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Contents



p36

Features

22 In desert skies

Barry Ambrose shares images from the recent Aviation Nation airshow at Nellis AFB

24 West Coast 1975

Richard Vandervord shares a selection of snapshots from a visit to the US in 1975

28 Au revoir, Alouette

Babak Taghvaei looks back on six-decades of French Navy Alouette IIIs as the venerable helicopter is retired from service

32 Old whale, new tricks?

Ian Harbison details Airbus's ongoing project to reinvigorate its redundant BelugaST transporters through the creation of a new outsize cargo aircraft

36 What now for Bruntingthorpe?

Jake Wallace visits Bruntingthorpe Aerodrome, where a new museum is set to rise from the ashes of a haven for Cold War jets

46 Electric Avenues?

Richard Schurman considers Heart Aerospace's recent redesign of its popular ES-19

52 Inside the Hornet's nest

Images from the Swiss Air Force's annual Exercise Yorknight deployment to RAF Leeming

56 Challenging convention

Paul Eden charts the Challenger business jet's evolution from LearStar to Challenger 3500

60 From the terraces: Cologne

Gary Morris gives his view on Cologne-Bonn Airport's visitors' terrace

78 New jet, new direction?

Tom Batchelor details the entry into service of Virgin Atlantic's maiden Airbus A330-900

Regulars

5 Headline news

6 Commercial News

11 Military News

16 Preservation News

20 Business and General Aviation News

45 What's on?

64 Airbase Movements

66 Airport Movements

70 Register Review

74 At The Fence

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Welcome



Two months ago, I pondered about the current tension between what aviation museums believe they should be and what we, as aviation enthusiasts, feel they ought to be. In the time since, the RAF Museum (RAFM) has shed six aircraft from its collection – the Auster T.7 Antarctic, the second and final Avro 707 in its care, examples of the North American B-25 Mitchell and P-51D Mustang, a de Havilland Vampire and a Junkers Ju 52.

While the RAF Museum's loss is to the benefit of Lincolnshire Aviation Heritage Centre, Midland Air Museum, the Avro Heritage Museum and, somewhat unusually, Australia's Hunter Fighter Collection, it is noticeable that an increasingly large portion of our aviation heritage is passing from museums which have secure futures to those which may be at the mercy of those more concerned with making a quick buck than preserving our nation's aviation history.

Case in point, the recent closure of Cornwall Aviation Heritage Centre. While these smaller museums are currently reaping the rewards of RAFM's downsizing (or should that read short-sightedness?) how long will it be before they themselves are threatened by developers? Coventry's Midland Air Museum (MAM) is an ideal example of this: a gigafactory set to loom large over the attraction would surely mean there would be little more than borrowed time before expansion threw MAM's existence into question as landlords or local council officials turned up with notices of eviction or compulsory purchase. Hopefully, that's not a future we

Cover: Clément Alloing/v1images

Above: Heart Aerospace

have to witness. Indeed, while the first sod has yet to be lifted on the planned gigafactory site, the project appears to have been built on shaky ground. Plans have been approved but no manufacturer has yet been signed up. Meanwhile, the UK Battery Industrialisation Centre – based next to Coventry Airport – has its own problems as Britishvolt, the company it has partnered with to manufacture batteries, is on the brink of collapse. At the start of November, it secured enough finance for five weeks, while staff agreed to "significant" pay cuts and executives went without a wage. Such is the company's perilous position that you may well have read or heard of its collapse before reading this editorial.

Elsewhere the recent raft of new airliner orders suggests we may now be basking in a light we have previously only glimpsed from inside a dark tunnel. Boeing in particular has racked up hefty orders for 737 MAX jets over the past few months, albeit due in part to increasingly lengthy wait times for A320neo Family aircraft thanks to the European manufacturer's bulging order book.

While a renewed confidence means billions in orders for Airbus and Boeing, it is undeniable that part of this shopping spree is due to the pressure placed on airlines to demonstrate their green credentials by buying Airbus, Boeing and Embraer's latest offerings as well as using sustainable aviation fuel and offsetting carbon emissions.

In this issue, we look at the Heart ES-30 (pictured) which is, at current

prediction, set to be the first clean-sheet electric airliner to enter revenue service. There's no question that the Swedish start-up is doing fantastic work in furthering the viability of electric-powered aircraft however, it is curious to note that several of the airlines which have indicated an interest in or have ordered the type have also openly admitted that the ES-30 doesn't fit their current fleet requirements, it having fallen short in both cabin size and range even after a redesign which almost doubles its seating capacity.

There is undoubtedly a need to further the development of electric airliners, however I can't help but think that airlines are making rods for their own backs by acquiring aircraft far smaller and with more restricted ranges than any member of their current fleets. I'd be interested to hear your thoughts – are the likes of United Airlines and Scandinavian Airlines saddling themselves with a necessary pain in order for aviation's electrification to make a leap forward, or is this a misplaced investment prompted by airlines buckling to pressure from those concerned by climate change which will result in aircraft quickly becoming redundant or obsolete requiring early retirement?

That's probably enough food for thought, especially at a time of year famed for overindulgence.

I'd like to thank you for your continued support and wish you a merry Christmas and a happy, healthy and prosperous 2023. I'll see you in the new year.

Martin Needham
Editor

1,573 down, one to go

THE END of the Boeing 747 era has moved one step closer following the delivery of the second to last airframe.

The jet, N862GT (c/n 67149), is the 1,573rd example to roll off the manufacturer's production line since 1968 and was handed over to the New York-based carrier Atlas Air on November 22. The 747-8F is finished in the livery of Swiss freight company Kuehne+Nagel and will be operated on its behalf by the American airline under a long-term agreement.

Kim Smith, vice-president and general manager of the Boeing 747/767 Program, said: "With Atlas Air taking delivery of the final 747s for its customer, Kuehne+Nagel, this iconic Boeing airplane will continue to move cargo around the world for decades to come."

"As we say goodbye to the 'Queen of the Skies', we're proud of her legacy as an airplane that propelled aviation innovation and later laid the foundation of our family of freighters."

