroes who had just completed a risky, dangerous mission. But for all involved, it felt utterly mundane.

Stakeholders can only hope that American Airlines flight 718 Miami-New York LaGuardia operationally sets the standard for all MAX flights to come. Perhaps the old saying 'If it's not Boeing, I'm not going' should be amended to 'If it's a boring Boeing, I'm going'. **AWA**

American Airlines' Boeing 737 MAX fleet has increased by more than a third since December 10 as Boeing works to hand over more than 400 stored airliners in production while the type was grounded AIRTEAMIMAGES.COM/ DIPANKAR BHAKTA



Fighting for change: **African** optimism

The African aviation industry still falls far behind in terms of female pilots, airport infrastructure and regional air connectivity in comparison to other parts of the world. **Wilbur Sargunaraj** talks to a trio of pilots from the continent to discuss their route to the flight deck, how they are inspiring others, highlighting prevalent issues, their hopes and what it means to be African

The number of women that make up the global percentage of airline pilots is still small – just 5% according to training provider CAE – but in some regions of the world, primarily in and around Africa, it's almost non-existent. Several factors have contributed to this, including the absence of female role models, cultural practices, attitudes and financial barriers which, in many cases, leads to women in Africa concluding that an airline pilot career is not a realistic option.

There is also the lack of a unified air transport market across Africa, which means international airlines from outside the region make up just under half of all passengers carried on the continent. This restricts major growth, and in turn, jobs with local firms. The devastating COVID-19 pandemic has compounded this, keeping passenger demand low.

Despite such setbacks, there is a band of pioneering pilots who seek to change that – and they are already making a tremendous impact, having been part of several campaigns in Africa and the Indian sub-continent that seek to both empower and inspire young girls. The author wanted to dig deeper and learn more from these incredible, trailblazing women and spoke to three female pilots who are breaking the glass ceiling in Africa.

Meet the aviators

The first pilot in our special roundtable discussion is Captain Ivana Alvares-Marshall, who was born and raised in the East African nation of Malawi. She holds a commercial pilot's licence from both South Africa and the United States and has completed her European Union Aviation Safety Agency (EASA) Airline Transport Pilot License (ATPL). At present, Ivana works in the corporate

air sector and flies types that typically include the Learjet 45, Cessna Citation Bravo and Beechcraft King Air B200 for a private bank in Malawi.

The second pilot is First Officer Dina Dawod, who flies the Airbus A320 with Egyptian-based AlMasria Universal Airlines. In 2001, directly after starting flight school in the US, Dina survived a horrific crash when she was a passenger in a small twin-engine aircraft. The pilot miscalculated weight and fuel and crash-landed on a street in Burbank, California. Even though she was not the pilot, this was the era of 9/11 and she was interrogated for months by various officials because of her race. The accident left her temporarily paralysed but with incredible determination she overcame all odds to be where she is today.

Finally, our last pilot is Captain Irene (Koki) Mutungi from Kenya. She had the distinction of being the first >>

Cairo-based AlMasria Universal Airlines has a fleet of five aircraft including a pair of Airbus A320neos, SU-TCE (c/n 977) and SU-TCF (c/n 1561)
AIRTEAMIMAGES.COM/HAMFIVE





Ivana Alvares-Marshall was born in Malawi and currently flies types including the Beechcraft King Air B200 and Learjet 45 for a private bank
VIA AUTHOR



Irene (Koki) Mutungi is a captain on the Dreamliner with flag carrier Kenya Airways
VIA AUTHOR



Dina Dawod is a first officer on the Airbus A320 with AlMasria Universal Airlines
VIA AUTHOR

South Africa's Johannesburg/O R Tambo was the busiest airport on the African continent before the onset of coronavirus
AIRTEAMIMAGES.COM/
FELIX GOTTWALD



woman on the African continent to become a certified captain on the Boeing 787 Dreamliner. Irene currently flies the widebody flagship for Nairobi-based Kenya Airways.

Airliner World (ALW): Could you tell us how you became interested in aviation, and how it led to a career?

IVANA: My interest began when I was ten years old. I knew I was born to fly. Once I completed all my flight training, which was self-sponsored, I faced many challenges. Getting a foot in the door was not an easy feat. However, each challenge brought an experience that made me stronger and from which I was able to learn something. I worked in different sectors [of] aviation, [including] flight operations, organising aviation events, flight instruction and freelance on private jets before I settled in Malaysia for a few years. I finally relocated back home to Malawi. I had forgotten how beautiful the African continent is. I am enjoying the varied experience as it is a mix of

corporate and bush flying that I am currently undertaking.

DINA: My dream was to travel around the world – and that's why I decided to become a [member of cabin crew]. During the first few months I remember how fascinated I was when I entered the cockpit. My eyes ran over everything, from the buttons to the instrument panels – I knew I belonged in [there]. I checked the registration process in the Egyptian academy, but as expected, I had to face the routine bureaucracy, the use of connections and other difficulties. I decided to travel to the USA and returned to Egypt with my [commercial pilot license (CPL)], then did a certificate equivalency. The most amazing experience was when I first landed an [Airbus] A320 in Oslo, Norway. The beautiful feeling of the plane's motion on the runway's centre lines will stay with me forever.

IRENE: I knew I wanted to fly from a very early age. My father was an airline pilot, and he would take my brother and I along on many flights. I was fascinated by airplanes and

would always say I wanted to become a pilot. Fast forward and after high school I still wanted to fly. I enrolled into flight school and here I am today. I've been working for Kenya Airways for [more than] 24 years.

ALW: Africa is such a diverse continent and I'm sure the issue of identity comes up all the time for you. Would you share some thoughts about what it means to be African?

IVANA: I often get asked how I consider myself African, [even though] I have Indian heritage. My great great grandfather emigrated from India to Malawi, and therefore I am considered fourth generation African [and] it's very much an integral part of my being. I consider myself blessed, having been raised [here]. To be African is to come from a land of complexity, diversity steeped in culture. I am blessed to experience both my original culture, Indian, and that to which I am born, African. In the words of the Ghanaian revolutionary Kwame Nkrumah: "I am not African because

Despite regional air connectivity still being low in comparison to global figures, Ethiopian Airlines has provided a vital local boost through its Addis Ababa/Bole hub
FLICKR COMMONS/
ALAN WILSON



I was born in Africa, but because Africa was born in me."

DINA: I am a proud to be African and I always work hard to let my voice and professionalism break the stereotypes about this beautiful continent. There is so much goodness that flows from [here], with so many great minds and many inventions. I am an Egyptian professional pilot and, indeed, a proud citizen of Africa!

IRENE: I am proud to have been born and grown up on this beautiful continent. There are a lot of possibilities and opportunities for Africans, but the learning infrastructure is not very enabling. I look forward to a time when every African child will have

access to all the basic human needs without a struggle.

ALW: What are some of the challenges that are unique to operating within Africa?

IVANA: While Africa is the fastest -growing aviation region, the [local sector] still [has] much work to do. From a pilot perspective we have seen time and time again communication issues with trying to deal with civil aviation organisations in various countries. Most of the time it is extremely difficult to get replies via email as there is poor internet connections or the telephone lines do not work [or] exist. Trying to work with flight planning departments

and obtaining weather information is arduous if you're working remotely. Most of the weather information can only be found on web-based platforms. We must remember that even though we are faced with these challenges [and] there is plenty of room for improvement, many opportunities exist.

DINA: The [continent's aviation industry] is vast and you always hear the phrase "when you fly within African aerospace you are on your own". We need to change that. With the ongoing demand of travellers around the continent I guess it is time to have an organisation that is concerned with [the African sector] and governs with a

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The African Section 99s

Ivana Alvares-Marshall is the co-founder and governor of the African Section 99s – a regional arm of the wider Ninety-Nines, a non-profit organisation established in 1929 by 99 women pilots, including Amelia Earhart. The group currently holds more than 6,000 members, divided into chapters and sections depending on their geographical locations across 44 countries. The African Section 99s seek to promote advancement of women in aviation through education, scholarship, and

mutual support, while honouring their unique history and sharing a passion for flight.

The group has set up the 'Girls Wings For Africa Scholarship Fund' and STEM to enable women in Africa to start a professional career in aviation. Educating girls in marginalised communities and rural areas also leads to a reduction in child marriages, early pregnancy, at-risk behaviours and violence against women and girls. It increases economic self-sufficiency and prosperity. When girls are

educated, cycles of gender bias against them are effectively disrupted, while additionally it reduces the risk of HIV infection by 36%.

The group is looking for companies, airlines and organisations who are willing to partner with it to provide scholarships and enhance education in aviation – especially as the industry is set to grow on the African continent. The only way this can be achieved is through grassroots methods. To learn more, visit: www.africansection99s.com

Ivana is the co-founder and governor of the African Section 99s organisation, which, among others, aims to help both girls and women into a career in aviation
VIA AUTHOR





Irene was the first woman on the African continent to become a certified captain on the Boeing 787. She joined Kenya Airways in 1995 and was the Nairobi-based firm's sole female pilot for six years
VIA AUTHOR



Irene's father was also a commercial airline pilot. He took her flying from an early age
VIA AUTHOR

higher standard. We used to see older and rarer aircraft, but more African nations are complying with international standards of safety set by ICAO [International Civil Aviation Organization], IATA [International Air Transport Association], FAA [Federal Aviation Administration] and EASA [European Union Aviation Safety Agency] so I can tell you that the rules are changing to be more restrictive and to always make safety a priority.

IRENE: Infrastructure is a huge challenge. Some airports were built many years ago and have difficulty accommodating modern aircraft. Things like air bridges and ground support equipment are dilapidated or non-existent at some facilities. Notwithstanding that, though, some very impressive airports have been built in the region [with] notable examples [including] Nairobi [Kenya], Accra [Ghana], Addis Ababa [Ethiopia], Johannesburg [South Africa], and many more. Communication is

also an issue. When flying through the region not all areas have radar coverage, which would enhance safety greatly.

ALW: Connectivity between nations in some parts of Africa can be tricky, with extreme examples of passengers having to fly via Lisbon or Paris and back to Africa. How big a problem is this and how can it be improved?

IVANA: Connectivity is a major problem [on] the African continent. If I were to travel from Egypt to Malawi, for example, I would need to go to another country, South Africa or Ethiopia, to reach my destination. Governments in Africa need to focus not just on international routes but also on domestic links, which will, in turn, increase trade, tourism and jobs. African countries need to embrace more private capital investment.

The 'Single African Air Transport Market' [SAATM] is a project of the African Union Agenda 2063. It is an

initiative to create a single unified air transport market [on the continent] to advance the liberalisation of civil aviation in Africa and to act as an impetus to the continent's economic integration agenda. To date, 34 countries have signed up to SAATM, and these countries represent 80% of the existing aviation market in Africa.

DINA: In my opinion I suggest a platform could be set up by the African Civil Aviation Commission [AFCAC], and limited to their members only in order to benefit all the African airlines. Sadly, so much business is lost to non-African operators. We need a platform that promotes African carriers and regulates airlines investing in the African markets. Both AFCAC and African operators should work together to achieve that.

IRENE: Connectivity is a function of the airline networks and is dictated by markets and profitability. I suppose until some destinations make



commercial sense for airlines, it will remain a challenge.

ALW: Are there any specific regions or countries within Africa that are currently better than others for gender representation?

IVANA: I am in the middle of conducting a survey on the representation of female pilots in Africa and, looking at the information I have so far, it's quite alarming to see how [many] are still extremely under-represented. Some countries are doing all they can to change that gender disparity, such as Kenya, Nigeria, Ethiopia and Tunisia. I would have expected many countries in

Kenya Airways fields nine examples of the Boeing 787-8 Dreamliner including, 5Y-KZD (c/n 36041), configured in a two-class, 234-seat layout
AIRTEAMIMAGES.COM/
MARKUS MAINKA

Lagos-based Air Peace operated a sizable network in Nigeria and West Africa before the onset of the pandemic
AIRTEAMIMAGES.COM/YOCHAI

Africa to try to change this narrative, especially if we are to achieve the 'United Nations Sustainable Development Goals 2030' [equality is just one of several 'global challenges' including poverty, peace and climate change that the UN sets to address]. It's important to note that before COVID-19, the few female pilots that did exist were employed with airlines, but now a majority of [the women] employed are now furloughed, affecting the statistics. Sadly, some countries in Africa do not even have an airline, and some have no female pilots at all.

DINA: Gender inequality in Africa remains high, but most countries [on

the continent] are stepping up their efforts now to close gender gaps. For the first time in Egyptian history, under the president Abd El Fattah el Sisi, the Cabinet has a total of eight female ministers. [Meanwhile] Rwanda is the only country in the world where women hold more than half the seats in parliament. These examples of progress should inspire others to forge ahead with actions to advance gender equality. In the formal economy, Africa has made notable progress in getting more women into executive committees and board positions. [The continent] has the highest female representation at the board level of any region, >>





with 25% against a global average of 17%, but even here gender inequality remains extremely high – as it is around the world.

IRENE: Africa has grown in leaps and bounds when it comes to gender representation in, I would say, 90% of the regions. Affirmative action from governments has made sure that women are not excluded from employment as in the past. It is still a work in progress, but it's heading in the right direction.

ALW: Have you personally experienced any discrimination (on the basis of gender, race/skin colour) in your journey to becoming a pilot? Any thoughts on how we can overcome this issue?

IVANA: I have experienced discrimination on numerous occasions in my life [including] gender prejudice, discrimination in the workplace, as well as facing racism in just ordinary day-to-day life. I am not someone who lets this affect me, nor do I take it to heart. Personally, I think it will take years and generations. Tribalism still exists in Africa and India, as well as other parts of the world. At an individual level, overcoming racist perspectives and stopping [this] behaviour start with changing our worldview. We should blur the concept of self and others and simply treat everyone, whatever their skin colour, equally. Governments around the world should work towards diminishing structural inequalities created by racist social hierarchies. We must remember we are all citizens of the universe.

DINA: Gender discrimination is a challenge we face everywhere we work, at every airport we land in, and

even with some of the passengers on our flights. I feel the only way to overcome this is to address the issue everywhere, and always to meet with leaders in government that believe in empowering women and their important role in building a healthy society.

IRENE: I remember an instance on my very first flight with Kenya Airways, when we used to have the flight deck door open. As a passenger was boarding, he saw me at the controls and started yelling that he would not fly with us. Needless to say, the captain asked him to apologise if he was going to proceed with us on the flight. In those days I was the only female pilot at the airline and the stereotype was still heavily engrained in people's minds. [Now] 24 years later, we have [more than] 30 female pilots at Kenya Airways.

ALW: The pandemic is having a major impact on the mental health of pilots around the world. What are some of your thoughts and how is COVID-19 affecting you as commercial pilots?

IVANA: Mental health is a topic that really needs to be addressed, especially in Africa. Many in the aviation industry have been affected due to job cuts around the world. Depression affects a significant number of pilots, and some say they've considered suicide; many are scared to speak up about their feelings or disclose the use of antidepressants – as this would be grounds for their licences to be suspended. The African Section 99s [see panel] has started a well-being and mindfulness campaign to assist pilots who are experiencing depression, called "Meditate Not Medicate".

During her flight training, Dina was involved in a major crash while as a passenger which left her temporarily paralysed
VIA AUTHOR

DINA: There is no doubt that the pandemic has greatly affected the whole aviation [industry] and tourism, with travel restrictions all over the world and a decline in passenger numbers. This personally affected me, as our company decided to take extreme measures that led to losing confidence in our ability to survive through the pandemic. Finding a stable career as a pilot through the crisis is a real challenge, but I am confident that we will weather the storm with the help of our peers and our tight-knit aviation community.





While in the past, many older or rarer types were still frequent on the continent, many carriers today fly factory-fresh aircraft. In 2019, Air Seychelles was the first African airline to fly the Airbus A320neo
AIRBUS



The COVID-19 pandemic in 2020 has resulted in airlines around the world storing jets and furloughing or letting crew go on an unprecedented scale
AIRTEAMIMAGES.COM/
CARLOS ENAMORADO

IRENE: COVID-19 has affected the aviation industry adversely worldwide. It is unfortunate that a lot of [air crew] have been made redundant or furloughed. For those who remain, they have had to take huge pay cuts; pilot mental health is a concern. I think that there is a lot of anxiety among pilots due to the uncertainty of the future [along with increased stress associated with] financial pressures. Fortunately, a lot of airlines have support networks – such as peer support groups – to help people cope.

ALW: What hopes do you have for aviation in Africa over the coming decades?

IVANA: I would like to see more collaboration between African governments. I hope connectivity improves and [that] international and domestic routes [experience] growth. I would also like to see private investment in infrastructure, improved resources towards safety and investment in training personnel. It would be wonderful to see SAATM come to fruition, although I probably will be very old by then! A single

African air transport market or the so-called 'Open Skies' policy could be a game changer for the aviation industry on the continent and boost intra-African trade and travel.


DINA: Non-African carriers have 40% of all seats in Africa. My hope is to decrease this number and increase the market share for African airlines. I would like to see the African Aviation Authority issue rules that match with international standards and monitor their strict implementation so we can raise the competitive edge and increase the market share for [our] airlines.

IRENE: I look forward to when our airspace will be more modernised regarding communication and radar coverage for safety purposes. I also look forward to seeing the African aviation sector competing with other worldwide markets, seeing as it is the fastest growing in the world according to IATA. There are huge opportunities for growth of the sector in Africa that just need to be harnessed.

ALW: Any messages you would like to share with young girls or women who are reading this interview?

IVANA: Ladies, stay focused and don't give up! Stay passionate to achieve your goals. There will be challenges but believe in yourself and you will achieve your dreams.

DINA: Don't be afraid of new experiences. If someone like me can do this then surely you can do this as well and achieve even greater things.

IRENE: Don't ever lose your passion! Have laser focus and work hard. In the end, it will be worth it! 

Around 40% of all passenger seats offered in Africa are flown by carriers from outside the region. Before COVID-19, Middle Eastern giant, Emirates, flew to 19 countries on the continent
FLICKR COMMONS/
MARKUS EIGENHEER



The author would like to thank David Burton for his assistance with this interview. Special thanks to Mervat Sultan, co-founder of Women in Aviation, Middle East Chapter and Ivana Alvares-Marshall, Governor of the African Section 99s

Simulators

GETTING ON THE FLIGHT TRACK

Flight simulators can roughly be split into two camps: pilots who use multi-million-pound devices that replicate realism for training, and aviation enthusiasts flying for fun from their homes. Airline pilot, **Jeremy Feldman**, offers his take on the pros and cons of each type

Ask airline pilots what sparked their interest in flying and their responses will vary. Some will remember visiting the cockpit in flight as a child and were inspired from then on. Some will wax lyrical about a fascination for attending airshows and dreams of being able to participate one day. For others, flying may be 'in the family', and it was only natural to continue in their parents' wake.

Despite myriad answers, almost all are likely to have experienced a flight simulator before deciding on embarking on aviation as a

professional career. Home PC flight simulators have been around for a long time. The original Microsoft Flight Simulator 1.0 was released in 1982, three years before the software giant released Windows. It also currently stands as the longest-running video game series of all time. But what makes this game so popular above all the others?

For many, flying is a dream. The hurdles to jump through to fly an airliner are enormous. Medicals, exams, time and training are all-consuming and can be expensive. The cost for a multi-pilot licence (MPL) can come to more than £120,000. Not

to mention that even when qualifying with a licence, a pilot often needs to find an airline to employ them.

Flight simulators can at least remove some of these barriers. Now, instead of having to spend the equivalent of a deposit on a house to start training, a would-be pilot simply needs to find a quiet room and a computer. No need to iron uniforms – just turn up in whatever feels comfortable. The weather outside is raining with a low cloud base and poor visibility? No problem. Adjust the simulator to CAVOK (cloud and visibility OK), and away you go. And if you ever get bored of flying straight and level, you can

Flight crew training on an Airbus A350 level D full-flight simulator
ALL IMAGES CAE UNLESS STATED





always try and pull the jet through a steady 1.0g barrel roll (remember, if you do it correctly, no one will spill any drinks, although this is not advised in real life).

For the professionals

So how exactly do simulators work and just how realistic are they? Perhaps it's best to look at the simulator market used by the airlines and military to train pilots.

The European Union Aviation Safety Agency (EASA) generally classifies three types of simulators: flight navigation and procedures trainer (FNPT), fixed training device (FTD)

and full-flight simulators (FFS).

An FNPT is essentially a fixed panel trainer. At its most simplistic, imagine a larger version of a computer simulator, with a joystick and engine throttles. There may or may not be any visuals present, and those that are might not be that realistic. Also, the flight modelling can be of a low quality. They do have their uses, however, such as providing the opportunity to practise flying in instrument meteorological conditions (IMC) where outside visuals would not usually be present.

An instrument landing system (ILS) approach can be very tricky to



ABOVE • Fixed training devices are touch-screen based and are valuable for practising standard operating procedures (SOPs)

ABOVE LEFT • Becoming a real pilot is a challenging process involving intense training and regular exams

Full-flight simulators are either hydraulic or pneumatically powered and provide full motion in six degrees of axis
BAA TRAINING

master. The pilot needs to develop a smooth and fast cockpit scan to be able to accurately fly an instrument approach. The process of learning to fly mostly using a primary flight and navigation display can be practised, developed, and fine-tuned. The FNPT can also help when developing other instrument-only flying skills, such as radio and point-to-point navigation.

The next generation of simulator is the FTD which is certified to seven different levels of complexity, with level seven being the most challenging. Technically the FTD is not a simulator, and there is no need for it to even have a sidestick or >>



yoke. The more modern level seven devices are typically touch-screen computer monitors set up in an aircraft cockpit layout. Because they are touch screen, they don't have any physical buttons, but when tapped, they will simulate what will happen to that button or display screen. They are good for learning touch drills, standard operating procedures (SOPs) and emergency procedures. The more advanced FTDs used in the military can include virtual reality headsets enabling the pilot to be fully immersed in the training environment.

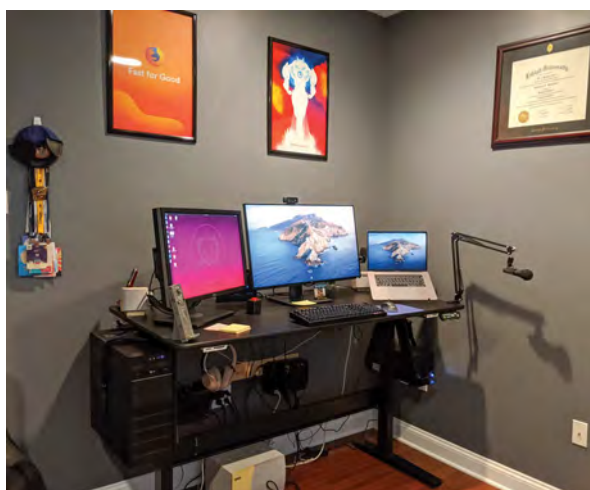
Finally, the FFS is the pinnacle of simulator devices. They are graded in four levels, A to D, with the latter rated the highest, and have an identical cockpit to that of the aircraft. They also feature an instructor station, typically situated behind the captain's seat (on the left side). Here the instructor can control differing meteorological conditions including: blowing snow, thunderstorms, turbulence and even wind-induced volcanic ash clouds. Other parameters can be set up, for example the aircraft's weight, fuel and centre of gravity and in some cases, its position on a specific parking stand at the airport. The fidelity on the newer level seven simulators is incredible. Some models even use Google Earth imagery which can be periodically updated to maintain accuracy.

It's not just about the visuals, though. The flight modelling for a level D simulator is designed and built using test data derived from mid-air aircraft dynamics providing an almost realistic experience. What sets these simulators apart from a home or fixed-based device is that they provide full motion in six degrees of axis.

Just like the real thing

As the flight progresses, the simulator will introduce acceleration to give the feeling of real flight, bumps and all. Pull back on the control yoke or sidestick, and you'll feel the positive load factor (pushing you back in your seat) as you start pointing up. Reject a take-off close to V1 speed (the point when the rotation can no longer be aborted), and you'll feel the effects of max autobrake stopping the aircraft in minimum runway distance (throwing you forward). Forget to flare (pointing the nose up) in the landing, and you'll experience the feeling of a heavy touchdown, and yes, there is a crash inhibit setting in case you get too carried away.

Of course installing an FFS at home is a little unrealistic for most enthusiasts unless they have a spare US\$10m and lots of space available. The motion is either hydraulic or pneumatically powered and requires extensive maintenance to keep them useable. They are also staffed 24/7 with engineers and technicians due to the complexity.



ABOVE • *Having a flight simulator at home provides aviation enthusiasts with the freedom to 'fly' anytime, anywhere and in any meteorological conditions – all without any real-life pressures*
FLICKR COMMONS/
TED MIELCZAREK

TOP • *While flight navigation and procedures training devices feature yokes/sidesticks and throttles, visuals are not a priority as the emphasis is on instrument-only flying skills*

Unfortunately, once the novelty has started to wear off, the simulator experience is seldom that pleasurable for commercial pilots as they undertake licence validation and training. Operating an FFS can cost from US\$300 per hour for a typical flight training organisation or airline, while simulator sessions usually last four hours or longer.

For commercial pilots, the minimum training required is a licence proficiency and line orientated evaluation check every year. Again, the level D FFS – classified as a zero flight time (ZFD) device – is so accurate it can be used for mandatory licence training and certification instead of a real aircraft.

Pilots are under a lot of pressure – if they don't meet the required standard they are removed from the 'line' and retrained until they eventually pass. It's a bit like having to take your driving test every six months, with an underlying pass and fail element.

For the enthusiast

Looking at it like this, the home set up can be much more enjoyable. While those in your house might not feature a full motion or realistic

physical cockpit setup, there is no added pressure of having to perform and pass mandatory tests, upon which your job and livelihood depend. The ability to be able to kit out your home setup with flight control yokes, rudder pedals and throttle quadrants can add to the realism and most importantly, the enjoyment of this set up.

As for realism factor, Microsoft has recently announced that they are planning to roll out virtual reality (VR), via a headset. This is still in beta testing, but this has the capacity to take the casual user's experience to a whole new level.

Negative training

As with all simulators, it comes down to how you use it. It can be very tempting to fly a home simulator wholly on instruments, and unless you have a large screen setup, it's quite difficult not to. While this can be good for learning and refining instrument flight rule (IFR) techniques and skills, for those studying at the private pilot licence (PPL) level, this can introduce a negative training aspect. For example, PPL flying is orientated around visual flight attitudes and maintaining an excellent outside visual lookout. Many single-engine propeller aircraft are not certified for IFR flight, and the risk is that pilots may be conditioned and become too focused on the cockpit instruments alone, rather than by visual references.

So long as the pilot has a solid flight training foundation and remembers the basics, the home flight simulator can be an incredible addition for any aviation enthusiast and pilot, from all backgrounds and skill level.

For less than the cost of one hour of flight in a single-engine propeller type, the pilot enthusiast can spend many happy hours flying their own airliner. And that's an enjoyable experience you cannot simulate. **AWA**

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RYAN PATTERSON*





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Riding the storm

In the
Spotlight

Chris Sloan chats with the chief commercial officer at Southwest Airlines, **Andrew Watterson**, to find out how the Dallas-based carrier is mitigating the effects of the gravest crisis in aviation history

Interview with a senior executive in the airline industry.

Airliner World: Most airlines have been playing defence during the COVID-19 pandemic. Relatively early on, Southwest Airlines defied this by playing offense, with aggressive additions to its route network. What motivated that pivot from triage to expansion? What was the timeline?

Andrew Watterson: That was around the second wave of COVID-19, because we had the spring and then different models for how things might unfold. Our original plan was [to be] roughly full strength by the end of the year. But we moved our network around so that we were exposed to locations like Las Vegas, Phoenix, Nashville – places that had business and leisure. And when the second wave came, the seriousness and the length of time was obvious to us, so we needed a new plan. From previous downturns [we knew] demand in each market was going to be subdued for a while. Therefore, no matter what the pace of

recovery, it would be insufficient to have the same amount of capacity in the same markets we had pre-COVID-19. As in past downturns, we needed to go broader, not deeper with our network. We needed new revenue pools. We needed to connect dots we hadn't connected before and new dots [altogether]. We need to have those become larger percentages of our network, so that whatever the aggregate demand

depression, we had more places to put people on our aircraft so we could get back to 'break even' faster.

ALW: Southwest has historically expanded and even been profitable during shocks like 9/11 or the financial crisis of 2007-2009. What is different this time around?

AW: This time the financial impact to us was much worse than before. It put us in a loss position, which obviously we had not had in a long, long time. So, there was a bigger hole to fill and it was as much financially and employee driven as it was marketplace driven. This is [why] we needed to preserve jobs and cash.

ALW: Southwest has historically had more point-to-point than connecting traffic. Has that situation changed as you adjusted to make the network broader, but shallower in terms of frequencies?

AW: We have always had connectivity – [as] a particular station got bigger, you just could not help having activity. In the last financial downturn, we started



LEFT • Andrew Watterson, the chief commercial officer at Southwest Airlines
SOUTHWEST AIRLINES

Southwest fields a fleet of 729 Boeing 737s, consisting of -700s, -800s and MAX 8s, as of January 21, 2021
AIRTEAMIMAGES.COM/
RYAN PATTERSON



Southwest's business model is still very much focused around the 150-seat aircraft
FLICKR COMMONS/
RUSSELL SEKEET



scheduling a certain amount of our flights to have structured connectivity. That persisted from that point forward. So, pre-coronavirus we had a portion of our network that was intentionally driven for connections. Now, with markets depressed and since we tend to fly bigger aircraft, our average gauge is much higher than other airlines. We are running 150 seats per aircraft where [rival carriers are operating] 100-110-seaters a lot of times because they are still flying their CRJs. That means we just cannot fill up point-to-point [flights with] 155 seats. So, we need more activity to make sure we can fill our bigger aircraft. The connectivity we have is not necessarily greater, it's just that point-to-point has drained out more than connections.

ALW: What is the current percentage of connecting passengers compared to the figures pre-pandemic?

AW: It was roughly 25% of customers with a connecting itinerary before the pandemic. Now it's up to 31%.

ALW: Southwest is supplementing secondary airports such as Fort Lauderdale-Hollywood, Chicago/Midway and Houston/Hobby with higher-cost airports like Miami International, Chicago/O'Hare, and Houston/George Bush Intercontinental. How does this fit into your low-cost model?

AW: Let me take a step back. When we grew out [in the western United States], there was plenty of room in the big airports. When we started

growing out east, they were full. We make it work just fine. Individuals say of Baltimore that it's the secondary airport for [Washington] DC. Well, for the people of Baltimore, it's *the* airport. So, we are not slavish to a secondary/primary airport approach, but we do want to have low airport costs. So Fort Lauderdale will likely always be bigger than Miami, as will Hobby than Bush and Midway than O'Hare. We want to have multiple airports, so passengers can drive to the one that is most convenient [for them].

ALW: In 2025, when the Wright Amendment Reform Act allows Southwest Airlines to enter other airports in the Dallas-Fort Worth region, can you see Dallas/Fort Worth



International (DFW) joining the map?

AW: We will certainly be looking at DFW or other airports and see if we want to complement Dallas/Love Field with another [gateway] in the Metro area. But that is an opportunity for another day.

ALW: Many airlines have taken a proactive approach at facilitating COVID-19 testing for customers. What is Southwest Airlines' approach?

AW: Our customers are very well informed. Part of the benefit of our direct distribution model and trusted brand is that we can communicate with our customers because they book straight through us. They read what we send them, so they are quite well-prepared. The US does not have the capacity for broad discretionary testing. We do not see [the need for] that right now for air travel.

ALW: What has been your experience of customer compliance regarding the wearing of face-masks?

AW: We have great flight attendants and agents to work with the customers. They are very good at de-escalation. Sometimes people just get tired of the mask and need a little cajoling. And with the people who want to make a statement, the last thing you want to do is enable them. Therefore, we are not going to create a big event. We will just not let them travel.

ALW: The famous Southwest Airlines culture has not been without its internal tension as the company is

forced to negotiate furloughs, leaves and buyouts. You have had incredibly positive responses from employee and labour groups working with the company, but it has not resonated with everyone. Why is that?

AW: We have been quite generous with our employees compared to other airlines, with voluntary retirement and separation packages. We offer people half pay, full benefits for 6-24 months. It costs us money, but it also saves us cash. We had a lot of people apply for that [and] we are very grateful.

What happened is that COVID-19 was more impactful and longer-lived than we expected. So, we need incremental savings and cash generation to help us

get back to break-even. Consequently, with every new city, [an] additional flight is an aircraft that would not have a job and an employee who now has work to do. But we also need some contributions from our biggest cost category which is salaries and benefits. With our non-contract labour, we promised no layoffs for a full year [with] 10% salary reduction. And then for our contract labour group, the law requires we negotiate through [the aforementioned]. So, our survey results from the rank and file [of] our frontline personnel [show] we still have very high engagement from our employees [and] very high love for the company. But the labour leaders are the ones with whom we negotiate, not the frontline. Thus, when you see information out there, it's between the company and the labour leaders, but there's no bad blood between us and our employees.

ALW: Southwest Airlines is the world's largest operator of the Boeing 737 MAX, but other airlines have reactivated it much sooner. Southwest has said that all its pilots must be trained on the MAX before any re-enter service. What is the airline's plan to reactivate the type and why the conservative approach?

AW: Well, we love the aircraft – it's safe and quite economical. It's all about the logistics of getting the pilot cadre trained, [although simultaneously] we must both unground our aircraft and receive new or stored examples from Boeing. That will dictate

Watterson stated that 31% of Southwest customers now hold a connecting itinerary, up 7% compared to pre-pandemic
DENVER INTERNATIONAL AIRPORT



In the Spotlight

According to Watterson, Southwest has opted to go broader, not deeper with its route network during the coronavirus pandemic
FLICKR COMMONS/
TOMÁS DEL CORO

Andrew Watterson

Job description: Andrew leads executive strategy and vision for network planning, marketing, revenue management and pricing, Southwest business, and customer relations/rapid rewards.

Experience: Prior to his roles at Southwest, Andrew served as vice-president of planning and revenue management at Hawaiian Airlines and spent 12 years as a partner with Oliver Wyman in Dallas in the consulting firm's aviation, aerospace and defence practice. Andrew also served four years in the US Army.

Education: BA, Washington University in St. Louis; MBA, Vanderbilt University.

Length of service at Southwest: Started in October 2013

Family: Two sons and one daughter

First paying job: Newspaper route when he was 12

Proudest moment: When his children were born

Best advice ever received: Always do your homework!

how we move these things into the network. What we have learned from both the COVID-19 pandemic and the MAX grounding is that you [need to] make a plan but then modify it as you go along once you see what is actually coming to fruition. Our plan was that we were not going to train our pilots speculatively. Once we see how smoothly and quickly the training goes, we will know how many pilots we have by what date. Therefore, it will be a handful for those first days, but then ramping up based [on] observation and adjusted accordingly. We manage

our business these days in 30-, 60- and 90-day plans. Whether it's capacity, training or the MAX, we will just keep adjusting those plans based on what we see.

ALW: Much has been made about Southwest Airlines looking at an alternative 150-seat aircraft that may begin with the letter A (such as the A220) rather than the letter B. What would it take from a commercial perspective to make the shift? And why the interest in smaller aircraft when Southwest has upgraded to 737-800s and MAX 8s for years?

AW: We need a 150-seat aircraft. I think people made assumptions about us, perhaps even manufacturers, because we have taken only the [737] -800 for several years now. That was more about rebalancing. Our short-haul network still makes up a large portion of our flights and a 150-seater is a good size for that. Our markets are not 75-seat aircraft. The 737-700 was a category killer for us. It could compete with the CRJs easily on short-haul – [such as] Sacramento-Los Angeles – and beat an Embraer. And then it



could fly Sacramento-Baltimore and have the legs for that. It was the best of both worlds. What replaces it? We are talking to Boeing and General Electric about the MAX 7. We have seven on order, but we need a huge number of these things.

ALW: Have you been flying during the pandemic and what is your impressions of the experience?

AW: I have been flying a lot. The first trip was the most eye-opening. You sit at your desktop and you are like "Oh my goodness, there's a lot less passengers." But then you get into an airport and the bigger ones still seem full. It was busier than it seems on a piece of paper. Mass compliance is a lot better at the airport. You could be in the grocery store or other places and you would see people not behaving correctly, but you go into an airport and an aircraft, people were behaving, wearing a mask, socially distancing; this is how it is supposed to be.

ALW: What has surprised you the most about your competitors' responses to the pandemic?

AW: I expected more long-life decisions by our competitors. We have made a long-life decision that we are going to go broad with our network [and have] opened several stations. We are going

to change how our network looks. But most of our competitors have not made fundamental changes. Whereas [in] previous downturns, airlines made far-reaching changes about who they were and how they were going to be operating as a business. Had we talked in April, I would have said that, by late summer, somebody would have de-hubbed [left one of their major airports], gone bankrupt or done something quasi-permanent. That has just not happened. Although there have been some long-life choices, most of it has just been short-term.

ALW: From a personal perspective, what has it been like for you living in the belly of the COVID-19 beast?

AW: We had a little bit of training with the MAX. That is on a much smaller scale, but it introduced a level of uncertainty and changing to adapt. For COVID-19, it was somewhat the same thing, but on a much larger scale. The key is just not getting lost in the what-ifs. Do not despair. I started my career in the army and it was somewhat like that: you make plans and, if something happens, you deal with it. And you do not look too far ahead, otherwise bad stuff happens. I am looking forward to a boring year – it's not terribly exhilarating, just more of a necessity. And I will take a lot of vacation days!

Southwest Airlines operates into both primary and secondary airports to give customers more convenience when flying
DENVER INTERNATIONAL AIRPORT



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Since that launch Boeing has developed four generations of the type including three military variants in 1993.

In 2011 Boeing countered the European charge of the Airbus A320 by launching the fourth generation 737 MAX but the variant was globally grounded followed tragic crashes in 2018 and 2019. Now coming back into service, the MAX variant will continue a remarkable series.

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A large Virgin Atlantic Boeing 747-400 aircraft is shown in a hangar. The aircraft is white with red accents on the nose and engines. The hangar has a high ceiling with yellow structural beams and large windows. The aircraft is parked on a grey floor, and there are some ground support equipment and personnel visible in the background.

Virgin Atlantic jumbos have graced the skies for more than 35 years, but the pandemic has brought their career to a premature end. In December 2020, the airline threw a retirement party for its last Boeing 747.

Paul Norton raised a glass on behalf of *Airliner World*

A fond

During the dizzying peak of the first wave of coronavirus in spring 2020, Virgin Atlantic revealed that its seven remaining Boeing 747-400s would be immediately retired. The news was greeted with sadness among staff, enthusiasts and frequent flyers who all share an emotional attachment to the iconic 'Queen of the Skies'. During the rest of the year its former Everett-

built jets gradually left for pastures new, leaving just one Virgin Atlantic example in the UK.

Of course Virgin couldn't entertain retiring its last jumbo, G-VROY (c/n 32340) *Pretty Woman*, without a proper send-off, so the Crawley-based company organised a very special farewell party at its London/Heathrow maintenance hangar on December 12. When news of the event was released, an estimated 100,000 people

registered their interest. However, strict social distancing measures limited the numbers to just 40, with the £50 tickets being sold out in less than two minutes.

All the proceeds from the sale were donated to the Trussell Trust, an organisation that supports a nationwide network of food banks and campaigns to end food poverty in the UK. Prior to the main public event, Virgin Atlantic invited a few

Virgin Atlantic Boeing 747-400, G-VROY (c/n 32340) 'Pretty Woman', was the firm's final jumbo to leave the UK

PAUL NORTON

RIGHT • Four Virgin Atlantic Boeing 747-400s – G-VROS (c/n 30885), G-VLIP (c/n 32338), G-VROM (c/n 32339) and G-VAST (c/n 28757) – stored at Manchester Airport's Terminal 2 in May 2020

SPENCER BENNETT

farewell

media representatives to a pre-party celebration, with *Airliner World* one of those on the exclusive guest list.

Bubble-bound

The formal celebrations kicked off in the 'bubble' (the upper deck of the 747) on board *Pretty Woman* with an introduction by Virgin Atlantic's chief customer and operating officer, Corneel Koster. In his speech, Koster was keen to express just how much



the jumbo has meant to the airline: "[Boeing] 747s really are special, they create such emotion. Is it the curves? I just don't know..."

"The [jumbo] has been with us since the very beginning in 1984 and has carried between 60-70 million passengers and flown [more than] 2.3 million flight hours over its career. The 747 is Virgin Atlantic," he added.

The British firm has operated three variants of the Boeing 747 since its >>

inception: the -100, -200 and -400. In the past it was proud to adorn some of its widebody jets – notably the Airbus A340 – with the slogan ‘4 engines 4 long haul’. However, increasing awareness of global climate change issues has seen airlines phasing out the more gas-guzzling types. The jumbo, for example, burned around 12 tons of fuel per flight hour, making it approximately 40% less economical than twin-engined jets – such as the Boeing 787-9 Dreamliner and Airbus A350-1000 – that replaces it at Virgin Atlantic and countless other carriers around the world.

With the 747’s retirement, Koster discussed the company’s “unwavering commitment to sustainability”, saying it will slash a further 10% from its emission per flight kilometre. But that’s not all: “We want to set ambitious targets for sustainability, we want to see how good we can be,” he added.

Meanwhile, as COVID-19 continues to hamper the finances of airlines around the world, Koster gave *Airliner World* an insight into the health of the carrier with some positive news. He highlighted that Virgin “smashed Black Friday”, recording three times as many sales as anticipated. Cargo flights were up 50% to 3,500 during the peak of the pandemic and Koster told guests that the airline was ready and willing to “do its part” in the distribution of vaccines, having already transported vital personal protective equipment (PPE) across the globe to help fight the disease.