Delivery of the last-ever 747 is due in January 2023. Atlas Air Worldwide Holdings – which owns six subsidiaries including Polar Air Cargo, Southern Air and Atlas Air – currently boasts a fleet of 57 jumbos, comprising 44 -400s and 13 -8s. It first took delivery of the next-generation variant on May 29, 2012. Boeing delivered a 747, N733PA (c/n 19640) *Clipper Pride of the Sea*, to Pan American World Airways on December 12, 1969 and the iconic widebody type has been produced ever since.

Kuehne + Nagel



Kuehne + Nagel



Emirates begins A380 refits



EMIRATES IS refurbishing its A380 cabins – the first jet to be upgraded, A6-EVM (c/n 264), entered the Emirates Engineering Centre's Hangar E in Dubai in November 2022 to begin the four-month conversion.

The upgrade involves removing 88 economy seats at the front of the main deck and replacing them with 56 premium economy class seats.

Business and first-class seats on the upper deck will be reupholstered and refurbished, and the shower-spa in first class revamped

with new colour tones and a hand-stencilled motif of a ghaf tree, a national symbol. All carpets and floorings throughout the aircraft cabins will be replaced.

The second A380 for refit was scheduled to roll into Emirates Engineering on December 1, 2022. Emirates said: "As the programme goes into full swing, engineers will work simultaneously on two aircraft. This means, every eight days, one aircraft will be grounded and towed for retrofitting." Emirates' first refurbished A380

will be reintroduced to service in March 2023, coinciding with the carrier's plan to introduce premium economy service on routes to New York JFK, San Francisco, Melbourne, Auckland and Singapore by the end of that month.

Emirates plans to have 67 upgraded A380s in service by May 2024, when similar cabin upgrade work will begin on 53 Boeing 777-300ERs, with those aircraft due to complete the retrofit by March 2025.

Emirates

Teesside bolthole for Oil Spill 727s

BOEING 727-2S2F(RE)s, G-OSRA (c/n 22938) and G-OSRB (c/n 22929), operated by 2Excel Aviation for Oil Spill Response Ltd (OSRL) moved to Teesside Airport in November 2022 following the closure of Doncaster Sheffield Airport (DSA).

The move was part of what a 2Excel statement called "an accelerated movement plan" for 18 aircraft the company previously operated from Doncaster. Three King Airs and two Panther variants of the PA-31 Navajo operated for the UK's Maritime and Coastguard Agency transferred to Humberside Airport, along with another Navajo used as a spotter aircraft for OSRL. Other PA-31s and King

Airs used for pilot training and check flights and those operated by 2Excel's Capability Development design engineering, manufacturing and maintenance business unit (which also includes a flight trials operation) will also move to Humberside.

A pair of King Airs will occasionally visit Humberside when not flying customers.

2Excel will retain its premises in DSA's Hangar 3. The company said ground-based support roles such as continuing airworthiness, procurement, design engineering, safety and operations will continue "to be based there for the foreseeable future".

Steve Lynes

Russian systems just the ticket for airlines hit by sanctions

RUSSIAN AIRLINES have completed their transition to domestic automated ticket booking systems as the industry continues to struggle with international sanctions. According to the Ministry of Transport, 53 different carriers including Aeroflot have moved away from foreign providers amid concerns over the confidentiality of company and personal data and claims of threats of service withdrawal, and are using the locally made Leonardo or TAIS systems.

Deputy Minister Dmitry Bakanov said: "Now, all Russian air carriers are using domestic ticket booking systems and are free from threats of unilateral termination of services of foreign providers. All settlements within the system are made in rubles. Our air companies and developers have managed to cope with migration in the difficult conditions stemming from Western partners' refusal to provide original data."

The switch to Russian ticketing systems mandated by November 1 is part of a wider move to decrease reliance on Western technology.



Swede goodbye for Loganair

EIGHT NEW ATR 72s will enable Loganair to phase-out its remaining Saab 340Bs.

The new aircraft will arrive progressively and the Saabs will leave Loganair's fleet between now and July 2023 under a \$12m sale agreement with the lessor Abelio.

They will take over routes from Glasgow to Islay, Benbecula, Sumburgh, Kirkwall, Derry and Stornoway.

Loganair already has 15 ATRs including four examples of the latest ATR 72-600

and four dedicated ATR 72-500 Freighters, which have recently taken over mail delivery flights to the Highlands and Islands.

Loganair CEO Jonathan Hinkles commented: "The Saab 340s have served us and our customers superbly well over the last two decades, but it's time for us to transition to a new generation of aircraft."

The ATRs will offer increased passenger and cargo capacity and their satellite-based

approach systems will enable operations in the reduced-visibility conditions that Loganair commonly faces in the Scottish Highlands and Islands.

Hinkles said: "It's important to have an aircraft which builds upon our environmental credentials while withstanding island weather conditions and providing accessibility for all customers in the communities we serve. We've found all those characteristics and more in the ATR."

Loganair



First Talon for Roc

THE GIANT Stratolaunch Carrier Aircraft will launch its initial hypersonic vehicle in the first quarter of 2023.

Developer Stratolaunch announced in November 2022 that its unique N351SL (also known as 'Roc') will air-launch the first expendable Talon-A test vehicle under a United States Air Force Research Laboratory contract.

Stratolaunch said: "Launched from the Roc aircraft, Talon-A is a rocket-powered, autonomous testbed with the ability to fly a variety of hypersonic flight profiles while carrying customised payload experiments on board. The first Talon-A vehicle is an expendable configuration. The next generation of Talon-A vehicles will be capable of reusable hypersonic flight."



Stratolaunch's Roc carrying the Talon-A separation test vehicle during its eighth flight test on October 28, 2022 Stratolaunch

In brief...

START-UP FlyAtlantic has gone public with its plans for transatlantic services from Belfast International Airport. The company, which intends to start operations in summer 2024, said it is in discussions with manufacturers over Airbus A321neo or Boeing 737 MAX aircraft. Belfast last had a transatlantic link in 2018 when Norwegian operated to Stewart International Airport, New York.

LOGANAIR WILL reinstate its Manchester-Cornwall Airport Newquay route on February 10, 2023, more than a month earlier than originally planned citing "increasing demand". The airline will also restart to Edinburgh and Newcastle from Newquay on March 26, 2023.

HYBRID AIR Vehicles is studying use cases for introducing its Airlander 10 airship for passenger transport and freight in the Highlands and Islands to boost regional passenger connectivity and logistics there. **FIVE LEONARDO AW139s** will be operated by Bond Helicopters from Norwich Airport from January 2024. Bond will operate the AW139s for a five-year offshore support contract for Perenco. The helicopters will be painted all-over red, the colour scheme long associated with Bond businesses in the helicopter market.

Have you got news for us? Just head to Key.Aero or aviation-news@keypublishing.com with your submissions.

Trials for lean burn

ROLLS-ROYCE's Boeing 747-200 Flying Test Bed N787RR has flown the company's ALECSys (Advanced Low Emissions Combustion System) in Tucson, Arizona.

A statement said: "The test programme has included flights up to 40,000ft as well as a number of engine relights at different conditions, all of which have been successful."

ALECSys is what Rolls-Royce calls a 'lean burn' combustion system to create cleaner combustion of the fuel to reduce emissions. The technology is part of the UltraFan engine demonstrator programme and flight trials have followed ground tests including icing, water ingestion, ground operability, emissions and running on 100% sustainable aviation fuel. (Photo Rolls-Royce)



Mriya to rise from the ashes?



ANTONOV INTENDS to rebuild the sole An-225 Mriya. The Ukrainian company said in a November 2022 statement on Twitter: "According to the available expert assessment, currently there are about 30% of components that can be used for the second example."

Antonov said the cost of building the aircraft "is estimated to be at least €500 million" although it added: "It is too early to talk about a specific amount. More information will be after the victory."

The sole An-225, the world's largest aircraft by wingspan, was destroyed at Kyiv Gostomel Airport in February 2022 when Russia invaded Ukraine. (Photo Flickr Commons/Dylan Agbagni)

D328eco firefighter

DEUTSCHE AIRCRAFT will offer a firefighting configuration for its new D328eco.

The Leipzig/Halle-based company is developing a new D328 variant, designed to offer improved operational and maintenance costs and a reduced environmental footprint, including using 100% hydrogen-to-liquid fuel.

The D328eco will be available in a multi-role configuration enabling conversion from a full-passenger layout. The developer has not yet released data on the performance and capabilities of the firefighting configuration, nor given an intended service-entry date.



Ampaire flies Eco Caravan



ELECTRIC AIRCRAFT developer Ampaire test-flew its Eco Caravan in November 2022 from Camarillo Airport north of Los Angeles. The company expects the aircraft "to be the first electrified regional aircraft to enter commercial service". Certification is planned for 2024. The Eco Caravan is a standard Cessna Grand Caravan fitted with

Ampaire's integrated propulsion system of a compression ignition engine and an electric engine. A battery pack in a body fairing preserves the aircraft's passenger and cargo capacity.

The 33-minute maiden flight saw the aircraft climb to 3,500ft at full power before the engine was throttled back.

Twenty minutes was spent testing various power settings while studying temperatures and other readings before returning to Camarillo in California at a low power setting.

Ampaire claims the Eco Caravan reduces fuel consumption and emissions by up to 70% and operating costs by up to 40% depending on airline route structure.

The company said: "The Eco Caravan can recharge its batteries in flight or at a charging station on the ground.

"Because charging infrastructure will be limited for some years, the ability to operate independent of ground charging is critical for preserving the full utility of the Eco Caravan."

(Photo Ampaire, Inc)

Brussels Airlines ready for kick-off

BRUSSELS AIRLINES has unveiled its latest special livery aircraft. It has adorned an Airbus A320, OO-SNO (c/n 3831), with an impressive trident design dedicated to both the male and female national football teams, known as the Red Devils and Red Flames, respectively. According to the carrier, the scarlet aircraft with a dark tail "represents a trident that seamlessly blends into a flame – the perfect mix of the logos of both teams".

Peter Gerber, CEO of Brussels Airlines, said of the new livery: "As an ambassador for Belgium, it has been our honour to be the official airline of both the Red Devils and the Red Flames for many years. As of today, we can show the world how we put that ambassadorship for both teams on equal footing, by dedicating our newest Belgian Icon to both the Red Devils

and the Red Flames. This is a statement to advocate for equal chances and opportunities for everyone, in football and everywhere else."

The previous trident jet was launched in April 2016 and flew Belgium's national football squad to international fixtures, including the men's World Cup in Russia in 2018. At the end of October 2022, the original aircraft was handed back to its lessor after more than 8,000 flights, creating the opportunity for a new sky-high canvas. The eye-catching design was painted at Airbourne Colours' East Midlands Airport facility by André Eisele, a leading European XXL-Airbrush artist.

On November 16, the jet restarted passenger service for the first time since its overhaul, operating Flight SN3633 to Paris. (Photo Brussels Airlines)



UK pairing to develop hydrogen infrastructure

ZEROAVIA AND a major British airport operator are to collaborate on hydrogen fuel infrastructure and the launch of zero-emission routes. In a first-of-a-kind partnership for the UK, ZeroAvia will work with AGS Airports to explore the development of the regulatory framework and resourcing required for delivering zero-emission flights from its airports.

The team at AGS, which owns and operates Aberdeen, Glasgow and Southampton airports, will work with ZeroAvia's specialist airport infrastructure team to assess the opportunities for hydrogen production on site, as well as exploring potential commercial routes.

The new partners say that switching certain routes to aircraft powered by ZeroAvia's hydrogen-electric powertrain could help AGS significantly reduce carbon emissions and noise and air quality impacts. The airport operator will explore how hydrogen can be used to reduce emissions across ground operations, while ZeroAvia will share its expertise in developing and operating its hydrogen airport refuelling ecosystem (HARE) at Cotswold Airport in Gloucestershire.

They will aim for a flight demonstration powered by ZeroAvia's ZA600 600kW hydrogen-electric engine, and certification by 2025, with commercial air routes following. Derek Provan, CEO, AGS Airports, said: "We'll address some of the challenges associated with the generation, delivery and storage of hydrogen on-site."