One final tour

After the welcome speech and, of course, a COVID-19 safety briefing, we were given a slickly presented tour of the aircraft, inside and out. Engineers, cabin crew and pilots were on hand to answer questions and share their personal stories while working with the ‘Queen of the Skies’.

One of the day’s notable attendees was Yvonne Kershaw, who in 1993 became the first female Boeing 747 captain in the UK. She amassed more than 18,000 flight hours (equating to almost two years in the air) during her career and spent 27 years flying for Virgin Atlantic.

Kershaw shared some amazing highlights of her career: “I was selected to be in the initial cadre of 747 instructors, which was quite a privilege,” she explained modestly to *Airliner World* in her former ‘office’ on board the iconic flight deck of *Pretty Woman*.

Since retiring three years ago Kershaw has missed her colleagues as well as the aircraft: “The crews really do feel like a family, you get on board with another two pilots and 12 or so cabin crew, shut the doors and head off somewhere. And when you’re spending more days away than at



The first aircraft for Virgin Atlantic was Boeing 747-200, G-VIRG (c/n 21189) ‘Maiden Voyager’, delivered on June 14, 1984
AIRTEAMIMAGES.COM/
CARL FORD

home these people do become part of your family. It really is a Virgin family.”

The tour continued with a visit to an area not seen by the travelling public – the crew rest compartment. Located above the rear of the economy cabin and up a winding set of stairs, there are eight bunks providing staff with the opportunity to grab some well-deserved shut-eye.

“The amount of time we get up there varies from flight to flight, from 15 minutes to around an hour, maybe more. It’s just nice to have somewhere to come and relax or freshen up,” said Laura Mansell, one of the senior cabin crew helping to supervise the day. “I’ll certainly miss the old girl though; we’ve had some adventures,” she added.

Next we took a look round the exterior of the 2001-built *Pretty Woman* which included a visit to the cavernous cargo hold and a close-up inspection of the widebody’s four

General Electric CF6 powerplants. Engineers who had worked so hard to keep the ‘Queen’ flying were dotted around to answer our questions.

One of them, Ian French, an aircraft maintenance manager, discussed the complexities of keeping an ageing aircraft in the air: “I think from a commercial point of view [the retirement] is the right thing to do, especially when you have modern aircraft available to you which are so much more economical to run, plus you have the green element; these [jets] burn a lot of fuel.”

French also demonstrated Virgin Atlantic’s £50,000 tool chests, which were developed in partnership with Snap-on to try to eliminate any safety issues and lengthy delays caused by missing tools. Engineers are able to unlock the state-of-the-art chest with their personal ID and take their required tool. The chest then automatically scans the drawer when

A trio of ex-Virgin Atlantic jumbos have been acquired by Atlas Air in a troop-transport role
AIRTEAMIMAGES.COM/
VINCENTO PACE

Virgin Atlantic Boeing 747 fleet as of March 2020

Reg	C/n	Name	Built	Final VS flight	Fate
G-VAST	28757	Ladybird	1997	24-Mar-20	scrapped by eCube, St Athan November 2020
G-VROM	32339	Barbarella	2001	24-Mar-20	to Atlas Air as N481MC, December 1, 2020
G-VROS	30885	English Rose/Forever Young	2001	31-Mar-20	returned to lessor (GECAS), to be leased to Atlas Air
G-VGAL	32337	Jersey Girl	2001	18-Mar-20	stored at Pinal Air Park, November 25, 2020
G-VXLG	29406	Ruby Tuesday	1998	16-Mar-20	to TLV for freight conversion, December 3, 2020
G-VLIP	32338	Hot Lips/The Falcon	2001	18-Mar-20	stored at Pinal Air Park, December 11, 2020
G-VROY	32340	Pretty Woman	2001	29-Mar-20	stored at Pinal Air Park, December 22, 2020, for Atlas Air as N482MC



closed and identifies which item has been removed, raising a red flag if the aircraft leaves the hangar before it is returned.

Top-class dining

The day was rounded off with a three-course meal served in the Upper Class cabin situated in the aircraft's nose. Guests were offered a range of high-end options. I elected to have mozzarella and tomatoes to start, Dingley Dell pork belly for main and a lemon dome desert – all were absolutely delicious and well presented. It certainly made a very welcome change to eat on an aircraft without having to worry about turbulence causing you to spill your meal down your shirt!

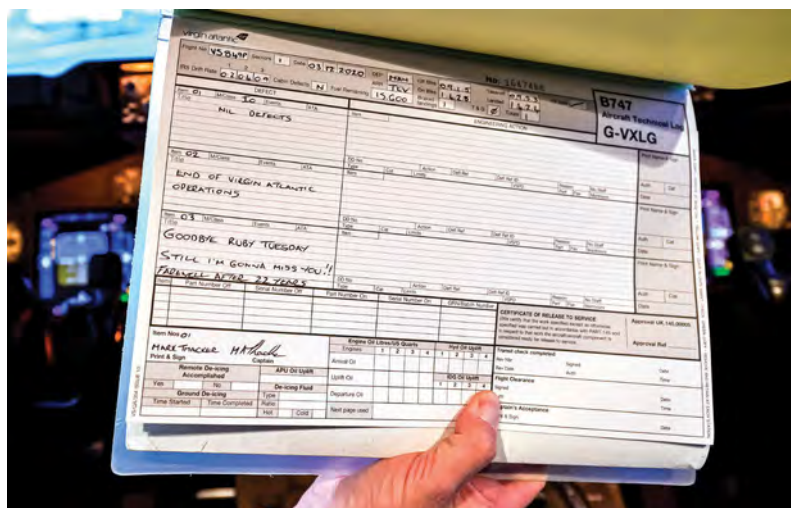
Finally, we had the opportunity to order drinks from Virgin's famous onboard bar and it wasn't lost on us that this is something most of us hadn't been able to do for many months. Of course, no farewell celebration would be complete without Champagne and attentive crew ensured glasses were kept topped up.

Then to finish it all in style, Virgin Atlantic kindly provided every guest with a goodie bag containing mementos of the day including the airline's well-known salt and pepper shakers, affectionately nicknamed Wilbur and Orville – after the pioneering Wright brothers.

End of an era

Prior to COVID-19, the Boeing 747 was mooted for a 2021 retirement by Virgin Atlantic and undoubtedly the relatively diminutive scale of

The logbook of another former Virgin Atlantic jumbo, G-VXLG (c/n 29406) 'Ruby Tuesday', illustrates how attached employees have become when the type retires
AIRTEAMIMAGES.COM/4X6ZK-MONI SHAFIR



this send-off wasn't quite what the company bosses had in mind, as Koster said: "Of course we don't want to go this quietly, but it is appropriate at this time." Nonetheless, the event made the most of Virgin Atlantic's trademark cheeky fun and the majesty of the 747.

So, what is the fate awaits *Pretty Woman*? Just over a week later, on December 21, G-VROY departed the UK from Heathrow's Runway 27L bound for Las Vegas. The following day, now as Virgin 848P, it flew a short hop from the Nevada metropolis to the Pinal Airpark in Marana, Arizona where it is due to be converted into a troop carrier with US-based Atlas Air. The jet has since been re-registered as N482MC.

The widebody joins two other ex-Virgin 747-400s, G-VROM (c/n 32339) *Barbarella* and G-VROS (c/n 30885) *English Rose/Forever Young*, for a new lease of life with Atlas.

Of the other four jumbos from the seven the carrier had at the time of the retirement announcement, G-VAST (c/n 28757) *Ladybird*, has been the first to be scrapped.

While there continues to be great uncertainty, one thing is for sure: the coronavirus pandemic will leave behind a very different aviation industry from the one we once took for granted.

While airlines across the globe have retired various aircraft types – many of which have their own loyal band of devotees – the passenger-configured Boeing 747-400 will most likely be the most fondly remembered. However, while Virgin jumbos are no longer gracing our skies taking families to the Caribbean or bringing business people to the Big Apple, it's comforting to know that the examples taken up by Atlas may well return to the UK every once in a while – so this is not adieu, but au revoir. **AAW**

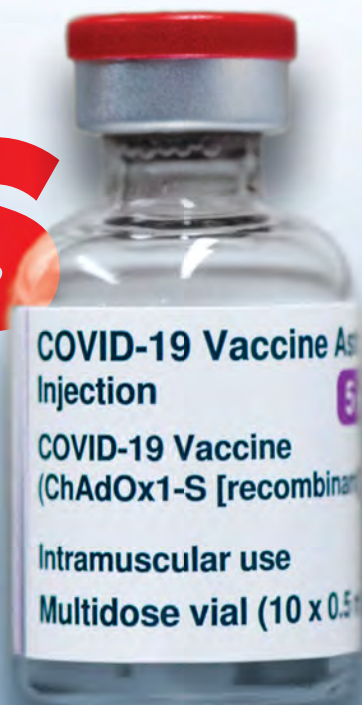
London/Gatwick's Pier 6 bridge gives a unique view of Virgin's Boeing 747, 'Pretty Woman'. The carrier is based near the West Sussex town of Crawley, which borders the airport
AIRTEAMIMAGES.COM/FLORENTE LACRESSONNIERE



Vaccines

A shot in the arm for airlines?

As octogenarians across the UK were issued their first helping of a COVID-19 vaccine, logistical efforts were already well under way for a mass rollout, as **Tom Batchelor** explains in the second half of his special report



With promising news from multiple pharmaceutical companies that the development of a COVID-19 vaccine has proved to be both safe and effective – the UK having now rolled out both Pfizer/BioNTech and AstraZeneca/University of Oxford-developed injections – scientists appear to be winning the battle against the virus.

Now, the aviation sector – and, specifically, dedicated cargo operators – must limber up for one of the largest and most important logistical challenges the industry has faced.

The world's top 20 air-cargo flyers alone operate nearly 1,000 wide-bodied freighters, and 2021 is likely to be busy for many of them.

Andrew Lobbenberg is an aviation

analyst with HSBC and predicted that nimble cargo operators would be well placed to adapt to the soaring demand. He said: "The global freight industry and air-cargo sector is already preparing for the unprecedented task of distributing vaccines to the worldwide population."

"Aviation is a tightly regulated industry, from an economic as well as safety perspective. But while international passenger-route rights are typically limited to airlines from the two countries at either end, cargo-traffic rights are much more liberally regulated. And, given the importance of expediting distribution, governments will likely allow airlines to operate vaccine charter flights."

"The pandemic's exceptional demands have already led to many unusual routings."

Logistics companies often prefer dedicated freight forwarders because of their ability to carry large, palletised shipments, route networks connecting large freight hubs, schedules that are better timed for shippers' needs, and less stringent payload and requirements surrounding hazardous materials.

Kings of cargo

Boeing's recent projection suggests that cargo airlines could play an even larger role in the years ahead. The Chicago-based manufacturer said it expected the global freighter fleet to grow by more than 60% over the next two decades. By 2039, 2,430 freighters

TOP • The AstraZeneca/University of Oxford-developed vaccine is easier to store and has a much longer shelf life at lower temperatures compared with its Moderna and Pfizer-developed counterparts, so it can be transported more easily. MATTHEW HORWOOD/GETTY IMAGES



A Singapore Airlines Boeing 747-400F was the first aircraft to transport a shipment of Pfizer-manufactured COVID-19 vaccines to an Asian nation
SIMON GREGORY/
AVIATIONIMAGENETWORK

are predicted to be delivered, Boeing forecasted, with approximately half replacing retiring aircraft and the remainder needed to meet projected traffic growth. More than one-third of these deliveries will be new widebody cargo jets, but the majority – nearly two-thirds – of the deliveries will be conversions from passenger planes.

"The urgent need to meet demands for transporting medical supplies to all regions in response to COVID-19 created a unique and unprecedented environment. The decline in air cargo capacity plus urgent demand for medical supplies led to a spike in yields to high double-digit levels in second quarter 2020," Boeing reported.

BELOW • UPS has built a 'freezer farm' in Louisville, Kentucky, close to its Worldport base at Louisville Muhammad Ali International Airport. A second has been completed in Venlo, the Netherlands, close to the firm's Cologne/Bonn Air Hub. The two locations each house 600 deep freezers which can hold 48,000 phials of the vaccine at temperatures as low as -44°C BAILEY/
AVIATIONIMAGENETWORK

"With these market conditions, freighter operators have been in a unique position to meet market demands that require a high level of speed, reliability and security, as only air cargo can do."

FedEx, the world's busiest cargo airline by volume shipped, has acknowledged that distributing COVID-19 vaccines will be "complex" – not least because of the strict temperature requirements of jabs such as Pfizer/BioNTech's, which must be stored at -80°C. But a spokesperson for the company said they were "confident" the systems were in place to cope, particularly as the freight firm had been involved in shipping flu vaccines for more than a decade.

Solutions including stationary freezers, temperature-controlled ocean containers and refrigerated trailers were being explored, it told *Airliner World*, and the company has also developed tags that provide trackable information about a shipment. "The FedEx network is well positioned to handle these shipments with our temperature-control solutions, real-time monitoring capabilities and a dedicated healthcare team to support the storage, >>



The world's top 20 air-cargo flyers alone operate nearly 1,000 wide-bodied freighters, and 2021 is likely to be a busy year for many of them...





customs brokerage and express transportation of vaccines and bioscience shipments around the world," the company said.

"Working with the FAA, FedEx has significantly increased [its] capability to carry dry ice aboard our cargo aircraft. On average, we now transport approximately 500,000 dry ice shipments a month.

"While standard country-specific restrictions on dry ice still apply, we can now move critical healthcare shipments, like the vaccines, faster between more than 100 countries on our Boeing 767s and 777s."

The Memphis, Tennessee-based company is also working closely

Lufthansa Cargo's dedicated COVID-19 Temp Premium service came online on January 11
OLIVER RÖSLER/
LUFTHANSA CARGO

FedEx began building 'freezer farm' infrastructure nearly a decade ago in response to the H1N1 ('swine flu') outbreak. It now has around 90 cold-chain facilities around the world for storing vaccines FEDEX EXPRESS

with the healthcare industry to transport other supplies critical to the distribution of vaccines, such as phials, syringes and personal protective equipment.

Another significant player in the market, DHL, has developed expertise in transporting shipments at cryogenic temperatures (-150°C) using non-hazardous liquid nitrogen. Compared with dry ice, which needs to be replenished every few days and is prone to temperature deviations, liquid nitrogen is more reliable – something which is particularly critical for fragile and temperature-sensitive biomaterials.

A spokesperson for UPS, which

is constructing a 'freezer farm' in Kentucky capable of storing millions of vaccine doses that require ultra-low temperatures, told *Airliner World* that staff were 'working hard to deliver increased package volume as a result of the pandemic'.

The spokesperson added: "We have visibility into the needs and demands regarding vaccines and testing and are preparing our network to help deliver in support of urgent, lifesaving operations."

In the Middle East, Emirates' freight division has set up a dedicated rapid response team to co-ordinate requests from the various bodies involved in the international vaccine distribution



network. The carrier said its SkyCargo vaccine hub in Dubai South will be the largest dedicated airside facility in the world for COVID-19 injections with more than 4,000m² of temperature-controlled storage. Emirates SkyCentral DWC, as the site is known, is complemented by one of the world's largest fleet of cool dollies – a mobile steel trailer and aluminium insulated container that can maintain temperatures

down to -200°C – helping protect temperature-sensitive cargo during transit between the aircraft and cargo terminal. Additionally, the availability of many temperature-controlled trucking docks and the proximity of the terminal to the aircraft parking gates will ensure rapid and efficient clearance of cargo.

Sheikh Ahmed bin Saeed Al Maktoum, Emirates' chairman and chief executive, said: "Dubai is well



Tecnam and ultra-freezer manufacturer Desmon have modified the P2012 Traveller to leverage the aircraft's short field performance to transport up to 115,000 vaccines to less easily accessible areas **TECNAM**



Lufthansa Cargo's 8,000sq ft Pharma Hub in Frankfurt was supplemented by similar hi-tech facilities in Chicago and Munich in 2020 **LUFTHANSA CARGO/STEFAN WILDHIRT**

positioned to serve as a gateway and distribution hub for COVID-19 vaccines to the rest of the world. We have the infrastructure and logistics connections and a geographic location that puts markets representing more than two-thirds of the world's population within an eight-hour flying radius."

Singapore Airlines (SIA) has described the distribution of the COVID-19 vaccine as the "largest and most important logistical challenge in recent history". The carrier's cargo arm is no stranger to pharmaceutical shipments, having carried 22,000 tonnes in the year to the end of March. The airline said its extensive network and the pharmaceutical handling capabilities at Singapore Changi Airport gave it an advantage. In a statement released after the Pfizer vaccine was approved for use in the UK, SIA said it would "make available cargo space on its flights and accord uplift priority to COVID-19 vaccine shipments across the key vaccine trade lanes". Its seven Boeing 747-400Fs will be readied and passenger aircraft deployed on belly cargo operations to increase transportation capacity where needed.

Capacity crunch?

One potential stumbling block in the global vaccination rollout is airport infrastructure. Glyn Hughes, the International Air Transport Association's (IATA) global head of cargo, said it was "critical for governments to identify any shortfalls they may have nationally regarding in-country and on-airport

facilities". According to HSBC's Lobbenberg, "ground infrastructure is key to distribution". But the analyst said the limitations in storage and other ground facilities >>





meant billions of people could miss out on access to a vaccine that requires distribution at very low temperatures. "Temperature requirements and packaging are potential bottlenecks, both at airports and in the air.

"The first vaccine to announce successful trials requires distribution at -80°C and existing logistics might limit volume distribution to only about 25 countries covering around 2.5 billion people. However, at conventional temperatures, distribution to 60 countries with a 5 billion population is feasible."

London's Heathrow Airport is on the front line in that battle, with the hub handling 41% by value of the UK's total pharmaceutical imports. Speaking to *Airliner World*, a Heathrow spokesperson said there was already "extensive" cold-storage equipment at the airport available to airlines and cargo handlers to transport vaccines.

Similar efforts are being made at hubs around the world. Frankfurt Airport has 12,000m² of temperature-controlled warehouses and 20 cool dollies to ensure multiple cargo planes can be loaded or unloaded at one time. In Mumbai, airport officials are said to be considering flexible slot management to facilitate ad-hoc charter operations with vaccine-laden aircraft prioritised when manoeuvring on the ground.

Other possible hurdles

An additional challenge that cargo shippers will face in transporting COVID-19 vaccines is security. Phials

Emirates operates an 11-strong fleet of Boeing 777Fs
SIMON GREGORY/
AVIATIONIMAGENETWORK

Emirates introduced its Cool Dolly system in 2005. The containers are equipped with a chlorine-free cooling system and an electrical back-up system enabling it to accommodate all types of lower deck unit load devices at temperatures between 40°C and -200°C
EMIRATES SKYCARGO



of the inoculation will be highly valuable commodities and will need to be protected both from theft and tampering. IATA has said processes are already in place to keep shipments secure, but the potential volume of vaccines needing to be transported meant these would need to be rapidly scaled up.

Securing the distribution network for vaccines does not simply mean more physical barriers to prevent theft or interference with the phials themselves. As the global vaccine programme becomes more sophisticated, cybercriminals are said to be looking at ways to undermine it.

A single breach can set back deployment significantly, so it is imperative organisations that make up the supply chain protect their systems.

Bill Conner, an advisor to the UK government and CEO of SonicWall, a

US-based internet security company, warned that "nation-state threat actors" had previously targeted vaccine research to steal valuable intellectual property. "Now, cybercriminals are opening new cyber-attack vectors on global deployment, recalibrating their attacks to target the 'cold chain'," he said. "Whether it be disrupting the shipping process, shutting down the vast freezers needed to keep vaccines cold or hacking into supply chain systems, the outcome of malicious intrusions can dramatically disrupt the entire distribution process."

When it comes to shipping internationally, airlines and logistics companies will also need to navigate strict new COVID guidelines that have shut borders and complicated distribution procedures, likely leading to an increase in processing times.

These emergency measures include



The UK's Department of Health and Social Care and the Ministry of Defence confirmed in December that military aircraft – such as this Royal Air Force Airbus Atlas C1 – will be deployed alongside commercial airliners to transport vaccines to and around the country
MARTIN NEEDHAM

closed air space or airports, new and rapidly changing restrictions on crew movement, and costly and inefficient processes for ad hoc operations.

IATA has urged governments and businesses to prioritise new fast-track procedures for overflight and landing permits for vaccination shipments. The organisation has also said flight crews should be exempt from quarantine requirements to ensure cargo supply chains are maintained, operating-hour curfews should be removed for flights carrying the vaccine to facilitate flexible operations, and tariffs should be eased to facilitate the movement of the vaccine.

Away from COVID, but with just as much potential to affect the UK's response to the pandemic, is Brexit.