Airbus and Boeing orders and deliveries October 2022

| TYPE | | ORDERS | CUSTOMER BREAKDOWN | DELIVERIES | CUSTOMER BREAKDOWN |
|--------|------------------|--------|---|------------|---|
| AIRBUS | A220 | 15 | Air Canada | 5 | Air France; Air Lease Corporation (ITA Airways)(2); Breeze Airways; Comlux |
| | A320neo | 91 | International Airlines Group (31); Jet2.com (35); Xiamen Airlines (25) | 21 | Aercap (Spirit Airlines, Tianjin Airlines); BoComm Leasing (China Eastern Airlines); British Airways; Flynas (2); Frontier Airlines; Go First; Indigo (5); Kuwait Airways; NAS Aviation Services (Play)(2); SAS Scandinavian Airlines; SMBC Aviation Capital (Avianca); Spirit Airlines; Spring Airlines; Tunisair |
| | A321neo | 71 | International Airlines Group (28); undisclosed (28); Xiamen Airlines (15) | 26 | Air Lease Corporation (Air Astana); Air New Zealand; American Airlines (2); Aviation Capital Group (Loong Air); CALC (Volaris); Delta Air Lines (5); Gulf Air; Iberia (Iberia Express); Indigo (2); JetBlue Airways; Korean Air; NAS Aviation Services (Starlux Airlines); Pegasus Airlines; Vietjet Air; Viva Aerobus; Volaris; Wizz Air (4) |
| | A330-300 | - | - | 1 | Altavair |
| | A330-900 | - | - | 2 | Air Lease Corporation (Virgin Atlantic); Delta Air Lines |
| | A350-900 | - | - | 4 | Air China; China Eastern Airlines; China Southern Airlines; Starlux Airlines; |
| | Airbus A350-1000 | - | - | 1 | Cathay Pacific |
| TOTAL | | 177 | | 60 | |
| BOEING | 737 MAX | 106 | Alaska Airlines (52); American Airlines (1); International Airlines Group (50); undisclosed (3) | 22 | 777 Partners (Flair Airlines); Air Lease Corporation (Aeromexico, Akasa Air, LOT Polish Airlines)(3); Alaska Airlines; BBAM (Central Airlines); Copa Airlines; Gol Linhas Aereas; Lion Air (Batik Air Malaysia)(2); Ryanair; Southwest Airlines (5); United Airlines (4); VIP Customer (2); |
| | 747-8F | - | - | 1 | Atlas Air |
| | Boeing 767-300F | 1 | FedEx Express (1) | 2 | FedEx Express (2) |
| | 777F | 5 | Emirates (5) | 1 | DHL Aviation; |
| | 787-8 | - | - | 2 | American Airlines (2) |
| | 787-9 | 10 | Undisclosed 10) | 2 | Air Lease Corporation; Lufthansa |
| | 787-10 | - | - | 2 | All Nippon Airways; KLM |
| TOTAL | | 122 | | 32 | |

Yorkshire hub to get facelift

TERMINAL MODERNISATION at Leeds Bradford Airport (LBA) has taken a major leap forward. As part of a wider upgrade, check-in Hall A is being reconfigured to optimise space and improve the passenger experience. It currently handles the check-in of all non-Jet2.com passengers.

The works will see 14 self-service kiosks and hybrid self-service automated bag drops installed, as well as four self-service check-in e-gates, all produced by Australian technology firm Elenium. A further 14

manned check-in desks will also be installed, with the hall itself due to be extensively refurbished.

It has been more than six years since the Yorkshire airport last made an investment in passenger-focused technology on this scale. It is hoped that the update will help keep LBA in step with rival gateways, where self-service technology and processes such as biometric identification are more commonly deployed. Vincent Hodder, chief executive of Leeds Bradford Airport, said: "The upgrading

of Hall A will futureproof LBA, bringing us in line with the world's leading airports. It is also an early, yet crucial component of the long-term modernisation plans for our existing terminal, which will dramatically improve passenger and airline experience." The work to reconfigure Hall A is expected to be completed by Easter 2023. The area will not be closed during the reconfiguration and day-to-day operations are not due to be adversely impacted.

The move comes less than nine months after Leeds Bradford Airport shelved plans to invest £150m in the construction of a brand new terminal in March 2022.

Joe G Walker

Maxed Herbs

A brand-new Boeing 737 MAX 8 now in service with low-cost giant Southwest Airlines has been painted in the carrier's Desert Gold retro livery. Spotted at Seattle's Boeing Field on November 5 prior to handover, the narrowbody, N871HK (c/n 67775), carries the name Herbert D Kelleher – in honour of the US carrier's co-founder – on its nose. It's not the first time the airline has applied such a retro scheme – it was most recently worn by 737-7H4 N711HK (c/n 27845).



British Sea Kings head to Ukraine

The UK Ministry of Defence (MOD) confirmed it has donated three Westland Sea Kings to Ukraine under its latest military aid package to the war-torn nation.

The support was unveiled by UK Prime Minister Rishi Sunak during his visit to Kyiv on November 19 and is valued at £50m. It includes the helicopters, which will provide Ukraine's armed forces with "key search and rescue capabilities", along with an additional 10,000 artillery rounds, 125 anti-aircraft guns and technology to counter Russia's Iran-supplied Shahed-131/136 'kamikaze' drones – including radars and anti-drone electronic warfare capabilities.

The MOD has since revealed the Royal Navy has "provided a six-week programme of Sea King training in the UK for ten crews of the Armed Forces of Ukraine and

associated engineers". The identities of the aircraft have not been officially confirmed, though *Aviation News* can reveal Sea King HU5 XZ920 was noted arriving at Rzeszów-Jasionka Airport in southeastern Poland on November 13. The facility is currently being used as a staging area for military and humanitarian aid packages that are destined for Ukraine.

The helicopter, which was sporting the same all-grey livery it received from Airbourne Colours in Exeter in February 2021, is understood to have been sourced from Portland, Dorset-based civilian contractor HeliOperations. The UK MOD-approved provider, which is believed to have trained the Ukrainian personnel, acquired a fleet of former Royal Air Force and Royal Navy Sea Kings

following the type's retirement from British military service. It has since used them to train aircrews from foreign air arms that still operate the aircraft, such as the Marineflieger (German Navy).

As *Aviation News* went to press, the identity of the remaining Ukraine-bound Sea Kings remains unconfirmed, but a second HeliOps example, ZA166, was ferried to Exeter for repainting on November 18 and is a likely candidate. The company, which is preparing to further expand its training capabilities with the acquisition of AgustaWestland AW139 SAR (Search and Rescue) helicopters, also has a third airworthy Sea King, HU5 XV666 'Damian' but, at the time of writing, it remains in service with HeliOps.
(Photo Airbourne Colours)

More Vipers for Romania



The Romanian Government has penned a multi-million euro deal to acquire 32 former Royal Norwegian Air Force (RNoAF) Lockheed Martin F-16AM/BM (MLU) Fighting Falcons. The €388m contract includes the aircraft, spares, and support equipment for the Vipers, along with maintenance and technical training services.

The F-16s will be upgraded to Romanian M6.5.2 configuration with support from the US prior to delivery, which will be made in two batches in late 2023 and early 2024. They are expected to replace the Romanian Air Force's ageing Mikoyan-Gurevich MiG-21 LanceR B/Cs, which are slated for retirement in 2023, and complement its

existing fleet of 17 F-16AM/BMs it purchased from the Portuguese Air Force in 2016.

Gro Jære, director general of the Norwegian Defence Materiel Agency (NDMA), commented: "I am very pleased that we have been able to finalise this agreement, which is Norway's largest ever sale of government-owned military equipment. Norwegian F-16s have been among the best maintained of their kind, with high technical standards throughout [their operational life]. I congratulate the negotiation teams of both countries for their efforts. Through this agreement, our F-16s will continue to serve one of our NATO allies for several years to come."

The NDMA was tasked with overseeing the disposal of Norway's F-16 fleet, which gave way to the Lockheed Martin F-35A Lightning II as the RNoAF's frontline fighter in 2019 before their eventual withdrawal in January 2022. Its deal with Romania follows the earlier sale of 12 examples to civilian defence contractor Draken International, which provides 'Red Air' adversarial training to several global air arms including the Royal Air Force and the US Air Force.
(Photo Key/Khalem Chapman)

Dutch Chinook deliveries conclude



Boeing has delivered the 20th and final CH-47F Chinook to the Royal Netherlands Air Force (RNLAf). An operator of the older D variant since 1995, the force agreed in 2016 to acquire 14 new-build Fs via the US State Department's Foreign Military Sales (FMS) programme, and upgraded its six remaining Ds to F standard as part of a wider modernisation programme.

The CH-47F features a fully integrated

digital glass cockpit management system and more advanced cargo-handling capabilities than the D model. Lt Col Wil van Rijn, the senior system integrator for the Chinook with the Dutch Ministry of Defence (MOD), said: "This is a milestone for us. We have newer radios and newer equipment which help our pilots operate better in different environments than we do already."

The Netherlands is one of eight NATO

countries operating the CH-47 and was the first export customer for the F variant. Ken Eland, vice president and H-47 programme manager at Boeing, added: "Our continuing partnership with the RNLAf exemplifies the value of a modern and versatile Chinook fleet. These state-of-the-art aircraft will significantly improve their defence and humanitarian assistance capabilities."

(Photo Boeing/Fred Trolio)

Another nation to axe NH90s?

Sweden could be poised to withdraw its NHIndustries (NHI) NH90 helicopters amid continuing reliability issues. The Scandinavian country is understood to have been dissatisfied with the platform for some time and has been openly critical about its serviceability and performance.

In the latest defence modernisation and procurement guidance report that was published on October 31, Gen Micael Bydén, Supreme Commander of the

Swedish Armed Forces, revealed that the nation intends to scrap both its Hkp 14Es (NH90 Tactical Transport Helicopter – TTH) and Hkp 14Fs (NH90 NATO Frigate Helicopter – NFH) as part of a raft of wider planned capability enhancements.

The plan, which requires government approval, also calls for the procurement of more Sikorsky UH-60M Black Hawks (known in Swedish service as the Hkp 16) and "a new maritime operational

helicopter" – likely to be the MH-60R Seahawk naval variant – to replace the outgoing Hkp 14Es and Fs respectively.

Developments in Sweden follow news that Australia, Belgium and Norway will all axe their respective NH90 fleets. The Australian Defence Force received its first of 47 MRH90 Taipans (NH90 TTHs) in July 2008 as a replacement for the Australian Army Aviation Corps' (AAAC) ageing Bell UH-1H Iroquis and, later, its legacy S-70A Black Hawks. But despite the type being in service for more than a decade, Canberra has been critical of delivery delays, development deficiencies and a lack of available spares, leading to poor availability rates. It has since confirmed the European type, which is pooled between the AAAC and the Royal Australian Navy, will be withdrawn early; Army examples will be replaced by UH-60Ms while the RAN will acquire additional MH-60Rs.

In Europe, Belgium is phasing out its four NH90 TTHs in 2024 in favour of 15 Airbus H145M light utility helicopters, though the Belgian Navy will retain its four NH90 NFHs for the foreseeable future. Norway terminated its contract with NHI in June 2022 and withdrew its 13 NH90 NFHs with immediate effect. It is also seeking 5bn kroner (\$525m) from the manufacturer in compensation.

NHIndustries was approached for comment but has not responded at the time of publication.

(Photo Airbus Helicopters/Anthony Pecchi)



End of the line for Ghostriders



US Air Force Special Operations Command (AFSOC) has received its 31st and final Lockheed Martin AC-130J Ghostrider. The fifth-generation gunship, 19-5926, was handed over to the 27th Special Operations Wing at Cannon Air Force Base (AFB), New Mexico on November 2 following a ceremony at the manufacturer's Gunship Modification Facility in Crestview, Florida.

Its arrival completes the AFSOC's transition from the legacy AC-130H Spectre, AC-130U Spooky and AC-130W Stinger II gunships.

Commenting on the delivery of its final Ghostrider, AFSOC commander Lt Gen Jim Slife said: "This airplane and its predecessors have exceeded all our expectations and kept more Americans alive than any other airplane on the battlefield."

He continued: "The future is going to be different from what we have experienced for the last 20 years, but one thing I am certain of is this airplane will be relevant to whatever the future operating environment brings, so thank you all for delivering such a magnificent capability to today's warfighters."

(Photo USAF/Tech Sgt Michael Charles)

Gambling in Tucson



The US Air Force's 21st Fighter Squadron has stood up once again following its relocation from Luke Air Force Base to Morris Air National Guard Base in Tucson, Arizona and its transition to the Republic of China Air Force's (ROCAF's) newly upgraded Lockheed Martin F-16V Fighting Falcon.