With new trading rules from the start of this year, logistics firms must consider how supply chains are affected by the potential disruption as the transition period that followed the UK's departure from the European Union ends. In December, the UK's Department of Health and Social Care (DHSC) and the Ministry of Defence (MOD) confirmed to *The*

Observer that millions of doses of the Pfizer/BioNTech vaccine, which is manufactured in Belgium, would be flown to the UK using military aircraft to avoid anticipated road, rail and sea delays experienced by commercial shippers as moving goods becomes more complicated.

Ensuring global distribution

While airlines, pharmaceutical companies and global institutions are working around the clock to design and test a vaccine distribution system, there are fears that large parts of Africa, Asia and Latin America could be left out, not least because of the difficulties in transporting a vaccine that requires sub-zero temperatures in regions where cold chain networks are in short supply.

UNICEF has held talks with 40 carriers as part of efforts to supply vaccines on behalf of Covax – a global immunisation plan led by the Gavi vaccines alliance, the World Health Organization and the Coalition for Epidemic Preparedness Innovations (CEPI). It aims to help 92 developing countries procure COVID-19 vaccines

that might otherwise be unaffordable and without delay. The UN body told *Airliner World* it would primarily rely on freight forwarders and commercial flights, but in exceptional cases whole charters would be arranged to ensure vaccines arrive on time and to reduce the risk of interruptions to the cold chain. "The facility's aim is to provide the world with the best chance that safe, efficacious COVID-19 vaccines are rapidly available and affordable – to the highest risk populations in all countries worldwide, regardless of income level.

"It is the only global effort of its kind and the only chance that many low and lower-middle income countries have of securing doses of these vaccines at the same time as countries with greater purchasing power."

Part of that challenge will be linking destinations, as IATA's Hughes explained: "With so much of the global passenger fleet grounded, there will be many countries not currently served by cargo operations and to ensure a vaccine can be delivered there will need to be either a partial resumption of passenger services meeting safe travel corridor requirements or the introduction of ad hoc or scheduled air cargo operations, using traditional freighters or reconfigured passenger aircraft. Determining capabilities will then ensure product safety won't be compromised. Moving deep frozen vaccines to many countries with less developed infrastructure will present significant challenges. It is hoped a range of vaccines will be approved with differing transport requirements to ensure all countries can benefit from equitable access."

The industry will face many hurdles as it distributes the vaccine, but it is already clear every effort is being made to rise to the challenge. **WVA**

DHL transported the first Pfizer/BioNTech vaccines to Israel in mid-December. More than 11% of the country's citizens had received an initial injection by January 3
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METAMORPHOSIS

from Skymaster to

Carvair



Unfazed by the financial folly of his first foray into aircraft manufacturing, Sir Freddie Laker's bath-time brainwave to buy up Berlin Blockade brutes for cross-Channel car-carrying conversions came good, as **Stephen Skinner** explains

Sir Freddie Laker was the best-known British airline chief from the 1960s to the 1980s. He was a personality, eager to develop his business and well able to argue his corner in a time when the airline business was heavily regulated by the government. Even before becoming a famous figure he made his mark and a lot of money from the way he ran his business.

Laker started out dealing in scrapped war surplus aircraft in 1947 and formed Southend-based Aviation Traders (Engineering) Ltd (ATEL). Amongst the aircraft bought

were 12 civilianised Handley Page Halifax bombers, known as Haltons, which were pressed into use as freighters during the year-long Berlin Blockade which started in June 1948. These Haltons proved an exceptionally profitable investment firmly establishing ATEL and making Freddie Laker a very wealthy man at just 26.

He was a personality, eager to develop his business and well able to argue his corner in a time when the airline business was heavily regulated

The ATL-98 Carvair was developed as a cost-effective way of replacing the ageing Bristol Type 170 Freighter with a larger and more economic aircraft
RICHARD VANDERVORD

During 1951 he bought three freight airlines; Surrey Flying Services, Air Charter and Fairflight which had a lucrative freight contract supplying Berlin. In-mid 1952 these carriers were merged under the Air Charter banner and started operating Avro Yorks and Tudors on trooping and cargo flights. Laker also led the development of – and lost a lot of money on – the Aviation Traders ATL-98 Accountant, a proposed Douglas DC-3 replacement, which flew in 1957 but never progressed beyond the prototype stage (see *Airliner World* December 2020). Silver City Airways had been >>





running cross-Channel car ferry flights from Lydd, 12 miles south of Ashford, Kent to Le Touquet, France since July 1948. Never an individual to let the grass grow under his feet when, in 1952 Silver City withdrew its car ferry services from Southend Airport, Laker formed Channel Air Bridge to run cross-Channel car ferry services from the Essex gateway. Silver City's business model now faced serious competition from a dynamic entrepreneur.

Channel Air Bridge began running with four Bristol Type 170 Freighters from Southend to Calais, Ostend and Rotterdam. It proved so popular that each aircraft was soon making seven

return trips a day, even though the lengthened Bristol Super Freighters could only accommodate three cars and 20 passengers.

By 1960 the market had grown massively so that between them Silver City and Channel Air Bridge were transporting 100,000 cars across the Channel annually. However, it was only a marginally profitable operation owing to the limited payload of the aircraft which were running out of hours and in need of replacement. A further complication was that the cross-Channel sea ferry operation was now becoming competitive. What was needed was a much

larger and faster aircraft for the role.

Silver City issued specifications for a new car ferry aircraft and there were several proposals from established British aircraft manufacturers. Among the more viable suggestions were the Armstrong Whitworth AW.670 (a version of the Argosy with an enlarged upper deck for passengers) and the Handley Page HPR.8. The latter employed the Dart Herald's wing and an enlarged tail mated to a much-widened fuselage with clam-shell front doors, and the flight deck placed above.

However, these newly built aircraft would be expensive to buy

The second ATL-98 to be converted, and the first to be modified at Stansted, G-ARSD, was named 'Chelsea Bridge' when in service with Channel Air Bridge
KEY COLLECTION

A British United Air Ferries ATL-98 being loaded at a snowy Manchester
KEY COLLECTION





and so an astute Freddie Laker came up with a much cheaper alternative.

It is claimed that Laker hit on the idea of converting Douglas C-54s and DC-4s into car ferries while in the bath. Wherever or however the notion came to him it was a wise move. There were plentiful stocks of inexpensive Douglas C-54s and spares available as the type had been superseded by Vickers Viscounts and first-generation jets, such as the Sud Aviation Caravelle. By installing a new bulbous forward fuselage with a large nose door, the flight deck sat 6ft 10in higher than before – the aircraft was also 9ft longer than a C-54 and had a 68ft long cargo compartment.

ABOVE • Two of Ansett-ANA's trio of Carairs were converted from Douglas DC-4s rather than the military C-54
KEY COLLECTION

ABOVE RIGHT • Four Lamborghini 400 GTs are unloaded from a British United Air Ferries Carair at Southend ahead of the car's UK launch at the airline's HQ in Victoria, London
KEY COLLECTION

RIGHT • The prototype Carair, G-ANYB (c/n 1), in flight ahead of delivery to Channel Air Bridge
KEY COLLECTION

BELOW RIGHT • Ansett-ANA's three Carairs were operated as dedicated freighters and, as such, were not fitted with a passenger cabin
KEY COLLECTION



With straight-in loading, five cars could be accommodated and the 12ft long rear cabin had room for 22 passengers. Fortunately, the Pratt & Whitney R2000 Twin Wasp was easy to maintain and there were plenty of them about.

Douglas Aircraft at Santa Monica licensed ATEL to carry out the conversion, and detailed design work started at Southend during mid-1959. A wind tunnel model was constructed and tested at Cranfield College of Aeronautics (now Cranfield University). ATEL was surprised that the new nose did not cause buffeting as had been feared. However, the aircraft did require additional fin area to balance it, so the height of the vertical stabiliser was increased by 2ft 10in giving it a shape similar to that of the DC-7's tail.

The fuselage of former KLM C-54, PH-DBZ (c/n 1040), was purchased and transported from Amsterdam/Schiphol to Southend where the nose section was removed and a mock-up Carair nose fitted in its place. Meanwhile, Air Charter C-54 G-ANYB was flight tested to check Douglas's own C-54 performance figures alongside those of G-ANYB's enabling the type's performance to be benchmarked with the Carair's.

Conversion of G-ANYB into the prototype ATL-98 Carair began on October 3, 1960. As the propliner was to become a virtually new aircraft, every item was removed for inspection. The engines were sent to Bristol Siddeley at Filton for checking, and the airframe was defueled and its systems examined. The tail and mainplanes were also removed. The >>





new front fuselages built at ATEL's Southend base containing the flight deck reused the original cockpit glazing. The nose also accommodated the single nosewheel which had to retract into a bulged nacelle owing to the new flat freight floor above it. A complex set of pulleys and brackets was employed to manage the six changes in direction of the control cable runs which went from the new flight deck position, down the sides of the new nose and connected with the original cable runs in the middle of the aircraft. A passenger cabin with windows was constructed to the rear of the passenger door.

On June 21, 1961 – the day after taxi trials were carried out – G-ANYB

took to the air from Southend's 5,265ft runway with ATEL's chief test pilot, Don Cartledge, at the controls. It landed two hours later after a successful mission. Flight trials continued quite smoothly, though some problems with the rudder and the nosewheel were eventually rectified. However, the whole project was put in jeopardy on July 23 when a forklift truck collided with the left tailplane almost severing the tail section. Aviation Traders considered declaring the aircraft a write-off but as no other Carvair was being constructed at the time G-ANYB had to be rebuilt using the tail of the ex-KLM C-54, PH-DBZ. As such, the first ATL-98 received not only a new

nose section but also a new tail.

Flight trials resumed in early October and G-ANYB then spent two extended periods at Filton making good use of the Bristol airfield's long, wide runway and less congested airspace. On February 10, 1962 the ATL-98 received its Certificate of Airworthiness and it was only at that point that the aircraft was officially named Carvair – a neat contraction of 'car via air'.

The main production line for the type was set up at ATEL's second site at Stansted, where there was far more space to easily store

ABOVE • British United Air Ferries (BUAF) ATL-98 Carvair, G-ASKN (c/n 13), parked outside the firm's Southend maintenance facility in March 1964. The propliner had been delivered to BUAF less than a month before

KEN FIELDING

The aircraft was officially named Carvair – a neat contraction of 'car via air'



C-54s in the open while they awaited transformation. Work started on the conversion of three C-54s: G-ARSD, 'RSF and 'RSH in July 1962.

A TEL discovered substantial differences among the C-54s, which had been built between 1943 and 1945 on different production lines. Only two of the Carvairs were DC-4 conversions, both built in 1946, and delivered to Australia's Ansett-ANA. The Skymasters' lengths varied by up to three inches, as did the positioning of the cabin windows, while standardising the fuel tankage of the differing C-54 versions proved to be a costly and time-consuming procedure. A further variable was that some were in a better condition than others, they were more of a motley collection of aircraft rather than an airline's cohesive former fleet. Besides which many had been left parked for several years and suffered from serious corrosion which had to be dealt with by reinforcing plates. As a result, the empty weights and exact payload of each ATL-98 varied.

From Golden Gate to Goldfinger

By this time Laker's Air Charter and Channel Air Bridge had merged with other British independent airlines to form British



Aer Lingus operated three Carvairs between 1963 and 1966, later selling them to Canadian Eastern Provincial
KEN FIELDING



BUAF ATL-98, G-ASKG (c/n 10), was leased to Italy-based Alisud and flown on a daily Naples-Palermo car ferry, removing the need for a gruelling nine-hour drive
KEN FIELDING

United Airways, with Freddie as managing director. In January 1962 Silver City was bought by the new grouping and merged with Channel Air Bridge creating British United Air Ferries (BUAF) commencing in January 1963.

A ceremony was held on February 16, 1962 to welcome G-ANYB to Channel Air Bridge. It was given the name *Golden Gate Bridge* and made

a return proving flight to Ostend. The following day it flew Ford cars to a show in Malaga and then made proving flights to Basel, Geneva and Strasbourg. These longer services were more profitable than the cross-Channel links handled by the Bristol Freighters. The next two ATL-98s, G-ARSD and G-ARSE, entered service in April and July in BUAF's livery so the carrier had fielded three

>>

Aviation Traders (Engineering) Ltd was based at Southend, however just three of the 21 Carvairs built were modified at the Essex airfield
RICHARD VANDERVORD





of its intended fleet of ten. In fact G-ARSF had a short life, it crashed on approach to Rotterdam on December 28, 1962 hitting a dyke and landing on its back. One of the 18 people on board (a crew member) was killed. The wreck was recovered to Stansted where it was stripped for spares.

The Carvairs were popular as they were quieter, smoother and faster than the Bristol Freighters with their fixed undercarriages. They could also cruise at 173kts and carry more than eight tons.

BUAF services were operated from Lydd to Bordeaux, Nîmes, Liège, Geneva, Basel, Strasbourg and from Southend to Ostend, Bremen and Rotterdam. BUAF also had a base at Bournemouth (Hurn) with routes to the Channel Islands and Cherbourg which remained a preserve of Bristol Superfreighters until October 31, 1965 when Carvair G-ASDC briefly appeared along with others that winter. Carvairs re-appeared at Hurn in the summer of 1972 on Channel Island services, transporting not just passengers but cargo, especially fresh flowers, on an ad hoc basis until the mid-1970s.

Growing the fleet

Gradually BUAF's fleet grew, taking on two more Carvairs, G-ASDC and G-ASHZ, in 1963. The former featured in the 1964 James Bond film *Goldfinger* transporting Auric Goldfinger's Rolls-Royce. They were followed by G-ASKG which was leased to Alisud at Naples for six months and flown on a daily Naples-Palermo car ferry which saved users a gruelling nine-hour drive. When the lease expired in February 1964 the aircraft joined the BUAF fleet. In a similar fashion G-AOFW, which had been leased to Aviaco, returned to the UK and was also added to the inventory.

Altogether 18 Carvairs were converted at Stansted and three at Southend, making 21 in all. The second to be completed at Southend was G-APNH, which joined BUAF in February 1965. ATEL had chosen to convert it there because its staff were



ABOVE • A Rolls-Royce is loaded onto British Air Ferries Carvair, G-AOFW (c/n 12), at Düsseldorf in 1974
AIRTEAMIMAGES.COM/
WOLFGANG MENDORF

TOP • BAF's G-AOFW departs Southend in March 1973
RICHARD VANDERDORP

short of work owing to the once-hoped-for large orders for Carvairs not materialising.

At the end of 1965 Freddie Laker left BUAF and had no more involvement with his innovative Carvair. Keen to be at the helm of his own company once again he went off to start Laker Airways.

BUAF's Carvairs were not confined to transporting cars and passengers but were frequently employed

on freight runs, such as carrying racehorses or Olympus engines for Concorde from Filton to Toulouse and transporting Black Knight rockets and Blue Streak missiles to Woomera in Australia for trials. They also transported military equipment for the British Army into Berlin, and G-APNH even carried the crashed BUA BAC One-Eleven G-ASJJ back from Milan/Linate to Gatwick in January 1969.





Two BAF Carvairs, including G-ASDC (c/n 7), were stripped of their paint, enabling their payloads to be increased by 1.5 tons
RICHARD VANDERVORD

Originally delivered to Aer Lingus as EI-ANJ, this example was later used by Canadian Eastern Provincial as CF-EPW
RICHARD VANDERVORD

In September 1967 BUAf became British Air Ferries (BAF) and most of the longer routes were discontinued, except that to Basel. Three Carvairs were placed into storage, including the prototype, G-ANYB.

It made its last flight on March 5, 1967 from Southend to Lydd for spares recovery and was scrapped there in August 1970 along with the second Carvair G-ARSD.

In total BUAf/BAF operated 11 of the

21 Carvairs produced. As the amount of traffic on the car ferry routes declined, the Bristol Freighters were replaced by Carvairs and on January 1, 1977 the last car ferry service was flown. Two BAF ATL-98s, G-ASDC and G-ASHZ, were stripped of paint giving them an extra one-and-a-half tons of payload. The airline boldly proclaimed its aircraft's weight-lifting abilities by advertising its 8½ ton payload on the aircraft's tails.

In the first 18 months after the delivery of G-ANYB to Channel Air Bridge, ATEL's Stansted production line completed nine Carvair conversions. The first pair went to BUAf and the next two were sold to InterOcean Airways of Luxembourg in January 1962 and registered as LX-IOG and LX-IOH. Both returned to Stansted in April 1965 and were then delivered to Compagnie Air Transport as F-BMHU and F-BHMY.

New operators

Compagnie Air Transport was a former Silver City subsidiary and Bristol Freighter cross-Channel car ferry operator. It used its Carvairs on routes from Nîmes to Corsica and Spain. F-BMHU crashed on take-off from Karachi in March 1967 and was replaced by G-ATRV from BUAf which became F-BOSU. F-BHMY was sold on and re-registered as N83FA, but crashed in Georgia, USA in April 1977. BUAf's G-ASKG also briefly >>

The fifth Carvair to be converted, G-AREK (c/n 5), at Southend during 1974 while owned and operated by Pauling (Middle East) Ltd, an Abu Dhabi-based construction firm
RICHARD VANDERVORD





ABOVE • Sold to the United States in November 1979, N55243 (c/n 17), flew for Airtime Corp, Aero Union and Pacific Air Express before being scrapped at Naples, Florida in 1993
AIRTEAMIMAGES.COM/
THE SAMBA COLLECTION



RIGHT • Dominicana de Aviación acquired Aviacó's two Carvairs and used the Stansted-converted aircraft to operate a short-lived freight service between Santo Domingo and Miami
AIRTEAMIMAGES.COM/
THE SAMBA COLLECTION

flew with Compagnie Air Transport as F-BRPT then was returned to BAF, subsequently operating with several different African users until it was scrapped in Kinshasa in 1995.

After InterOcean, Aer Lingus became the next operator of the Carvair. The Irish airline had been spurred on by BKS' successful Liverpool-Dublin car ferry services using Bristol Freighters. So it placed an order for two Carvairs and advertised routes from Dublin and Cork to Bristol, Dublin to Liverpool and one longer route from the Irish capital to Cherbourg.

The sixth Carvair G-ARZV was originally destined for BUAF and first

flew in its livery but was released to enable Aer Lingus to speedily start services. It had to be modified to the airline's specification with an additional 12-seat passenger cabin ahead of the standard Carvair provision. This allowed it to carry

four cars and 34 passengers. It was delivered in March 1963 becoming EI-AMP *St Albert*, and the second, EI-AMR *St Judith* in the following month. A third, EI-ANJ *St Senan*, completed the line-up in November 1964. The first two aircraft had

The Carvair's much larger nose necessitated increasing the fin's height by 2ft 10in giving it a shape similar to that of the DC-7's tail
RICHARD VANDERVORD





Rolamat cargo floors installed by ATEL in 1963 to facilitate easier freight loading, as well as raised ceilings for transporting horses.

Aer Lingus found the Carvair troublesome and its operations were plagued by engine serviceability issues. Compounded by increasing competition from sea ferries, the car ferry routes were not proving profitable and were abandoned in October 1966. The Irish flag carrier sold its three ATL-98s to Canadian Eastern Provincial in mid-1968. The firm used the

bulbous-nosed propliners to supply mining projects in the cold wastes of Eastern Canada. Unfortunately, CF-EPX, the former EI-AMP, crashed at Twin Falls, Labrador in September of the same year although none of the

ABOVE • Originally built for Aer Lingus, this ATL-98 later served on behalf of the Red Cross as LN-NAA. It is pictured at Bangkok/Don Mueang in 1984 where it was scrapped two years later
AIRTEAMIMAGES.COM/THE SAMBA COLLECTION



38 on board were lost in the accident. The two other ex-Irish Carvairs fared far better – CF-EPV was returned to ATEL in 1973 for spares recovery while CF-EPW spent 15 months with BAF before joining the Red Cross as LN-NAA. It was scrapped in Bangkok in 1986.

Costa del Carvair

Aviaco – also a Bristol Freighter operator – opted for a pair of Carvairs to succeed the ageing Filton-built type. The 12th ATL-98, G-AOFW, was leased to the Iberia subsidiary in early 1964 as EC-AVD to fly a daily car ferry route connecting Barcelona and Palma, Majorca. When this proved popular, it was supplemented with a rotation from Valencia to Palma.

As EC-AVD arrived to begin its tenure with the Spanish carrier, Aviaco flew EC-AEO – a C-54 it had owned since 1949 – to Stansted for conversion. ATEL made quick work of this and the Skymaster was back in the Balearics, bulbous nose and all, by June.

The leased EC-AVN returned to the UK in November 1964 as

Aviaco received EC-AXY, its predecessor joining BUAF the following spring.

The 'punta aereo' services lasted until 1968 when a declining >>



market share made the operation unsustainable. Aviaco's two Carvairs were purchased by Dominicana in spring 1969 for a short-lived freight link between Santo Domingo and Miami. The first, HI-168, crashed at Miami in June the same year while HI-172 was withdrawn from use in 1970 and broken up at its Santo Domingo base in 1978.