The unit, also known as 'The Gamblers', carried out fighter and maintenance training for ROCAF pilots and groundcrew at Luke

AFB under the Peace Fenghuang (Chinese for 'Phoenix') programme from August 1996 when it was initially reactivated with F-16A/B Block 20 Fighting Falcons. It was temporarily stood down in June 2022 when the last of its aircraft returned to Taiwan for upgrade and the unit moved to Morris ANGB, co-located at Tucson International Airport, to make space at Luke AFB for its growing commitment as a major F-35A

Lightning II training centre for the US Air Force and other allied nations.

Tucson was selected ahead of nearby Davis-Monthan AFB and Holloman AFB and Albuquerque ANGB, both in New Mexico, and has a long association with foreign operators, having previously housed F-16s of the United Arab Emirates, Iraq and most recently the Netherlands.

(Photo Nate Leong)

Guardian makes UK debut



The British Army Air Corps' (AAC) newly acquired Boeing AH-64E (Version 6) Apache Guardian attack helicopter has marked its operational debut after participating in Exercise Talon Guardian.

The two-week training operation saw

the AAC's 3 Regiment fly almost 1,000 miles and place its personnel and assets at multiple locations from which they planned and executed attack missions and maintained operational readiness of the new gunship. Reflecting on the exercise,

3 Reg commander Lt Col Simon Wilsey said: "Exercise Talon Guardian is a significant step forward for the British Army's AH-64E, which is the most advanced attack helicopter in the world."

"We have been working hard to learn how to fly and maintain the AH-64E; now we're getting the aircraft out into the field, tackling the additional complexities of living, planning, maintaining, and operating in an austere environment and developing how we fight with it."

The exercise kicked off with 3 Reg deploying from its home base at Wattisham Flying Station in Suffolk initially to Otterburn in Northumberland from which it worked at nearby electronic warfare range at RAF Spadeadam, Cumbria. The AH-64Es then positioned south via RAF Wittering to Bramley in Hampshire where they worked with Challenger 2 tanks and air defence assets at Salisbury Plain.

The UK has now received around half of the 50 Apache Guardians it has on order; the type is replacing the WAH-64D Apache AH1 which is due to reach its out-of-service date in 2024.

(Photo MOD Crown Copyright)

More Super Hercs for Australia



The Royal Australian Air Force (RAAF) is set to acquire 24 new-build Lockheed Martin C-130J-30 Super Hercules and associated equipment under a \$6.35bn overhaul of its tactical transport capability.

Under Project AIR 7404, the air arm will simultaneously expand its C-130J fleet while replacing its 12 existing examples,

which have been in service since 1999. The Australian Department of Defence added: "We have approached a number of aircraft manufacturers and received information on all available medium air mobility options.

"We're seeing a low risk, certified in all roles, proven, mature and affordable replacement that meets Australia's air

mobility needs. We have identified that the new C-130J aircraft represents the only option that meets all of Australia's capability requirements and assures our medium air mobility capability without introducing substantial cost, schedule and capability risk."

(Photo Australian Department of Defence/Warrant Officer Mark McIntyre)

A Texan in Tunisia

The Tunisian Air Force has become the second African operator of the Beechcraft T-6C Texan II after taking delivery of the first of eight examples.

The turboprop trainer, Y22081 'KA', arrived in-country in early November using its ferry registration N2766B and will be operated by No 13 Squadron at Sfax Air Base, which is co-located at Sfax-Thyna International Airport in the east of country. A second example is slated for delivery before the end of 2022.

Commenting on the delivery, Gen Mohamed Hajjem, chief of staff of the Tunisian Air Force, said: "Becoming a regional leader in military flight training excellence is one of the milestones on the path to achieving our counterterrorism and border security mission requirements...This acquisition



paves the way for additional bilateral engagements and strengthens our relationship with the US."

Tunisia is expected to augment its fleet of T-6Cs with four AT-6C Wolverine light

attack aircraft, the sale of which was approved by the US State Department in February 2020. The Texan II is also in service with the Royal Moroccan Air Force. (Photo Textron Aviation)

Marine Corps Milestone



Bell has delivered the 189th and final AH-1Z Viper to the US Marine Corps (USMC). The manufacturer's Amarillo, Texas facility delivered the attack helicopter, 169862, to Marine Corps Air Station (MCAS) Camp Pendleton, California on November 4, to be operated by Marine Light Attack Helicopter Training Squadron 303 (HMLAT-303) 'Atlas'.

Col Nathan "MOG" Marvel, commanding officer of Marine Aircraft Group (MAG) 39, said: "The completion of the H-1 Program

of Record delivery is a momentous event for Marine Aviation. By no means is this the end of an era – it is the next chapter in the great legacy of the H-1 and the US Marine Corps."

While USMC deliveries are now completed, Bell is still producing the AH-1 to support ongoing Foreign Military Sales contracts with US allies and partner nations, including the Kingdom of Bahrain (12 helicopters) and the Czech Republic (ten, plus ten UH-1Ys).

(Photo USMC/Cpl Levi Voss)

Belgian Lightning takes shape

Assembly of the maiden Lockheed Martin F-35A Lightning II for Belgium has kicked off at the manufacturer's Fort Worth, Texas production facility.

The European nation is expected to receive its first of 34 F-35As in late 2023, with the initial eight examples set to remain at Luke Air Force Base in Arizona for pilot and groundcrew training purposes. The fifth-generation jet is planned to make its domestic debut at Florennes Air Base in 2025 and, once fully operational, will replace the Belgian Air Component's ageing fleet of F-16AM/BM (MLU) Fighting Falcons, which initially entered service in March 1979.

Indonesian Falcon breaks cover

The first Dassault Falcon 7X for the Indonesia Air Force (TNI-AU) has been spotted in the Netherlands ahead of what is believed to be the aircraft's imminent delivery to the Asian air arm.

The business jet, which was wearing the French civil registration F-HJCP (c/n 261), received its new operational TNI-AU livery at Lelystad Airport in the Netherlands, from which it departed for the short hop to Paris/Le-Bourget on November 4. It is anticipated the aircraft will receive the serial A-0707 once it enters military service.



Information regarding the acquisition remains scarce, but it is understood that Indonesia will acquire just one Falcon 7X, which will provide VIP transport services as part of Skadron Udara 17 (SkU17; 17th Air Squadron) at Halim Perdanakusuma Air Base in East Jakarta.