Down Under

Maybe the most impressive livery ever worn by the Carvair was Ansett-ANA's red, white and blue colour scheme. The Melbourne-based airline received the last three aircraft.

Unlike its predecessors only one of these was a C-54, the first two were Douglas DC-4s. All three were destined to be pure freighters with no passenger accommodation and no windows were fitted. They received Rolamat flooring throughout and widened doorways so they could transport seven standard Qantas pallets at a time. The two former DC-4s converted at Stansted became VH-INJ and VH-INK and were delivered in late 1965.

At the same time, Aviation Traders sought another antipodean order and

Phoebus Apollo Aviation owns the 21st and final Carvair to have been built, 9J-PAA (c/n 21). It is understood to have been stored at Rand Airport, Johannesburg, South Africa since 2002

PAUL DUNN

BUAF's G-APNH was leased to Straits Air Freight Express (SAFE) of New Zealand in October 1965 as a trial replacement for its Bristol Freighters. SAFE deemed the ATL-98 too large for its small airfields and the propliner was returned after just two months.

Completing Ansett-ANA's Carvair hat-trick, VH-INM did not fly until July 1968. It was also the final Carvair and one of the Southend trio. The three Ansett aircraft were put up for sale in 1973-74 before passing through several operators' hands.

The first, VH-INJ, was initially sold to Royal Air Cambodge and is

flowers to the US west coast. Two of these crashed in Alaska, one was scrapped while the last Carvair built survives. It is owned by Phoebus Apollo of South Africa as 9J-RAA and is in a poor condition at Rand Airport, Johannesburg. Appearing to be in a much better state is N89FA (formerly BAF's G-ASKZ) at Gainesville, Texas and there are even hopes that one day it may fly again.

The Carvair was an innovative and, most importantly, an inexpensive solution to a demanding specification. Owing to the differences between them, the age and varying condition of the aircraft, ATEL's engineers faced numerous problems to produce a viable fleet but it was a challenge they ably achieved.

There were plans to develop a Rolls-Royce Dart powered version with an extended upper passenger deck and Vanguard-type fin but unfortunately this never materialised. Whether the type ever takes to the air again or not, the Carvair will continue to hold a place in many hearts. **AVIA**

Looking in a much better condition is N89FA (formerly BAF's G-ASKZ) at Gainesville, Texas and there are even hopes that one day it may fly again

understood to have been damaged at Phnom Penh in 1975 and subsequently abandoned before being scrapped during the 1990s.

The other ex-Ansett machines, as well as two other ATL-98s, flew with a trio of Hawaiian airlines between 1983 and 1993 transporting fruit and

Just two Carvairs survive – this example, N89FA (c/n 9), is based at Gainesville Municipal Airport in Texas

PAUL DUNN

*For a more in-depth look at the Carvair's tenure with Irish flag carrier Aer Lingus, see the January 2021 issue of **Aviation News***



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TAP Air Portugal has received an Airbus A321neo, CS-TJR (c/n 10105) in this retro livery to celebrate its 75th anniversary. AIRTEAMIMAGES.COM / MATHIAS DUEBER



AirSial [PF/SIF 'AIRSIAL']				
AP-BOB	A320ceo	3510	ex N499TA, dd 02.12.20, lsd fr AerCap	
AP-BOC	A320ceo	3538	ex N680TA, dd 07.12.20, lsd fr AerCap	
Air Travel [-/OTC 'AIR TRAVEL']				
B-30EH	A321neo	10061	dd 22.12.20	
Chengdu Airlines [EU/UEA 'UNITED EAGLE']				
B-650S	ARJ21-700	151	ex B-001L, dd 27.12.20	
China Central Longhao Airlines [GI/LHA 'AIR CANTON']				
B-220L	737-800(BCF)	28608	ex N760BB, dd 17.12.20, lsd fr Babcock & Brown	
China Express Airlines [G5/HXA 'CHINA EXPRESS']				
B-320V	A320neo	10209	ex F-WWDK, dd 13.11.20	
B-650Q	ARJ21-700	142	ex B-099K, dd 28.12.20, lsd fr Suyin Financial Leasing	
China Postal Airlines [DF/CYZ 'CHINA POSTAL']				
B-5131	737-800(BCF)	30686	ex N1784B, dd 23.12.20, lsd fr AerCap	
China Southern Airlines [CZ/CSN 'CHINA SOUTHERN']				
B-30EA	A350-900	398	ex F-WZFH, dd 27.11.20	
B-30EC	A321neo	9168	ex D-AVZC, dd 30.09.20	
B-30E1	A321neo	9048	ex D-AYAS, dd 03.11.20, lsd fr ICBC Leasing	
B-30E5	A321neo	9288	ex D-AVXW, dd 30.09.20	
B-30FW	A321neo	9477	ex D-AVXV, dd 05.11.20, lsd fr ICBC Leasing	
B-30FX	A320neo	10081	ex B-007W, dd 05.11.20	
B-30F0	A350-900	411	ex F-WZFS, dd 30.11.20	
B-30F6	A321neo	9293	ex D-AVZV, dd 05.11.20	
B-650K	ARJ21-700	148	ex B-099W, dd 04.12.20	
China West Air [PN/CHB 'WEST CHINA']				
B-321R	A321ceo	7311	ex D-AAER, dd 30.12.20, lsd fr BOC Aviation	
B-321T	A321ceo	7358	ex D-AAET, dd 30.12.20, lsd fr BOC Aviation	
Colorful Guizhou Airlines [GV/CGZ 'COLORFUL']				
B-320T	A320neo	10204	ex F-WWII, dd 10.11.20, lsd fr GECAS	
Joy Air [JR/JOY 'JOY AIR']				
B-20E5	737-800	41121	dd 19.12.19, entered service 01.12.20	
Juneyao Airlines [HO/DKH 'AIR JUNEYAO']				
B-30EP	A321neo	9506	ex D-AXAN, dd 20.11.20, lsd fr SMBC Aviation Capital	
B-30EQ	A321neo	9368	ex B-005M, dd 27.11.20	
B-320Z	A320neo	10268	ex F-WWIK, dd 23.11.20, lsd fr SMBC Aviation Capital	
B-321A	A320neo	10194	ex B-007D, dd 30.11.20	
Loong Air (Zhejiang Loong Airlines) [GJ/CDC 'LOONG AIR']				
B-30FV	A320neo	10104	ex B-007X, dd 13.11.20	
B-320E	A320neo	9490	ex B-005N, dd 20.11.20, lsd fr AerCap	
North Western Cargo Airlines [-/]				
B-2866	757-200	34009	dd 29.12.20	
B-2959	737-300(F)	27520	dd 11.12.20	
OTT Airlines [-/OTT 'OTT AIRLINES']				
B-620G	ARJ21-700	149	ex B-099Y, dd 25.12.20	
SF Airlines [03/CSS 'SHUN FENG']				
B-220C	757-200(F)	33100	cnvtrtd to 757-200(F) at CTU 12.20	
N233SA	767-300ER(BCF)	30847	ferried QPG-CAN 21.12.20	
Sichuan Airlines [3U/CSC 'SICHUAN']				
B-30D8	A320neo	9350	ex D-AVXM, dd 26.11.20, lsd fr AerCap	
B-30FR	A321neo	9445	ex D-AVYN, dd 19.11.20, lsd fr AerCap	
Spring Airlines [9S/COH 'AIR SPRING']				
B-30FZ	A321neo	9556	ex D-AZAU, dd 11.11.20, lsd fr BOC Aviation	
B-320L	A320neo	10154	ex F-WWBC, dd 30.11.20, lsd fr AerCap	
B-320M	A320neo	9552	ex D-AXAF, dd 11.11.20, lsd fr AerCap	
B-321F	A321neo	10036	ex D-AVXL, dd 26.11.20	
B-321G	A321neo	10124	ex D-AVZH, dd 27.11.20	
Cathay Pacific Airways [CX/CPA 'CATHAY']				
B-HPB	A321neo	9228	ex D-AVYR, dd 13.11.20	
B-LBD	A330-300E	1503	ex F-WWTY, dd 02.12.20, parked HKG	
B-LBI	A330-300E	1598	ex F-WWKI, dd 02.12.20, parked HKG	
B-LBK	A330-300E	1621	ex F-WWKN, dd 02.12.20, parked HKG	
HK Express [UO/HKE 'HONGKONG SHUTTLE']				
B-LCU	A320neo	10248	ex F-WWBG, dd 23.11.20, lsd fr AerCap	
Mandarin Airlines [AE/MDA 'MANDARIN']				
B-16859	ATR 72-600	1645	ex F-WKVB, dd 08.12.20	
B-16860	ATR 72-600	1652	ex F-WKVC, dd 10.12.20	
Air Canada [AC/ACA 'AIR CANADA']				
C-GHNC	A330-300E	986	ex 9V-STC, reg'd 21.12.20, lsd fr DAE Capital	
C-GMZN	A220-300	55098	reg'd 22.12.20, was dd 17.11.20	
C-GMYU	A220-300	55097	reg'd 08.12.20, was dd 30.10.20	
C-GMZR	A220-300	55100	dd 20.11.20, fleet #113	
C-GMZY	A220-300	55102	dd 09.12.20, fleet #114	
C-GNGV	A220-300	55103	dd 21.12.20, fleet # 115	
Air Transat [TS/TSC 'TRANSAT']				
C-GOIM	A321LR	10042	ex D-AVYB, dd 10.11.20, lsd fr AerCap, fleet #707	

Jazz Aviation (Air Canada Express) [QK/JZA 'JAZZ']				
C-FJFZ	CRJ900	15494	reg'd 09.12.20, was dd 27.11.20, parked YUL	
C-FJGZ	CRJ900	15495	ex C-FJFZ, dd 17.12.20	
C-GJNZ	CRJ900	15489	reg'd 02.12.20, was dd 04.10.20, parked YHZ	
C-GJUZ	CRJ900	15492	reg'd 01.12.20, was dd 03.10.20, parked YHZ	
PAL Airlines [PB/PVL 'PROVINCIAL']				
C-FCGE	Dash 8-100	38	ex ZS-THU, reg'd 29.12.20	
Pascan [P6/PSC 'PASCAN']				
C-GANR	Saab 340B	340B-341	ex N341CJ, reg'd 23.12.20	
Sunwest Aviation [-/CNK 'CHINOOK']				
C-FNSA	DHC 8-400	354	ex ZS-NLZ, reg'd 03.12.20	
Transwest Air [4T/-]				
C-GWWD	ATR 42-300	211	ex N213AT, reg'd 01.12.20	
VIH Cougar Helicopters [-/VHC 'WILDCAT']				
C-GUPQ	S-92A	920203	ex 5N-BXN, reg'd 14.12.20	
Aerovias DAP [V5/DAP 'DAP']				
CC-	BAe 146-200QT	E2112	ex N13TA, dd 22.12.20, lsd fr Tronos Jet	
Sky Airline [H2/SKU 'AEROSKY']				
CC-DBD	A320neo	10225	ex F-WWDP, dd 30.11.20, lsd fr China Aircraft Leasing Group	
TAP Air Portugal [TP/TAP 'AIR PORTUGAL']				
CS-TVH	A320neo	10033	ex F-WWIF, dd 18.11.20, lsd fr BOC Aviation	
Nauru Airlines [ON/RON 'AIR NAURU']				
VH-ONU	737-300(F)	28732	ex N732NA, cnvtrtd to 737-300(F)	
Ethiopian Mozambique Airlines [ET/-]				
C9-AXP	Dash 8-400	4607	ex ET-AXP	
Condor [DE/CFG 'CONDOR']				
D-AICR	A320ceo	4463	ex EC-MBM, reg'd 02.09.20, lsd fr Air Lease Corporation	
D-AICS	A320ceo	4478	ex EC-MAX, reg'd 02.09.20, lsd fr Air Lease Corporation	
Air Nostrum [YW/ANU 'NOSTRUM AIR']				
EC-NLM	CRJ200	7866	ex ZP-CRN, ret fr Paranaair lease & reg'd 16.11.20	
Canaryfly [PM/CNF 'CANARY']				
EC-JQL	ATR 72-500F	726	ex F-WWEG, dd 14.12.20	
Swiftair [WT/SWT 'SWIFT']				
EC-NMJ	737-400(F)	24126	ex G-JMCZ, dd 01.12.20	
ASL Airlines Ireland [-/ABR 'CONTRACT']				
EI-DPB	737-800	33603	ex N1787B, dd 12.20, ferried PIK-TNA 08-09.12.20 for cargo conversion	
EI-GUL	ATR 72-600F	1653	ex F-WWEX, dd 17.12.20, lsd fr/op for FedEx	
Fly Armenia Airways [VF/FBB 'YEREVAN']				
EK-FAB	737-400	23980	ex UR-CNP, dd 28.12.20	
Shirak Avia [-/]				
EK-SHA	737-500	26297	ex EK73797, dd 29.12.20	
ATA Airlines [I3/TBZ 'ATALAR AIR']				
EP-MDZ	MD-82	49531	ex OY-JCN, dd 12.20	
HiSky [-/]				
ER-SKY	A319ceo	2326	ex 2-SSFG, dd 22.12.20, lsd fr Air Lease Corp	
Airest [-/AEG 'AIREST CARGO']				
ES-LAA	A320ceo	2157	ferried TLL-VNO 17.11.20	
NyxAir [-/NYX 'NYX AIR']				
ES-NTA	ATR 42-500	655	ex HK-5070, dd 11.20	
Ethiopian Airlines [ET/ETH 'ETHIOPIAN']				
ET-AYA	A350-900	431	ex F-WZNT, dd 06.11.20; Geneva	
ET-AYB	A350-900	412	ex F-WZGS, dd 06.11.20; Singapore	
Belavia [B2/BRU 'BELAVIA']				
EW-555PO	E195-E2	19020042	ex PR-EFD, dd 22.12.20, lsd fr AerCap	
Rada Airlines [-/RDA 'RADA']				
EW-286TL	An-74-200	36547098057	ex EK-74957, dd 26.12.20	
Air Corsica [XK/CCM 'CORSIKA']				
YU-ALV	ATR 72-500	727	ret fr Air Serbia lease 08.20	
Air Caraibes Atlantique [-/CAJ 'CAR LINE']				
F-OFDF	A330-200	253	ferried CHR-ORY 27.12.20 after storage for ret to service	
Air Saint-Pierre [PJ/SPM 'SAINT PIERRE']				
F-ORLB	ATR 42-500 (600)	1605	ex F-WWLZ, dd 11.12.20	
Air Alderney [-/]				
G-BJWL	BN-2A	166	ex 5B-CHD, reg'd 03.12.20	
ASL Airlines UK [-/]				
G-OASL	ATR 72-200(F)	265	ex EI-SOA, reg'd 16.12.20	
BA CityFlyer [CJ/CFE 'FLYER']				
G-LCAF	E190	19000548	ex EI-GTG, reg'd 21.12.20, lsd fr CDB Aviation	
British Airways [BA/BAW 'SPEEDBIRD']				
G-STBO	777-300ER	66584	ex N5014K, dd 24.12.20	
G-STBP	777-300ER	66633	dd 29.02.20	

Key to Abbreviations

a/c	aircraft
als	airlines
awys	airways
bf	bought from
b/u	broken up/scrapped
canx	canceled
cls	colours
cn	manufacturer's
	construction/serial
	number
cnvtrtd	converted
dbf	destroyed by fire
dbf	damaged beyond
dbf	repair
dd	delivery date
ex	previous reg'n
ff	first flight
frtr	freighter
lrf	last revenue flight
lsd fr	leased from
lsd to	leased to
msn	see cn
ntu	not taken up
oo	on order
op	operated
pax	passenger
pwfu	permanently
	withdrawn from use
reg'd	registered
reg'n	registration
ret fr	returned from
ret to	returned to
rr	re-registered
rts	return to service
sb	sold by
scr	scrapped/broken up
st	sold to
std	stored
tba	to be advised
unk	unknown
wfu	withdrawn from use
w/o	written off/destroyed



We welcome any feedback on this listing.

(The listing is alphabetical with reference to the registration of the country of origin. Columns indicate the registration, type, construction number and notes.)

DHL Air [DO/DHK 'WORLD EXPRESS']

M-EKSL	A330-300(F)	1124	ex D-AAED, reg'd 15.12.20, cnvrt'd to A330-300(F) at DRS
M-PVGK	A330-200	1107	D-ACVG reserved 10.08.20
easyJet Airline [U2/EZY 'EASY']			
G-EZTN	A320ceo	4006	ex HB-JYE, reg'd 18.12.20
NHV Helicopters [-/NHZ 'GOLD']			
G-SNSK	AW139	41354	rr G-NHVB 23.11.20
TUI Airways [BY/TOM 'TOMFLIGHT']			
G-TUKC	737-800	31713	ex EI-FHH, reg'd 23.12.20, lsd fr Babcock & Brown, parked Lasham
Virgin Atlantic Airways [VS/VIR 'VIRGIN']			
G-VTEA	A350-1000	426	ex F-WZNA, dd 30.11.20; Rosie Lee
Swiss International Air Lines [LX/SWR 'SWISS']			
HB-JPB	A321neo	10115	ex D-AZAN, dd 06.11.20; Château-d'Oex
Zimex Aviation [XM/IMX 'ZIMEX']			
HB-AFL	ATR 72-200(F)	222	ex EI-SLX, reg'd 07.12.20
Asiana Airlines [OZ/AAR 'ASIANA']			
HL8371	A321neo	9226	ex D-AVXR, dd 26.11.20
HL8382	A350-900	389	ex F-WZNK, dd 24.11.20
Thai Vietjet Air [VZ/TJV 'THAI VIETJET']			
HS-VKP	A320ceo	5742	ex VN-A682, dd 03.12.20, lsd fr Macquarie AirFinance
HS-VKQ	A320ceo	5822	ex VN-686, dd 24.12.20, lsd fr Macquarie AirFinance
flynas [XY/KNE 'NAS EXPRESS']			
HZ-NS33	A320neo	10097	ex D-AVVI, dd 30.11.20, lsd fr BOC Aviation
Neos [NO/NOS 'MOONFLOWER']			
EI-NYE	787-9	38756	ex LN-LNX, dd 08.12.20, lsd fr AerCap; Valerio Catullo
Poste Air Cargo [M4/MSA 'MISTRAL WINGS']			
EI-GUA	737-400(F)	28888	ex N288AU, dd 16.12.20, lsd fr Automatic
ANA – All Nippon Airways [NH/ANA 'ALL NIPPON']			
JA150A	A321neo	10117	ex D-AVXX, dd 23.11.20
Japan Airlines [JL/JAL 'JAPANAIR']			
JA07XJ	A350-900	451	ex F-WZNG, dd 30.11.20
Peach [MM/APJ 'AIR PEACH']			
JA08VA	A320ceo	6447	ex F-WXAI, dd 12.12.20, lsd fr SMBC Aviation Capital
Cargo Air [-/CGF 'CLEVER']			
LZ-CGY	737-400(F)	28882	ex N882AV, cnvrt'd to 737-400(F) at MIA 12.20
Aero-Flite [-/]			
N399AC	Avro RJ85	E2337	ex EI-RJF, reg'd 17.12.20, std AVQ
Air Transport International [8C/ATN 'AIR TRANSPORT']			
N491AZ	767-300ER(F)	29429	ex N392AN, dd 30.11.20, lsd fr Cargo Aircraft Management, op for Prime Air
Allegiant Air [G4/AAV 'ALLEGIAN']			
N287NV	A320ceo	4508	ex RP-C3261, reg'd 06.12.20
Amerijet International [M6/AJT 'AMERIJET']			
N658GT	767-200(F)	23019	ex N786AX, dd 02.12.20, lsd fr/op for DHL
Asia Pacific Airlines (Aero Micronesia) [P9/MGE 'MAGELLAN']			
N754CS	757-200(PF)	24845	N922TS reserved 09.12.20
Atlas Air [5Y/GTI 'GIANT']			
N481MC	747-400	32339	ex G-VROM, bf Celestial Aviation, reg'd 01.12.20, std AVQ
Bemidji Airlines [CH/BMJ 'BEMIDJI']			
N26959	SA-227	AC-662B	reg'd 16.12.20
Breeze Airways [-/]			
N190BZ	E195-E2	19000660	ex PR-AUB, dd 30.12.20, lsd fr Azul Linhas Aéreas
Cape Air (Hyannis Air Service) [9K/KAP 'CAIR']			
N965CA	P2012	025/US	reg'd 16.12.20
Commutair (United Express) [C5/UCA 'COMMUTAIR']			
N13124	ERJ145	145689	ferried YQB-ALB 01.12.20 for entry into service
N14125	ERJ145	145690	ferried YQB-ALB 27.12.20 for entry into service
N17138	ERJ145	145727	ferried MCN-IAH 17.12.20 for entry into service
N21144	ERJ145	145741	ferried YQB-ALB 09.12.20 for entry into service
Delta Air Lines [DL/DAL 'DELTA']			
N306DU	A220-300	55085	ex C-GPVF, dd 07.12.20 & reg'd 08.12.20, fleet #8306
N107DN	A321ceo	9582	ex F-WZME, dd 13.11.20, fleet #1007
Envoy Air (American Eagle) [MQ/ENY 'ENVOY']			
N302RN	E175	17000849	ex PR-ECN, dd 03.12.20
jetBlue Airways [B6/JBU 'JETBLUE']			
N3008J	A220-300	55099	ex C-GPJH, dd 31.12.20