The aircraft was initially delivered to Aerolineas Centrales in Mexico as XA-GOR in November 2015. Subsequently, it was briefly registered in the United States as N261FJ before returning to Dassault Aviation in June 2022. (Photo Peter Heeneman)

Cotton's Electra closing in on first post-restoration flight

THE LOCKHEED 12A Electra which provided Britain with invaluable reconnaissance photographs of Germany in the weeks and months leading up to the outbreak of World War Two is closing in on its first flight in the UK for more than 80 years.

The Electra, which was flown on clandestine aerial reconnaissance missions and would eventually be the last British-registered aircraft to leave Germany before World War Two began, has conducted its first taxi run since being imported into the UK in May 2022.

Prior to arriving in the UK in May, the 1936-built propliner had last crossed the Atlantic eastwards in May 1939 on the SS *Aquitania*. Later the same month, it was registered to British Airways Ltd as G-AFTL to mask its true purpose. Two additional 70-gallon fuel tanks increased the aircraft's range to 1,600 miles and Heston-based Airwork installed hatches under the rear fuselage behind which a trio of F24 cameras, which could be activated by a button under the pilot's seat, were fitted.

Once modified, the aircraft was entrusted to Australian businessman, inventor, engineer and adventurer Sidney Cotton. In 1938, Cotton started Aerofilms, an aerial photography business and was recruited by Frederick Winterbottom of MI6 to begin taking clandestine photographs of German militarisation. As an apparent Nazi sympathiser, Winterbottom had been a regular visitor to Germany and was welcomed into the Third Reich's highest circles, meeting Adolf Hitler, Hermann Göring and Luftwaffe top brass Erhard Milch and Albert Kesselring, all the

while gathering enormous amounts of information on the Luftwaffe and the intentions of the German military.

Cotton began conducting photographic reconnaissance missions for the British in June 1939, with flights over the Middle East and North Africa to take pictures of Sicily, Italian Somaliland and the Libyan coast. Cameras were later fitted behind sliding panels in the wings and, that July, Cotton flew from Heston to Berlin Tempelhof, returning the following day having taken pictures of various military installations on both the inbound and outbound legs.

On one occasion, Winterbottom introduced Cotton to the commander of Tempelhof Airport, who asked Cotton if he would take him up on a trip in the Lockheed. Permission was obtained for them to fly over the Rhine at Mannheim, which was a restricted zone. Cotton photographed the entire area, and captured important pictures of the German fleet anchored at Wilhelmshaven on the return trip. On another sortie, Cotton allowed Albert Kesselring to fly the Lockheed from the right-hand seat while Cotton covertly operated the cameras from under the left-hand seat, taking pictures of the military airfield from which they were operating.

On August 24, 1939, the Electra was the last British aircraft to leave Germany, pictures being taken on the way back to Heston. However, even in the final few days before war descended on Europe, further reconnaissance flights were made over Heligoland, Sylt and the docks at Wilhelmshaven on August 29, just three days before the outbreak of hostilities.

For his service and the experience he had gained, Cotton was commissioned into the RAF as an acting wing commander tasked with setting up the air arm's Photographic Development Unit at Heston.

While still on the British civilian registry, the aircraft was delivered to the unit – later known as the Cotton Club – and provided an enormous increase in the RAF's reconnaissance capabilities.

The Burbank, California-built twin-prop continued flying after war had been declared, including an April 1940 mission along the south coast of England testing the efficiency of the Chain Home radar networks and the Dowding aircraft reporting system. Flights all over France continued well after the end of the 'phony war', with G-AFTL venturing as far as Marseilles on June 11, finally returning to Heston via Jersey on June 18.

The aircraft was badly damaged at Heston when the hangar it was parked in was hit by a parachute mine and it was returned to Lockheed for repairs. This concluded its war service, with the Electra being reregistered in the US as NX21707 and passing through several owners, including famed film and aerobatic pilot Art Scholl.

Prior to being acquired by its new owners, the 1930s airliner had been owned by retired Delta Air Lines pilot Ben Runyan and based in Washington state. It was then purchased by a French organisation which planned to operate it from La Ferté-Alais to the south of Paris in 2018, before being acquired by Fighter Aviation Engineering and shipped to Sywell, Northamptonshire during the first half of 2022.

Steven Coe



Rare Skyraider up for sale

Douglas AD-5 Skyraider N62466 has recently been listed for sale by Platinum Fighters

The 1955-built machine is one of relatively few EA-1E/AD-5 variants still flying, and is fitted with six seats, operational drop tanks and replica rockets.

It served with Carrier Airborne Early Warning Squadron 11 from 1964, operating from USS Kearsarge. The aircraft, powered by a Wright R-3350-26WD, has had several private owners and a recent annual inspection – the asking price is \$1.25m (£1.1m). Steve Beebe



IWM Jag disposal hints at AirSpace overhaul timeline



THE IMPERIAL War Museum's (IWM) rumoured overhaul of its AirSpace exhibitions appears to be scheduled for the second half of 2023.

In a listing in the Museums Association website, the IWM has announced that it plans to remove Jaguar GR.1B, XX108, from its collection and is accepting applications

from other museums to take on the jet. The aircraft, built as the first production Jaguar GR.1, undertook its maiden flight on October 12, 1972, initially lacking the type's distinctive chisel nose that housed the laser rangefinder. It was later used as a demonstrator for Jaguar International, making appearances at the 1974 Farnborough Airshow and 1979 Paris Air Show, before returning to trials use.

In 1996, XX108 was upgraded to GR.1B standard and later used for trials of the Rolls-Royce/Turbomeca Adour Mk.106 powerplant in 2000 before being retired to RAF St Athan in 2002 and transported to IWM Duxford for display in October 2003.

The aircraft is now suspended from the ceiling of the AirSpace hangar, with removal likely requiring several other aircraft to be moved from their positions. The Museums Association website reported that the "aircraft will be available to receive from November 2023".

Trio leaves RAF Museum Midlands

A number of airframes formerly at the RAF Museum Midlands are on their way to new homes.