Mesa Airlines [YV/ASH 'AIR SHUTTLE']

N86371	E175	17000853	ex PR-ECU, dd 10.12.20
N86372	E175	17000854	ex PR-EAD, dd 10.12.20
N85373	E175	17000865	ex PR-EEG, dd 10.12.20
N85374	E175	17000867	ex PR-EEI, dd 10.12.20
N86375	E175	17000868	ex PR-EEN, dd 10.12.20
N85376	E175	17000869	ex PR-EEA, dd 10.12.20
Miami Air [LL/BSK 'BISCAYNE']			
N735MA	737-800	37260	ex OO-JAH, dd 02.12.20, lsd fr SMBC Aviation Capital
Rambler Air [-/]			
N44AC	Pa.31	31-8052147	reg'd 10.12.20
N200AK	Pa.31	31-8052180	ex C-GBUL, reg'd 10.12.20
N3516A	Pa.31	31-7952106	reg'd 11.12.20
N3536B	Pa.31	31-7952205	reg'd 11.12.20
N4112K	Pa.31	31-8353006	reg'd 10.12.20
N4501B	Pa.31	31-8052168	reg'd 10.12.20
N35497	Pa.31	31-8052039	reg'd 10.12.20
Republic Airlines [YX/RPA 'BRICKYARD']			
N294NN	E175	17000851	ex PR-QCQ, dd 17.12.20
Ryanair [7S/RYA 'RYAN AIR']			
N1331C	CASA 212	265	ex C-GDPP, reg'd 16.12.20
SkyWest Airlines [OO/SKW 'SKYWEST']			
N305SY	E170	17000866	ex PR-EEH, dd 23.12.20
N306SY	E170	17000870	ex PR-ECY, dd 23.12.20
N307SY	E170	17000871	ex PR-EEQ, dd 23.12.20
N308SY	E170	17000872	ex PR-EDJ, dd 23.12.20
United Airlines [UA/UAL 'UNITED']			
N2302U	A319ceo	2565	ex G-EZIV, reg'd 11.12.20, fleet #4302
N5307U	A319ceo	2677	ex G-EZAA, reg'd 04.12.20, fleet #4307
N9312U	A319ceo	2754	ex G-EZAL, reg'd 04.12.20, fleet #4312
UPS – United Parcel Service [5X/UPS 'UPS']			
N263UP	MD-11F	48782	ex D-ALCB, reg'd 14.12.20
Wright Air Service [8V/WRF 'WRIGHT FLYER']			
N288PC	Cessna 208B	208B1270	ex XA-ULH
N761RV	Cessna 208B/EX	208B5334	
N762RV	Cessna 208B/EX	208B5340	
XTR Airways (TEM Enterprises) [XP/CXP 'RUBY MOUNTAIN']			
N802XT	737-800	34405	ex M-ABNS, reg'd 07.12.20
MEA – Middle East Airlines [ME/MEA 'CEDAR JET']			
T7-ME4	A321neo	10068	ex D-AZAG, dd 30.11.20
T7-ME7	A321neo	10116	ex D-AVXO, dd 30.11.20
Airseven [-/]			
OY-ASA	737-400	24644	ex YR-BAZ, dd 03.12.20, op by Copenhagen Air Taxi
OY-ASB	737-400	27007	ex YR-BAS, dd 03.12.20, op by Copenhagen Air Taxi
Smart Cakrawala Aviation [-/]			
PK-SNW	Cessna 208B/EX	208B5579	ex N890PT, dd 07.12.20
Trigana Air Service [IL/TGN 'TRIGANA']			
PK-YST	737-300(F)	23741	ex ZS-MPZ, dd 12.20, entered service 18.12.20
Azul Linhas Aéreas [AD/AZU 'AZUL']			
PR-ANW	A330-900	1934	ex F-WWYF, dd 05.11.20, lsd fr Avolon; Gigante Azul
PR-ANX	A330-900	1924	ex F-WWCK, dd 16.11.20, lsd fr Avolon; Azul Around the World
PR-YYK	A320neo	7323	ex VQ-BXC, dd 18.12.20, lsd fr GECAS
PS-AEG	E195-E2	19020034	dd 23.12.20; Azul de coração
PS-AEH	E195-E2	19020035	dd 23.12.20; Valor Azul
GOL Transportes Aéreos [G3/GLO 'GOL TRANSPORTE']			
PR-GEU	737-700	34295	ex N894JA, dd 22.12.20, lsd fr Babcock & Brown
Azimuth [A4/AZO 'IGAVIA']			
RA-89139	SSJ100	95199	ex 89139, dd 15.12.20; Pechora
Red Wings Airlines [WZ/RWZ 'REMONT AIR']			
RA-89140	SSJ100	95200	ex 89140, dd 29.12.20
Rossiya Airlines [FV/SDM 'ROSSIYA']			
RA-89133	SSJ100	95197	dd 30.12.20
S7 Airlines [S7/SBI 'SIBERIAN AIRLINES']			
VQ-BFJ	A321ceo	6114	ex OE-IOF, dd 03.12.20, lsd fr Air Lease Corp
VQ-BFQ	A321ceo	6548	ex OE-IOG, dd 21.12.20, lsd fr Air Lease Corp
Taiga Air [-/]			
RA-67264	DHC 6-400	982	ex C-GUVA
RA-67265	DHC 6-400	986	ex C-GYDH
CEBU Pacific Air [5J/CEB 'CEBU AIR']			
RP-C4124	A321neo	10130	ex D-AYAJ, dd 17.11.20, lsd fr Jackson Square Aviation

Middle East Airlines received Airbus A321neo, T7-ME3 (c/n 10000) on October 5
AIRTEAMIMAGES.COM / SERGE BAILLEUL





Airliner Deliveries

United Nigeria Airlines received its first two Embraer ERJ145s during November. This example, 5N-BWY (c/n 145622), passed through Shannon on November 19

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SAS Scandinavian Airlines [SK/SAS 'SCANDINAVIAN']

SE-RUC	A320neo	10051	ex D-AVVD, dd 06.11.20, lsd fr Alafco; Drott Viking
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TUI fly Nordic [6B/BLX 'BLUESCAN']

SE-RFM	737-800	38108	ex G-TAWJ, dd 21.10.20, tfd fr TUI Airways, lsd fr Aviation Capital Group
SE-DFN	737-800	38107	ex G-TAWH, reg'd 29.12.20, lsd fr Aviation Capital Group

West Air Sweden [SWN 'AIR SWEDEN']

SE-MAJ	BAe ATP(F)	2038	ret to service 15.09.20
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Aegean Airlines [A3/AEE 'AEGEAN']

SX-NAB	A321neo	9575	ex D-AVZD, dd 20.11.20, lsd fr AerCap
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Sky Express [GQ/SEH 'AIR CRETE']

SX-IOG	A320neo	10083	ex F-WWIZ, dd 06.11.20, lsd fr SkyServ
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Amelia International (Aero4M) [NL/AEH 'AEROCUTTER']

F-HGNU	ATR 72-200	1288	ex 2-HOPN, reg'd 17.12.20, lsd to Regourd Aviation & op by Amelia
F-HGYM	ERJ145	145548	ex CE-04, dd 24.12.20

Afrijet Business Solutions [J7/ABS]

HB-ABS	ATR 72-500F	711	ex EC-IZO, dd 30.12.20, lsd fr/op by Zimex Aviation
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Solenta Aviation Gabon [-/SCG 'Solavia']

TR-XCH	ATR 72-200(F)	460	dd 11.12.20
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Sky Mali [ML/FML 'EAGLE BIRD']

TZ-SMA	737-500	25418	ex ZS-PKV, dd 24.03.20, lsd fr Africa Charter Airline
V5-WEB	ERJ145	145440	ex N972RP, dd 14.12.20, lsd fr Westair Aviation

Air Astana [KC/KZR 'ASTANALINE']

P4-KBK	A320neo	9459	dd 06.08.20, ferried TLS-NQZ 15.12.20
P4-KBM	A320neo	10005	dd 27.07.20, ferried TLS-ALA 11.12.20
P4-KGD	A321LR	9432	ex D-AVZR, dd 06.11.20, lsd fr Air Lease Corp

Jupiter Jet [-/JPJ 'JUPITERJET']

UP-AN220	An-12A	2340806	ex UR-CSD, dd 08.12.20
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Constanta Airline [-/UZA 'CONSTANTA']

UR-UZH	An-32P	2901	ex UR-48086, dd 29.12.20
UR-UZK	An-26B	13808	ex ER-AVK, reg'd 22.12.20

Babcock Mission Critical Services Australasia [-/]

VH-YXR	AW139	31277	ex C-GLPI, reg'd 18.12.20, lsd fr Eagle Copters, Canada
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Eastern Air Services [-/]

VH-WGF	Pa.31	31-7305010	ex N7682L, reg'd 19.12.20
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Maroomba Airlines (Nantay Pty Ltd) [-/KN]

VH-JYA	Beech 1900D	UE-94	ex ZS-ALT, reg'd 26.11.20 to Awesome Aviation Pty Ltd
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Network Aviation (Qantas Link) [-/NWK 'NETLINK']

VH-UVK	A320ceo	2316	ex 9V-JSA, reg'd 11.12.20
VH-UVV	A320ceo	2604	ex 9V-JSH, reg'd 15.12.20

Pays Helicopters [-/]

VH-POV	Cessna 208B	208B1182	ex SX-ARX, reg'd 21.12.20, lsd fr Tillair Services
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Penjet [-/]

VH-YBH	Beech 1900D	UE-108	ex V5-WAB, reg'd 02.12.20
VH-ZOA	Beech 1900D	UE-85	ex ZS-SER, reg'd 08.12.20

REX - Regional Express [ZL/RXA 'REX']

VH-RQC	737-800	33797	ex VH-VOP, dd 23.12.20, ferried CGK-SYD 23.24.12.20
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Sydney Helicopters [-/]

VH-NVS	Bell 412SP	33204	ex 5Y-PHO, reg'd 30.11.20
VH-ZMK	Bell 412	33066	ex 5Y-PAH, reg'd 30.11.20

Vietravel Airlines [-/]

VN-AZ78	A321ceo	6376	ex OE-IDP, dd 18.12.20, lsd fr Avolon
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AirAsia India [IS/IAD 'RED KNIGHT']

VT-ATE	A320neo	9525	ex D-AXAQ, dd 31.08.20
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FlyBig Airlines [-/]

VT-FBA	ATR 72-500	955	ex VH-FVI, dd 12.12, lsd fr Aviation Plc
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IndiGo [6E/IGO 'IFLY']

VT-ISQ	A320neo	9382	ex D-AVVK, dd 26.11.20
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Vistara [UK/VTI 'VISTARA']

VT-TQA	A320neo	10237	ex F-WWBE, dd 30.11.20, lsd fr Avolon
VT-TQB	A320neo	10261	ex F-WWIB, dd 30.11.20, lsd fr GECAS

TUM AeroCarga de México [T8/MCS 'CARMEX']

XA-MCM	737-400(F)	25101	ex N764AS, dd 07.12.20 lsd fr Avmax Aircraft Leasing
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Viva Aerobus (Aerolines Nacionales) [VB/VIV]

XA-VAC	A320ceo	3437	ex N637AC, dd 07.12.20, lsd fr Aircastle
XA-VAI	A320ceo	4312	ex EI-GTJ, dd 20.11.20, lsd fr Aircastle

Volaris [Y4/VOI 'VOLARIS']

XA-VRO	A320neo	10078	ex F-WWBB, dd 02.11.20
XA-VRS	A320neo	10148	ex F-WWID, dd 30.11.20

Liza Transport International [-/]

P4-EBO	737-400(F)	27087	ex N114JF, dd 17.12.20, lsd fr Vallair
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Myanmar Airways International [8M/MMA 'MYANMAR']

XY-ALP	E190	19000556	ex M-ABNL, dd 23.12.20, lsd fr CDB Aviation; Loikaw
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Kam Air [RQ/KMF 'KAMGAR']

YA-WTA	A340-300	207	ex F-GLZK, dd 03.12.20
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Iraqi Airways [IA/IAW 'IRAQI']

OM-FEX	737-800	28213	ex N679AC, dd 14.12.20, lsd fr/op by AirExplore
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Air Serbia [JU/ASL 'AIR SERBIA']

YU-APM	A319ceo	4301	ex OE-IKF, dd 01.12.20, lsd fr Carlyle Aviation Partners
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Conviasa [VO/VCV 'CONVIASA']

YV643T	A340-300	199	rr YV3507 31.12.20
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Central Air Transport [-/]

Z-SKM	Cessna 208B	unk	
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Airwork New Zealand [-/AWK 'AIRWORK']

SX-APX	757-200(F)	25297	ex N663AM, dd 03.12.20, lsd fr Olympus Airways
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Auckland Seaplanes [-/]

ZK-AMD	DHC-2	1227	ex N375RM, reg'd 15.12.20
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Paranair [ZP/AZP 'GUARANI']

ZP-CRT	CRJ200	7200	ex LV-HQU, dd 24.12.20
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Lift [-/]

ZS-GAL	A320ceo	64	ex N625AW, lsd fr/op by Global Aviation, entered service 10.12.12
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ZS-GAO	A320ceo	67	ex TU-TSS, lsd fr/op by Global Aviation, entered service 10.12.20
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ZS-GAR	A320ceo	53	ex N621AW, lsd fr/op by Global Aviation, entered service 11.12.20
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Solenta Aviation [-/SET 'SOLENTA']

ZS-XZD	ATR 72-600	1047	ex F-ORVI, reg'd 29.09.20
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Global Air Transport [-/]

5A-	ERJ145	145298	ex N13997, dd 02.12.20
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Flight Link [-/]

5H-FLJ	EMB 120	120162	ex ZS-SMV, reg'd 24.03.20
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My Fly Aviation [-/]

5H-MFA	Cessna 208B	208B0552	ex ZS-THE, reg'd 06.12.19
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Fly Zanzibar [-/]

5H-MZD	Cessna 208B	208B0714	ex 5H-VIP, reg'd 08.09.20
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Arik Air [W3/ARA 'ARIK AIR']

EI-ULN	737-700	32426	ex HL8022, entered service 01.12.20, lsd fr/op by Eznis Airways
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United Nigeria (Private Airlines Services Ltd) [-/]

5N-BWW	ERJ145	145575	ex N13550, dd 27.12.20; Our Lady of Miracles
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Air Sénégal [HC/SEN 'SENSA']

6V-AMC	A321ceo	1881	ex F-WTAJ, dd 28.11.20, lsd fr Carlyle Aviation Partners
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Manta Aviation [NR/MAV 'SEA WING']

8Q-RAE	DHC-6 300	617	ex C-GKBR, reg'd 03.12.20, lsd fr Kenn Borek Air
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Air X Charter [-/AXY 'LEGEND']

9H-DOM	Challenger 850	8069	ex D-AJOY, reg'd 17.12.20
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Avion Express Malta [-/MLH 'SOUTH WIND']

9H-AMD	A321ceo	1421	ex LY-NVU, dd 04.12.20, lsd fr AerCap
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Corendon Airlines Europe [XR/CXI 'TOURISTIC']

9H-CXC	737-800	39434	ex EI-GBI, dd 30.12.20, lsd fr DAE Capital
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Galistair [-/GTR 'GALISTAIR']

9H-VDS	A320ceo	1757	ex HK-5051, dd 10.12.20, lsd fr Arena Aviation Capital
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Lauda Europe [LW/LDA 'BEAUFORT']

9H-IHD	A320ceo	3270	ex OE-IHD, dd 03.12.20, lsd fr AerCap, parked STN
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9H-IHH	A320ceo	2502	ex OE-IHH, dd 09.12.20, lsd fr AerCap, parked STN
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9H-IHL	A320ceo	3105	ex OE-IHL, dd 14.12.20, lsd fr AerCap, parked STN
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9H-LOO	A320ceo	3027	ex OE-LOO, dd 15.12.20, lsd fr Dragon Aviation Leasing, parked STN
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9H-LOQ	A320ceo	3131	ex OE-LOQ, dd 10.12.20, lsd fr AerCap, parked STN
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9H-LOS	A320ceo	3153	ex OE-LOS, dd 11.12.20, lsd fr AerCap, parked STN
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Kuwait Airways [KU/KAC 'KUWAITI']

9K-AKO	A320neo	10082	ex F-WWBJ, dd 30.11.20; Al Kout
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9K-AKP	A320neo	10087	ex F-WWBI, dd 20.11.20; Al Qurain
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9K-AKO	A320neo	10060	ex D-AUAB, dd 27.11.20; Al Fintas
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MY Jet Xpress Airlines [N7/NEP 'WARISAN']

9M-NEW	737-400	27143	ex OE-IWP, dd 19.11.20
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Key to Abbreviations

a/c aircraft
als airlines
awys airways
bf bought from
b/u broken up/scrapped
canx cancelled
cls colours
cn manufacturer's construction/serial number
cnvrt'd converted
dbf destroyed by fire
dbr damaged beyond repair
dd delivery date
ex previous reg'n
ff first flight
frtr freighter
lrf last revenue flight
lsd fr leased from
lsd to leased to
msn made by
ntu not taken up
oo on order
op operated
pax passenger
pwfu permanently withdrawn from use
reg'd registered
reg'n registration
ret fr returned from
ret to re-registered
rr return to service
sb sold by
scr scrapped/broken up
st sold to
std stored
tba to be advised
unk unknown
wfu withdrawn from use
w/o written off/destroyed

Thanks to Dave Richardson and LAASI Aviation for the above

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The latest news from maintenance, repair and overhaul providers

By
Nigel
Pittaway

ExecuJet MRO Services Malaysia has been certified to perform maintenance work on all in-production variants of the Dassault Falcon family of executive jets.

Following the December 2020 reveal, the company has performed significant maintenance checks on the Falcon range, including: Falcon 900, Falcon 2000, Falcon 7X and Falcon 8X. Also, it has successfully completed a 24-month maintenance check on a Philippines-registered Falcon 900EX, as well as an ADSB-Out upgrade and several 24-month/1600 flight-hour inspections on Falcon 2000s based in the region.

Ivan Lim, ExecuJet MRO Service Malaysia's regional vice-president for Asia, commented: "We would like to thank Dassault Aviation and the civil aviation regulators from the US [Federal Aviation Administration (FAA)], Europe [European Union Aviation Safety Agency (EASA)], Malaysia [Civil Aviation Authority of Malaysia (CAAM)] and other countries around

Dassault Falcon family maintenance certification



the world for helping us to achieve this significant milestone.

"Falcon aircraft accounted for less than 10% of ExecuJet Malaysia's business in 2019, but by the end of 2020, [it accounted] for 15-20% and [by 2021] we anticipate Falcon aircraft will account for at least a third," Lim added.

ExecuJet MRO Services became a wholly owned subsidiary of Dassault in 2019 and the Malaysian facility is one in a network of approved facilities around the world. The complex is also an approved service centre for Bombardier and Gulfstream business jets. (Photo Flickr Commons/James)

Cargo conversion first in China

Elbe Flugzeugwerke (EFW) is undertaking the first Airbus A321 passenger-to-freighter (P2F) conversion in China for the mature aircraft and asset specialist, Vallair. Work is being performed at the ST Engineering facility in Guangzhou, in the south of the country.

The aircraft, N417PB (c/n 1017), was built in 1999 and initially delivered to Air 2000 as G-OOAJ. It is expected to be handed over to Vallair by Q3 of this year before it leases the jet onward to SmartLynx Malta and is put on the Maltese register. The jet is the first of nine scheduled to be converted in China.

Vallair CEO Gregoire Lebigot commented: "Vallair is keen to introduce the A321F to the Chinese

market as we see a strong potential for the freighter in its active e-commerce sector. Our decision to commission the conversion process for a significant number of our lease portfolio 'in-country' demonstrates not only our confidence in the future implementation of this type, but also our commitment to local technical and engineering resources."

EFW has previously partnered with Vallair in Asia for the world's first conversion of an A321 to freighter configuration in Singapore. The ex-British Midland jet, VH-ULD (c/n 835), was delivered to Qantas Freight in October 2020. EFW is a joint venture between Singapore's ST Engineering and Airbus. (Photo ST Engineering)



Iberia Maintenance selects Ramco software

Ramco Aviation has been selected by Iberia Maintenance to supply its M&E MRO software suite, replacing multiple legacy systems across Iberia's airframe maintenance, powerplant shops, component overhaul facilities and supply chain.

The technology transformation programme will help future-proof the maintenance organisation's growth, while offering a simplified user experience. Bosses at the software specialist said that Iberia Maintenance will also benefit from its Mobility via Anywhere apps, HUBs, Artificial Intelligence (AI) and Dashboards capability.

Ramco's Enterprise Resource Planning (ERP), a cloud-based digital platform, is also set to be used by more than 3,000 Iberia maintenance personnel. A team of 50 people are set to undertake the implementation project.

Andy Best, Iberia Maintenance chief technical officer, commented: "Ramco Aviation were the standout option [for] comprehensive MRO-specific functionality all in a unified offering as an 'out of the box' solution. We are confident the digital transformation... will help bring major benefits to our customers through operational efficiencies, reduced maintenance TAT [turn-around-time], simplification and improved productivity."



BBAM Partnership accepts A321P2F

US-based lease-management company BBAM Partnership has welcomed its maiden Airbus A321 passenger-to-freighter (P2F) example, G-POWY (c/n 1238), after delivery from Elbe Flugzeugwerke (EFW). The A321P2F is scheduled to be the first of three leased to Stansted-based Titan Airways as it transitions into an all-Airbus fleet.

Alistair Willson, managing director of Titan Airways, said: "Titan Airways has [more than] 32 years of successful freight and passenger operations, and

has been an Airbus operator since 2013. The A321P2F will enable us to utilise all the benefits of this type into our air freight activities, including best-in-class economics, reduced noise, a lower carbon footprint and real-time health monitoring, ensuring the highest levels of reliability."

EFW CEO Andreas Sperl added: "As our A321P2F programme gains traction with more deliveries, we will, together with our parent companies ST Engineering and Airbus, double down on delivering this innovative solution

to the market and capturing more narrowbody freighter market share."

The A321P2F offers containerised loading on both the main deck and lower deck at 14 and ten positions, respectively and has a gross payload capability of up to 30 tons.

As *Airliner World* went to press, two of the A321P2F trio bound for Titan have been identified. The 2000-built pair, G-POWY and G-POWZ (c/n 1250), are both former Thomas Cook Airlines examples, G-DHJH and G-NIKO, respectively.

The latest news from maintenance, repair and overhaul providers

By
Nigel
Pittaway

Etihad Engineering wins award

Abu Dhabi-based MRO, Etihad Engineering, was the recipient of the inaugural 'Pride of Aviation' trophy at the Aviation Business Awards held in Dubai on December 15, 2020.

According to the organisers, Etihad Engineering won the award for "demonstrating outstanding steadfastness in the face of unprecedented industry crisis and meeting adversity with solidarity, innovation, determination and adaptability". The award was accepted at the event by Etihad Engineering head of communications Khawlah Alrayssi, and head of sales David Doherty.

Vice-president of technical sales and customer service at the MRO, Frederic Dupont, said: "The Etihad Engineering team is honoured to be recognised by the Aviation Business Awards, particularly given the challenges we have faced [in 2020]. We have not only been able to deliver on our commitments to our existing customers and Etihad Airways, but hopefully also

contributed to supporting the aviation industry during these challenging times. This has been made possible by the support of our stakeholders, the continued confidence of our customers and most importantly, the overwhelming resilience and determination of our people."

Dupont added that during the COVID-19 pandemic, the MRO had

expanded its operations to meet changing requirements and launched a series of service solutions, including leveraging Part 21J and Part 21G capabilities to design, manufacture, certify and install cabin parts.

At the same event, Etihad Engineering was also a finalist in the 'Technology Innovation of the Year' award. (Photo Etihad Engineering)



Cargo volume boost for 737 BBJ

RoyalJet has become the latest customer for Hong Kong Aircraft Engineering Company (HAECO) Cabin Solutions' in-seat package stowage systems. RoyalJet – a private aviation company based in Abu Dhabi and jointly owned by Abu Dhabi Aviation and Presidential Flight – will use HAECO's product on its fleet of Boeing

737-700 BBJs (Boeing Business Jets).

Rob DiCastri, CEO of RoyalJet, said: "We have been searching for ways to allow our customers to transport more precious cargo on their trips.

"Of the solutions we considered, HAECO Cabin Solutions' all-in-one cargo product and cargo bags provided the most payload/volume and was easily configurable to adapt to the available space, maximising cargo capacity while minimising cabin modification."

HACEO Cabin Solutions supplied the supplemental type certificate for the equipment. Its installation and approval were awarded by the United Arab Emirates' General Civil Aviation Authority.

Doug Rasmussen, president/group director of HAECO Cabin Solutions,

added: "These are challenging times for airlines. We are delighted to offer these quick and cost-effective solutions that allow RoyalJet to continue passenger operations as well as the capability to greatly increase and maximise the cargo volume and payload capacity of their aircraft."

(Photos HAECO Cabin Solutions)





Letters to the editor

Dear editor,

With all the attention on retiring 747s at the moment, how about a feature where readers write in with their song title and artist that references a "747" or "Jumbo" and see how many we can get?! I'll start: Breakfast in America by Supertramp: "Take a jumbo, across the water..." and Going to Brazil by Motörhead: "Here we go again on a seven forty seven."

Matt Howard, Leicester

Ed: Now this sounds like a rather fun lockdown distraction. I'll add to proceedings with Song 2 by Blur, which opens with the line: "I got my head checked, by a jumbo jet... It wasn't easy, but nothing is..."
woo hoo!

Dear editor,

I thoroughly enjoyed reading about the trijet legends turning 50. From the reliable TriStar to the 'Long Beach Luxury Liner'. I love both aeroplanes equally and was lucky enough to have the privilege of flying on the TriStar in the late 1980s. In my opinion they are iconic aircraft.

Daniele Pelaia, Monasterace, Italy

Dear editor,

Of particular interest was your article on the Trident. Between January 1964 and January 1981 I flew 46 times on various marques of the Trident, mainly between Bremen and Frankfurt, to and from LHR.

I recall flying 'backwards' on some Trident flights, which I believe was an MoD requirement for all British Forces. It was an unfamiliar feeling to be looking 'downhill' on take-off at the forward and 'uphill' facing passengers, who displayed various facial expressions of excitement ...or fear.

My epic Trident experience was a package tour holiday to Cyprus in June 1974; this involved three aircraft for the outbound trip to Nicosia and two for the return. We were due to board the BE Trident LHR-NIC, but were informed at the gate that there would be a delay as the designated aircraft had technical problems, and we should wait for the replacement – another BE Trident.

This duly came, we boarded and taxied, but were told before take-off that there was a technical problem and we were returning to the terminal;

by this time the CY Trident scheduled departure, some hours later, would be the replacement, and we made it to Nicosia with some delay. Whilst taxiing to our stand at NIC, the cabin started to fill with smoke and fumes from the rear... we disembarked hurriedly down the airstairs, which seemed to take an age to be positioned. The return flight was scheduled to be a BE Trident, but yet again, due to technical problems, we were re-booked on the later CY Trident to LHR. I am glad we did not have any seat-rows facing each other, as I think my facial expressions might have shown how I felt.

Mike Nicholson, Four Marks

Dear editor,

I was interested to read your article about Vistara and SpiceJet both wanting to serve London Heathrow.

I can understand Vistara, an established long-haul airline, being interested as they presumably hope their 787s will be more economical than the 777s used by previous airlines such as Kingfisher and Jet Airways, but SpiceJet? What next? EasyJet from Luton to Lucknow, or Ryanair from Manchester to Mumbai?

On a lighter note, as Singapore Airlines refer to their female cabin crew as 'Singapore Girls', what are SpiceJet's staff called?

"On your flight today, we have in the premium cabin, Posh Spice and her new trainee Baby Spice, whilst in the economy section you will be served by Ginger Spice, Sporty Spice and the cabin manager Scary Spice. Oh, and I'm your captain, Old Spice."

Whilst I'm sure SpiceJet *Wannabe* on the LHR route themselves, perhaps they could code-share with Vistara so *2 Become 1?*

Andy Butt



Dear editor,

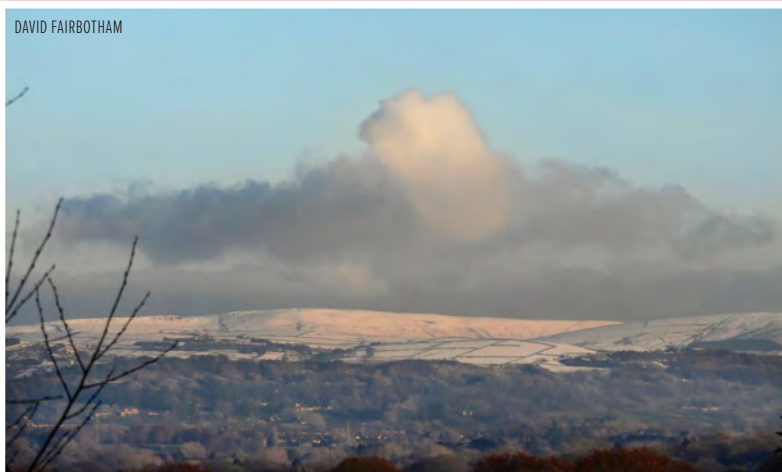
When I was out walking recently, I spotted this cloud formation, which I thought loosely took on the appearance of an Airbus A380... with a bit of imagination.

David Fairbotham

Ed: Alas, it has been many months since most of us have been on an aircraft, so it was perhaps only a matter of time before the hallucinations kicked in! I'll be sure to keep an eye out for any other aviation-themed clouds when out for my government-mandated exercise. Have you spotted a cumulonimbus that looks like Concorde or a cirrus resembling a 747? Drop us a line at: airlinerworld@keypublishing.com

Silver linings

DAVID FAIRBOTHAM





Chinese dispatch

Dear editor,

As a frequent domestic flyer in China from 1991 to around 2005, Gerry Manning's pictures in the November issue sure jogged a few memories. During that time, I visited 19 of China's provinces and autonomous regions, flying on practically every airline and aircraft model available.

A few episodes stand out. Flying Xinjiang Airline's Il-86 from Beijing to Ürümqi was something else. You entered via built-in stairs in the belly, up two floors into a cavernous cabin. There was a small fan built into the seatback in front of you – if it was too hot, you simply turned it on.

The take-off run took forever, to the point I believed we were going by road. Thankfully, Beijing/Capital had long runways, but we had an intimate relationship with terra firma for quite some time.

Another flight was on a Tupolev Tu-154. I was seated on the port side,

where there were three seats abreast, but my row had two; seat A was in the row in front. Instead, there was a big box containing an emergency chute with the following printed instructions:

1. Open emergency exit
 2. Open box
 3. Pull out chute
 4. Throw chute out window
 5. Open gas cylinder to inflate chute.
- I'm not sure how I would have managed as the emergency exit was rather small and next to the engine – which, by the way, had a bent pylon, probably as the result of some fairly solid landings.

Check-in and boarding was also fascinating. At the counter they would have a box with all the boarding cards sorted alphanumerically. Unless the aircraft had a business class cabin, the first person to arrive would be given 1A, then 1B and so forth. These boarding cards were collected and reused. It worked well, but on a couple of occasions we travelled on Boeing

737s with lavatories mid-cabin on the starboard side. Both times we had seats where there was now a toilet, with the result that we were standing up during take-off, until such time as the cabin crew was able to organise seats for us.

In those days, not even Beijing/Capital delivered announcements in anything but Chinese. I frequently travelled without an interpreter, as they were normally waiting for me at the destination. To help navigate my way through the airport, I made it a habit to find a passenger with a boarding card with the same flight number as mine. I would then stay within two feet of that person until safely on board, even as far as to the toilet – hence I always opted for a male passenger!

Happy days, but my carry-on bag always contained a good number of Underberg drinks – just for calming the nerves, of course...

Per Bertelsen, Porsgrunn, Norway

BER with us

Dear editor,

Thanks for your recent article about the opening of Berlin's new airport.

I'm not sure if you got the name right, though. Yes, the signs say 'Berlin Brandenburg Airport', but its name (and not side name) is actually 'Willy Brandt'.

The airport is located on the outskirts of Berlin, in the Brandenburg region. Brandenburg is also a federal state and co-owns the airport together with the City of Berlin. For that reason you shouldn't call it 'Brandenburg'. At least, in Germany we wouldn't do that – everyone here calls it BER.

Harald Gabriel, Mannheim, Germany

Ed: Thanks for your local insight, Harald. Like many other members of the English-speaking press, we have often used 'Brandenburg' as shorthand to describe the new facility. I agree that this is not strictly accurate and appreciate that 'Willy Brandt' or even 'BER' would be closer to its proper name. We've taken this on board and hope you noted that in our 'First In; Last Out' feature in the February issue, we used 'Willy Brandt' in the introduction. With Tegel and Schönefeld now largely out of the picture, hopefully things will become a little more straightforward when discussing the aviation scene in the German capital.



FLUGHAFEN BERLIN BRANDENBURG GMBH / GÜNTER WICKER

Dear editor,

I enjoyed reading Bernd Sturm's article on aviation in Tonga in the January edition. He described the airport runway at Ha'apai being intersected by a main road with the gates closed to traffic when the runway is in use.

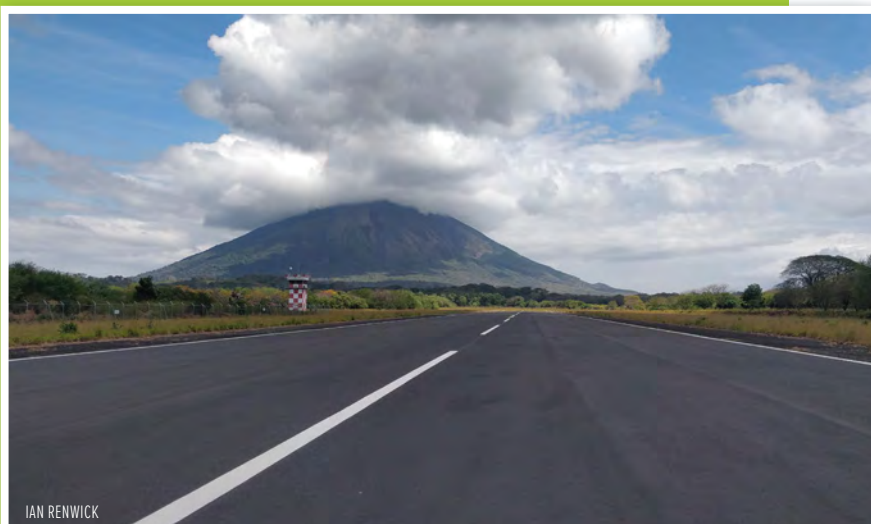
He also asks where else in the world you could have this experience.

Well, you can see the same at Ometepe Island 'international' airport (MNLP) in Lake Nicaragua, Central America.

I was lucky enough to squeeze in a trip to that part of the world just before lockdown and we cycled across the runway. Unfortunately, there was no aviation action but, as you can see from the enclosed picture, there is plenty of interest with the adjacent active volcano.

Ian Renwick, Scarborough

Tropical treasures



IAN RENWICK



Striking gold in the desert



STEPHEN L. GRIFFIN



Dear editor,
Reading your Airbus article reminded me of a chance encounter with the third Airbus A300, F-BUAD. It was at California's Mojave Airport in the early 1990s. I was up there to take photos of whatever I could and General Electric was preparing their test aircraft for flight. As I walked by, I spoke with one of the men who was handling the push-back and he told me that it was a test flight for an engine destined for the new A330 – he said it was the most powerful engine ever put on an airplane wing. Attached are some of the photos.

Stephen L Griffin

Ed: Thanks for sharing these fascinating images and offering some insight into how you took them, Stephen. Bet you're glad you had your camera to hand!

Perks of the job

Dear editor,
I really enjoyed the recent feature on airline tickets. My first flight was on a BEA Vanguard LHR to JER on a family holiday with my parents as an eight-year-old in 1966. We did the same route the following year – this time on board a Viscount – and on the way

back we diverted into Southampton due to bad weather!

I remember going with my father to BEA's office in London. It was somewhere near Haymarket, long gone nowadays. You booked your flights and then the agent would have to write out all the tickets while you

waited – good handwriting was an essential, as well as knowing your airport codes. I used to keep my tickets, but several house moves and the passage of time has meant they are no longer with me.

My first job when I left school was as a messenger for a travel agency. We were based above the big Woolworths store on Oxford Street. A regular task was to accompany one of the managers round to the bank to collect some airline tickets which were being booked by our customers. I can remember our safe deposit box being full of all sorts of tickets and, being a young avgeek, wondering when I might get the chance to travel. I would also deliver the completed tickets to our customers, and back in those days some airlines also gave away branded carry-on bags if you booked a certain class of ticket. Some of the customers gave these to me as they didn't want them! Why did I use them? Why didn't I save these bags? Hindsight is a wonderful thing!

Keep up the great work, and let's hope 2021 is a better year all round.

John Spencer

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The latest training aids available for the aviation professional

Historic training partnership signed

Tel Aviv-based Israir Airlines plans to train its Airbus A320ceo pilots using Etihad Aviation Training's full-flight simulators (FFS) after a January 7 commitment was signed virtually between both parties. As part of the deal, instructors from the Israeli carrier are set to train its own flight crew as Israir will dry-lease Etihad's simulators in Abu Dhabi.

Captain Paolo La Cava, managing director Etihad Aviation Training, said: "Following Etihad's announcement to commence services to Tel Aviv, EAT [Etihad Aviation Training] is delighted to further commercial opportunities with Israel by providing comprehensive aviation training services to Israir Airlines.

"Continuing our commitment to providing highly skilled pilots by offering state-of-the-art training facilities, EAT is looking forward to working with Israir Airlines and is anticipating further collaboration

with the [operator] to cement this landmark agreement."

The move is the latest in a series of developments – including the launch of scheduled flights between the two countries – as diplomatic ties were formally established following the historic signing of the Abraham Accords Declaration between Israel and the United Arab Emirates in

September 2020 (see *Airliner World*, December 2020).

Israir fields a fleet of seven, including four IAE V2500-powered A320ceos, 4X-ABF (c/n 4354), 4X-ABG (c/n 4413), 4X-ABI (c/n 7110) and 4X-ABS (c/n 2728), with 4X-ABF given special 'Future, Peace, Partnership' markings to signify the thaw in relations. (Photo Etihad Aviation Group)



New cadet scheme launched

FlyBy Aviation Academy launched its new pilot cadet programme in December.

According to the Spanish-based training provider, students are "guaranteed" to receive a one-year flight instructor job after conclusion of their Integrated Airline Transport Pilot Licence (ATPL) course.

Prospective cadets – who require no prior flying experience – would

enrol onto a three-part programme.

The first phase starts with a 14-month ATPL Integrated course; successful students then progress onto a three-month instructor phase before gaining fully paid employment as a flight instructor for 12 months. Most training takes place at FlyBy's Burgos, northern Spain-based facility.

Alex Alvarez, CEO of FlyBy, said: "Despite the difficulties of 2020,

we have great confidence in the resurgence of the commercial aviation industry over the next few years.

"We are the first flight school to offer a course of this kind and in less than 18 months' time cadets will have not only the best skills as experienced and trained instructors, but a guaranteed job to further build up their industry experience."

Bosses at FlyBy are confident the cadet scheme will take full advantage of a "strong industry rebound". The flight school has reported that 27,000 new pilots are required "from the end of 2021" and that 264,000 are needed by the end of the decade.

The training firm confirmed it will continue to expand "over the next 24 months and beyond".

(Photo FlyBy Aviation Academy)



New Vietnam deal

BAA Training Vietnam and start-up carrier Vietravel Airlines have signed a long-term partnership to "connect and combine" the strategic efforts between both groups. As part of this, BAA Training will support the growth of the Phu Bai International-based carrier through the wet and dry leasing of Airbus A320 full-flight simulators (FFS) to train flight crew. Vietravel has also shown interest in using BAA Training's V9000 Commander that would simulate fire drills for aircrew.

Vytautas Jankauskas, CEO at BAA Training Vietnam, said: "We have been investing in state-of-the-art devices to take the lead in flexible, innovative

and cost-saving aviation training for airlines. We are ready to connect and combine our strategic efforts with the new and ambitious player, Vietravel Airlines, capable of shaking the aviation market."

Vietravel – created by the nation's leading tour operator – has taken A321ceos, VN-A278 (c/n 6376) and VN-A289 (c/n 6168). With two more due in 2021, the airline is recruiting captain instructors and first officers type-rated on the A320 Family.

BAA Training also provides wet and dry leasing to Bamboo Airways and VietJet.

(Photo BAA Training Vietnam)



Jet2.com Boeing 737 crew rejected take-off after V1

The crew of a Jet2.com Boeing 737-800 chose to reject a take-off after reaching V1 leading the aircraft, G-DRTN (c/n 32735), to come to a stop about 600m from the end of the runway, the UK's Air Accidents Investigation Branch (AAIB) has found.

On February 9, 2020 East Midlands was experiencing strong, gusty winds and squalls resulting from Storm *Ciara*. The forecast indicated wind was 32kts gusting 45kts. The commander initially intended to conduct the take-off but changed his mind after the co-pilot informed him that as a senior first officer, he was permitted to use the same weather limits as the commander. This transfer of responsibility allowed the captain to focus on anticipated difficulties they would face in the strong winds when loading catering and persons of reduced mobility (PRM).

As expected, the commander spent a considerable amount of time dealing with ramp staff and the operator's headquarters as he tried to resolve several issues relating to the gusty conditions. During the cockpit brief, the crew refreshed the actions for the windshear escape manoeuvre and a rejected take-off. The calculated performance figures for the departure were V1 134kts, VR 149kts, V RMAX 158kts and V2 156kts.

As they approached the runway, the flight was cleared for take-off and passed a wind of 220° at 32kts. The pilots confirmed this was acceptable and lined up without stopping and selected take-off power. At approximately 120kts, the commander recalled a 10-15kts reduction in airspeed. He called this to the co-pilot but, as the acceleration resumed, decided to continue. The commander

stated that approaching V1 (134kts) the aircraft deviated dramatically from the centreline to the right, estimating it at between 20° and 30° of heading. The commander saw a large downtrend on his airspeed indication and felt the co-pilot's attempts to control the heading were ineffective. He told the investigation, "as PM [pilot monitoring], my instant snapshot was that indicated airspeed was reducing and we were below V1, so I called "Stop". During this time both pilots recalled hearing the automated V1 callout.

The commander took control in accordance with Standard Operating Procedures (SOP), the rejected take-off (RTO) actions were carried out and the aircraft stopped on the runway centreline between M and H taxiways, with around 600m remaining.

During the aircraft's take-off roll, there was a 13kt reduction in airspeed prior to V1. As the narrowbody passed V1 the automated callout sounded, but immediately thereafter the airspeed decayed, the aircraft yawed rapidly right away from the centreline (approximately 8°) and there was a noticeable change in the lateral g.

The commander was concerned the aircraft might exit the runway and considered the situation to be unsafe. He had seen the reduced airspeed with the associated downward trend indication, which occurred approximately five seconds before V1, and called "Stop" to reject the take-off. The AAIB say the RTO actions were promptly and correctly carried out along with rapid control inputs to return the aircraft to the centreline.

The AAIB's accident analysis focused heavily on the crew's decision to stop once beyond V1. The report quoted a section from the non-normal

manoeuvres segment in the aircraft quick reference handbook (QRH) which concentrated on what to do if windshear is encountered before V1.

Responding to its QRH entry, Boeing said "[It] does not imply that stopping could be initiated after V1. On the contrary, a windshear during take-off roll can result in groundspeed greater than indicated airspeed due to the tailwind effect of the windshear. Because of the higher ground speed, performance data for stopping on a field length limited runway (a short runway) may not be accurate, resulting in a runway excursion even though the airspeed indicates V1 or less at the start of the RTO.

"The commander has the sole responsibility for the decision to reject or continue a take-off in a windshear emergency. The commander must determine the safest course of action based on airspeed, airspeed trend, runway remaining, braking capability, and other indications of airplane performance," it added.

In conclusion, the AAIB report stated that the commander had a high workload managing the departure and to give himself time, decided that the take-off should be flown by the co-pilot. Investigators noted that the airline's SOP is to continue a take-off when V1 has been reached because as the manufacturer commented, successful outcomes are more likely than when a take-off is rejected.

The aircraft returned to its stand safely and passengers subsequently disembarked. As a result of the high-speed RTO, the number four wheel and brake unit suffered heat damage, the latter together with all the wheels and tyres were replaced.

The Boeing 737-800 stopped 600m short of the end of the runway
AIRTEAMIMAGES.COM/
SIMON WILLSON



DATE	REG'N	C/N	TYPE	OPERATOR	FATALITIES	LOCATION	NOTES
Dec-05	C-FWYO	111	Beech A100 King Air	Airco Aircraft Charters	0	Canada	Landing gear collapse
Dec-09	UR-33642	16233-32	Antonov An-2	Private	1	Ukraine	Cause of crash unknown
Dec-20	N412JA	258516	Raytheon Hawker 800XP	Talon Air	0	United States	Runway excursion
Dec-30	PZ-TSK	208B0488	Cessna 208B Supavan 900	Blue Wing Airlines	0	Suriname	Landing gear collapse
Jan-02	PP-BBV	31-113	Learjet 31A	Brasil Vida Táxi Aéreo	0	Brazil	Runway excursion
Jan-02	N831WP	BB-569	Beechcraft Super King Air 200	Vagus Group	0	United States	Cause of crash unknown
Jan-09	PK-CLC	27323	Boeing 737-500	Sriwijaya Air	62	Indonesia	Entered a rapid descent shortly after departure
Jan-09	N3RB	560-0035	Cessna 560 Citation V	SX Transport	2	United States	Crashed en route

Brave Blue World



While the rest of the world was looking forward to putting 2020 behind them, JetBlue

Airways had an additional reason to be cheerful. The New York-based airline's maiden Airbus A220-300 departed the European aerospace giant's Mobile, Alabama final assembly line on New Year's Eve and, just after 7.30pm, arrived in the Big Apple. As the aviation industry's toughest year concluded, any reason to celebrate was welcomed.

The airliner, N3008J (c/n 55099), is the first of 70 examples the carrier has on order. In accepting the narrowbody, JetBlue became the ninth A220 operator and is due to field the type's second largest fleet when it receives its 70th and final jet in 2026.

The company's tradition of adorning its aircraft with bespoke tailfin liveries continues with its first A220 debuting a new design called 'Hops'. The company stated that this reflects the type's role "carrying passengers on many short trips together as part of a larger journey, commonly referred to as 'hopping'.

Another of the carrier's long-held customs is giving its new



aircraft a name that is a play on the word blue, with remarkably few jets named after a person. An exception was made for the airline's maiden A321neo, which was named after founder David Neeleman. Similarly, the company's newly received initial A220 was called 'Rob Dewar', honouring the engineer often referred to as the 'Father of the C Series'. Dewar has been with the programme since its earliest days at Bombardier and is providing the project with continuity and leadership since its purchase by Airbus.

The carrier's first 60 A220s will replace its fleet of Embraer E190s on a like-for-like basis
AIRTEAMIMAGES.COM/
STEVEN MARQUEZ

JetBlue has become the third North American airline to receive an Airbus A220, following in the footsteps of Delta Air Lines and Air Canada
JETBLUE AIRWAYS

The A220 is replacing JetBlue's Embraer E190s on a like-for-like basis through to 2025. JetBlue had brought legitimacy to the first-generation E-Jets programme with an order for 84, although the airline only accepted 60 examples. The 100-seaters have quickly become long in the tooth.

Speaking to *FlightGlobal* in June 2017, JetBlue CEO Robin Hayes explained: "The stage length of the E190 is 40% shorter [than the A320] but the E190 is a high CASM [cost per available seat mile] airplane. We look >>

JetBlue celebrated its 20th year by unwrapping a late Christmas present – the first of 70 Airbus A220-300s. **Chris Sloan** headed to the Big Apple to see the 'Baby Bus'



at the E190 issue not as a CASM issue, but a return issue."

Bombardier vs Brazil

Within months, the Brazilian manufacturer had offered its E195-E2 as a solution to JetBlue's E190 problems and kicked off a hard-fought sales campaign between the airline's two long-time exclusive airframe suppliers.

When JetBlue opted for the A220 in the summer of 2018, ergonomics, network range and fleet plan flexibility tipped the scales in favour of the 'Baby Bus'. At the time, the New York-based carrier's chief financial officer, Steve Priest, told *FlightGlobal*: "The E195-E2 is a fabulous next generation aircraft. It was incredibly close from an economic standpoint when we look at the two platforms." He added: "Both really drive a step change from existing technology."

The E2 and A220 are very tightly matched at the lower end of the 100-150-seat market for capacity and fuel burn. While both jets eclipse the E190's 2,450nm flight capability, the latter's range and capacity at the high end present it with a huge advantage. The E195-E2's maximum range falls 750nm short of the A220-300's 3,350nm endurance. The Canadian-designed and developed jet even has a slight 50nm advantage over the Empire State-based airline's A320neos.

Thinner routes, as well as the pioneering new ones, provide bread-and-butter work for JetBlue's E190s, while they are also deployed on frequency-boosting missions across the network. Their average stage length is around 90 minutes, according to *ch-aviation*, with *Cirium* stating that typical sorties range from

The airline's first A220, N3008J (c/n 55099), passes behind the winglets of its bigger siblings – the A320ceo and A321neo – as it is towed to the stand AUTHOR



The carrier is famous for its variety of tail liveries. With the arrival of a new aircraft type, JetBlue unveiled this design, called 'Hops' JETBLUE AIRWAYS



Boston-Austin at 1,698nm to short hops such as the 66nm journey from San Juan to St Thomas.

Leveraging long range

You don't have to be a fleet planner to see how the A220s niche can only grow. The A220-300 is an up-gauge over the E190 fleet, though JetBlue has options to convert to the smaller 125-passenger A220-100, more in line with the outgoing Embraers, if it

so chooses. Likewise, the A220 could be stretched to mirror the capacity of an A320 should the long-rumoured A220-500 variant come to pass. It's worth noting that JetBlue has yet to order any A320neos, so there's potential for both the E-Jets and the company's 130 A320ceos to be replaced by a single type.

Network planners and the carrier's C-Suite are salivating at the prospects. JetBlue president

The airline's maiden Airbus A220 made its first flight on December 9. It is expected to enter service in the first half of this year AIRBUS





and chief operating officer, Joanna Geraghty, said in 2018: "One of the benefits that the A220 has is range. We can fly them transcontinental. In some circumstances, you can fly a version of it across the Atlantic. It also performs well across short sectors. That gives a lot of flexibility."

Pioneering A220-300 operator airBaltic offers the type's longest sector in the world: a 6½-hour non-stop connection between Riga and Abu Dhabi.

Revenue management is also thrilled. The A220-300 seats between 120 and 150 with a maximum capacity of 160 passengers, whereas the Embraer E195-E2 maxes out at 146 and traditionally has around 120 passengers on board. Importantly, the larger A220-300 has lower CASM than its Brazilian rival.

As of January 2021, the E1 fleet was 8% of JetBlue's available seat mile capacity (ASMs) and 22% of flights systemwide, according to Cirium.

*The business end of
the brand new jet* AUTHOR

Data from *ch-aviation* indicates that E190 fleet utilisation was a paltry 6½ hours, well below its A320/A321 fleet-mates – even with the reductions in flying during a pandemic.

With higher utilisation, more seats, longer range, greater reliability and reduced maintenance, the A220 fleet will be a more significant network player than its predecessor.

Powered by the highly efficient, quiet, and increasingly more reliable Pratt & Whitney GTF engines, Airbus claims a nearly 30% lower direct operating cost per seat than the current E190. This aligns well with JetBlue's sustainability goals: becoming the first major US airline to achieve carbon neutrality for all domestic flights and achieving net carbon zero emissions across all operations by 2040.

Shrinking seat costs

Lower seat costs come from both fuel and non-fuel savings. JetBlue's E190s

are 12½ years old on average with the most junior examples dating back to 2012. The new A220 fleet will also help to reduce JetBlue's maintenance costs well into the decade. The company anticipates the A220s fleet, with improved reliability and longer maintenance intervals, will have a maintenance cost per seat that is more than 40% lower than the E190.

Pilot training and induction into the fleet is already under way months ahead of entry into service. As *Airliner World* went to press, JetBlue had confirmed the first regularly scheduled revenue route for the A220 will connect its Boston/Logan and Fort Lauderdale focus cities by late June. Prior to that, the aircraft will be substituted on additional short-haul routes. Pioneering links, including long/thin and medium-haul such as transcontinental and potentially Europe would come later. The airline is contemplating crossing 'the pond' with the A220 although it has >>



outlined potential services between Boston and New York and London's Stansted and Gatwick airports using newly acquired Airbus A321LRs in an updated Mint configuration.

Passengers as well as operators have showered the A220 with accolades and the platform has been praised for its widebody comfort and spaciousness in a narrowbody package. In a post-COVID-19 world of reduced widebody and up-gauged narrowbody flying, this becomes an even more enticing offering. The 129in wide and 83in high cabin with its huge overhead bins, high ceilings and windows that are 50% larger

than an A320 have been a hit with passengers, as have the wider aisles and seats, and 2-3 configuration.

Stepping on board

From trail-blazing LiveTV to free Wi-Fi and free snacks, JetBlue's passenger experience has been a cornerstone of its success since the airline's creation. The Embraers quickly carved out a fan base among flyers thanks to its middle seat-less 2-2 configuration and widest economy class seats in the fleet at 18.25in. At 32" and 39" pitch for regular and 'Even More Space' seats, they have the most legroom in the JetBlue Core Cabin fleet. However,



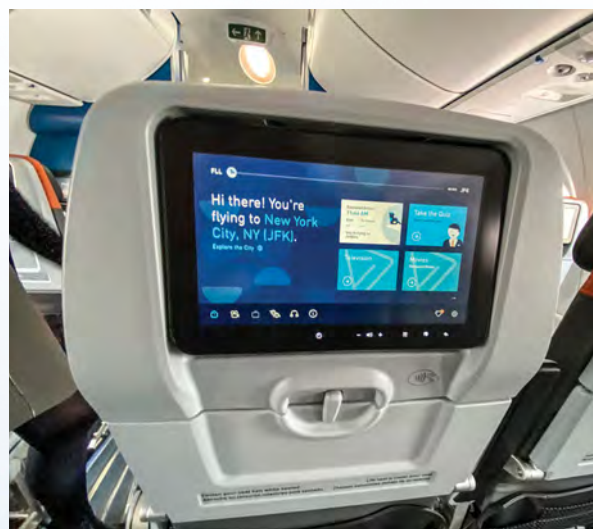
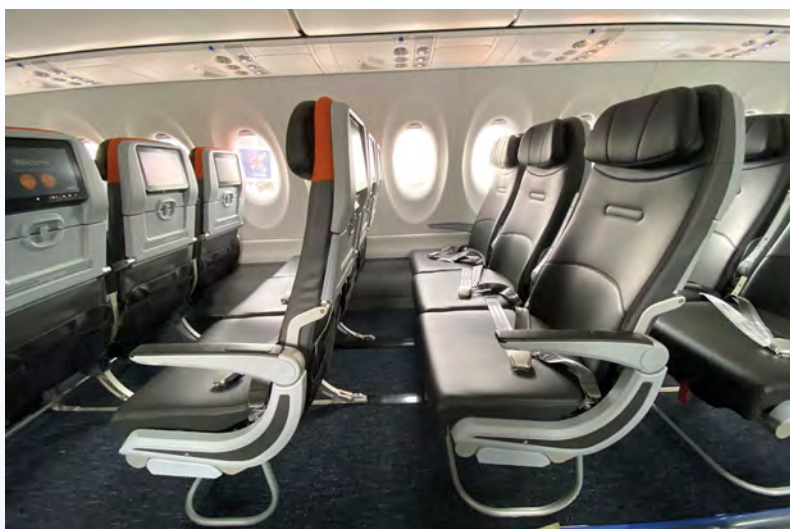
ABOVE • The cabin is equipped with 140 Collins Meridian seats which are 18.6in wide and offer a minimum of 32in of pitch AUTHOR

ABOVE LEFT • Airliner World was shown around the new narrowbody by Mariya Stoyanova, the cabin's interior designer AUTHOR

the carrier's E190 cabins have become dated having not been upgraded since the type entered service back in 2005. But with the A220 replacing the 'Jungle Jets', what flourishes will the Blue Crew have for its latest addition?

Airliner World had an exclusive tour of the new ship months ahead of service, with Mariya Stoyanova, who designed the cabin in-house, showing off the stunning new 'Baby Bus'. Unsurprisingly, JetBlue seeks to exceed their own passenger experience standards as well as upping the game for its rivals. Their A220s are fitted with 140 seats in an all-economy configuration. The first





six rows each have a 35in seat pitch as part of the carrier's 'Even More Legroom' option, while the rest of the cabin has a generous 32in. The Collins Meridian seats – upholstered in a vegan Ultraleather – are the same as those in the A320neo phase 2 refresh programme, but there have been some upgrades. At more than 18½in, these are the industry's widest economy seats. Egalitarian JetBlue chose not to order the optional wider middle seat that a few airlines, like Air Tanzania, have gone for. Still, with the 3-2 configuration, only 20% of the seats will be the dreaded middle one. The wide seats still allow for the

famous A220 spacious aisles allowing a passenger to pass while cabin crew are serving drinks and snacks.

The Meridian's breathable cushion provides an enhanced comfort over other slimline seats the author has sat in, while the seatback is contoured at knee level, providing extra room. Even with the seat in front reclined, the 32in between these seats feels like a lot more. There is custom-designed mesh seatback storage with separate pockets for water bottles, personal electronic devices and airline literature. The mesh was chosen for easier cleaning and for passengers to see their possessions, preventing lost

ABOVE • The new type boasts the same 10.1in seatback touchscreens found in the airline's Airbus A320 Family AUTHOR

ABOVE LEFT • The Canadian-developed jet seats 140 passengers in a 2-3 configuration AUTHOR

The first of 70 A220-300s for the Big Apple's budget behemoth is framed against the company's New York/JFK maintenance facility JETBLUE AIRWAYS

property. The tray tables can easily accommodate a 15in laptop. Each seat has in-seat power with new USB-C ports just below the monitor. The AC and USB-A ports are less conveniently located at foot level, but at least there's no sharing!

Let me entertain you

In terms of in-flight entertainment (IFE), JetBlue continues to buck the industry trend. The A220 employs the same Thales Avant and high-speed ViaSat-2 Fly-Fi connectivity as on its bigger brothers. The 10.1in 1080p high-definition touchscreen delivers 30 streaming LiveTV channels, >>



different from the DirecTV product in the rest of the fleet, yet still offers pause and rewind functionality. There are also hundreds of movies and premium content from HBO and Showtime on demand. A picture-in-picture feature and 3D flight map round out the picture. The most stunning part of the IFE are the low-tech but massive signature windows, complemented by LED mood lighting.

The devil is in the detail and JetBlue excels here, too. The three SpaceLav washrooms don't have windows like their Delta counterparts but are finished with subway tile patterns, a nod to being New York's hometown airline, and gender-neutral signage. The bulkheads sport custom-created patterns incorporating morse code spelling out the airline name.

Special touches extend to the crew with a fold-down tray table for their seats and special cubbies for their devices. Even the galley floor has different colours denoting personal space for the flight attendants.

With comparable range, lower costs, and passenger appeal akin to that of the larger A320 and A321neo, it's likely the A220 will become a game changer for JetBlue. 'Baby Bus' may well teach its big brothers some new tricks. **AWA**

Get a Sneak Peek!

Step on board JetBlue's maiden A220-300 before it enters service with our exclusive video tour. It's only available to view on our new website: www.key.aero

Three SpaceLav washrooms feature tiles inspired by the New York subway system AUTHOR



Passengers flying on the A220 will be afforded views through windows 50% larger than those found on Airbus A320 Family airliners AUTHOR



JetBlue's A220-300s will enter service by connecting the carrier's two largest focus cities, Boston and Fort Lauderdale AIRTEAMIMAGES.COM/ RONALD J STELLA



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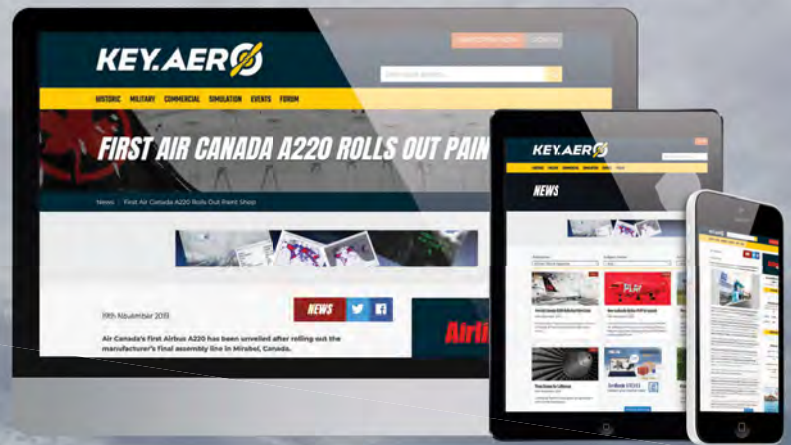
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We venture far off the beaten track to get on board one of the lesser known airliners used for scheduled passenger services: the Xian MA60. We'll examine the market for these Chinese-built turboprops, before taking to the sky in one to try them out for ourselves.

Brexit demystified

December's last-minute deal between London and Brussels came as a relief to many, but is the devil in the detail? We crunch the numbers and analyse the small print to reveal what the agreement really means for aviation.

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