CASA 352L T.2B-272 – a Spanish-built version of the Junkers Ju 52 – has moved from RAF Museum Midlands in Cosford, Shropshire, to the Kent Battle of Britain Museum at Hawkinge, while another Cosford airframe, Auster C.4 Antarctic WE600, has also departed – and is now at Coventry's Midland Air Museum (MAM).

The Junkers, a resident at Cosford for more than 30 years, arrived at its new home on the south coast in November. It currently wears British Airways livery, but is destined to be repainted as a Luftwaffe Ju 52/3m earmarked for Operation Seelöwe (Sealion) – Germany's planned invasion of Britain in September 1940.

The 1951-built Auster was one of two converted to C.4 status to support Dr Vivian Fuchs's 1956 Joint Commonwealth Trans-Antarctic Expedition. With WE600 built at nearby Rearsby, Leicestershire, its acquisition



Flickr Commons/Alan Wilson

falls in line with MAM's policy of collecting aeroplanes linked with the local area.

In mid November, the Avro Heritage Museum at Woodford confirmed it had received Avro 707C WZ744, another important aircraft formerly at Cosford. The museum planned to reassemble its acquisition – a tailless delta jet design that

contributed to the development of the Vulcan – soon after. The 707C featured dual controls and side-by-side seating. It was used ultimately for other research beyond the Vulcan and, together with the other three surviving 707 variants, it continued in use even after the Vulcan's development phase had concluded.

East Kirkby receives B-25 and Bolingbroke pair



Martin Keen/LAHC

The Lincolnshire Aviation Heritage Centre – which is home to Lancaster *Just Jane* – has now received a B-25 Mitchell and two Bolingbrokes.

Weeks after receiving Bristol Bolingbroke 9980, the Lincolnshire Aviation Heritage Centre (LAHC) has welcomed two further additions, another Bolingbroke and North American B-25J Mitchell 44-29366.

The East Kirkby-based attraction successfully bid for the Mitchell when it was made available for transfer from the RAF Museum. The Mitchell arrived at its new home in two sections, on November

9 and 10. LAHC boss Andrew Panton said: "The addition of this wonderful aircraft enables us to tell the story of 98 and 180 Squadron prior to D-Day as part of 2 Group, Bomber Command."

"Our role is to educate future generations about Bomber Command so they will continue to be remembered. Having a range of aircraft operated by the command helps us to keep their memory alive."

"We hope to breathe life back into 44-29366 in the coming years."

"We must extend our sincere gratitude to the RAF Museum for entrusting the

future of the B-25 to us, and to Welch's Specialist Movements for their conscientious transport."

On November 14, the Mitchell was joined by Bolingbroke 10073. Sourced from Arizona's Pima Air & Space Museum, the delivery comprises a complete airframe plus a spare set of wings and a rare Bristol Mercury engine.

Meanwhile, personnel at East Kirkby have been inspecting the B-25 airframe – the next stage was to begin reassembling it, with the prospect of returning it to running condition also in the pipeline.

The extra set of wings that came with the second Bolingbroke are being put to good use – they are destined for the Kent Battle of Britain Museum at Hawkinge to help complete a Blenheim project. The wings represent the final piece in a transfer deal with the Kent attraction – this was initiated in return for some Lancaster parts held in storage. These extra parts will be surveyed and assessed for spares.

Steve Beebee

'Val' arrives at Pearl Harbor museum

Hawaii's Pearl Harbor Aviation Museum (PHAM) has taken delivery of a rare Aichi D3A. The addition arrived at its new home on September 26.

It is believed that it was recovered from the Solomon Islands in 2019.

A spokesperson for the museum, located on Pearl Harbor's historic Ford Island, said: "World War Two-era Japanese Aichi D3A dive-bombers are few and very hard to find these days. Of the 1,495 D3As built

across five versions, only a handful have survived destruction in combat or the inevitable ravages of time and nature.

"For these reasons and the significant historical value in acquiring a visually recognisable, wartime-era 'Val', we're extremely pleased to announce our latest restoration project."

After PHAM's personnel unloaded the rare exhibit, the aircraft was placed in Hangar 79 – one of Pearl Harbor's original

hangars – where it will be reassembled using several sections of at least two other 'Vals', before joining the museum's Mitsubishi A6M 'Zero' fighter and Nakajima B5N 'Kate' bomber.

"Now that the 'Val' is on site, the real work begins," the spokesperson added. "Our restoration team will start to repair the aircraft to make it display-ready, and then reunite the three aircraft to share the stories of Pearl Harbor."

Swordfish issued permit to fly



Steve Kilvington

The world's oldest Fairey Swordfish, Mk.I W5856, has completed its test flights and is now 'operational' once again.

Having made a successful first flight, post-restoration, on August 17, it has now

completed a set of trials and received its permit to fly. The charismatic biplane will fly on the UK civil register as G-BMGC.

On November 17, the *Stringbag*, as it is affectionately called, received its

official documentation. The next day, the 1941-built biplane flew to Royal Naval Air Station Culdrose to attend the Wings Parade for new Merlin helicopter aircrew at 824 Naval Air Squadron.

Navy Wings owns two other Swordfish. Mk.II LS326 (G-AJVH) is under restoration. The structure of the aeroplane is being thoroughly checked via X-ray, while the fabric covering of fuselage and wings is undergoing non-invasive status checks. LS326 is also awaiting its rebuilt engine.

The third Swordfish is Mk.III NF389, which is in long-term storage. The three aircraft were once owned by the Royal Navy Historic Flight, but are now in the hands of the Navy Wings charity foundation.

Since 2019, another British organisation, the White Waltham Airfield of Maidenhead, has owned a Swordfish, HS554, a Mk.IV registered as G-RNMZ. Before coming to the UK, HS554 flew in Canada as C-GEVS as part of the Vintage Wings of Canada collection based at Gatineau, Quebec.

Steve Beebee

Hurricane gathering set for Duxford

Following the success of last winter's 'Spitfire: Evolution of an Icon' exhibition, IWM Duxford has announced that it will be staging a follow-up in the form of 'Hurricane: Unsung Hero'.

Opening in the Conservation Hall part of Duxford's AirSpace hangar on December 27 until February 19 2023, this will bring together seven examples of the Hawker fighter, a total that represents just under half the current airworthy population. Aside from the six Hurricanes based at Duxford, or regularly seen there, among them the Hurricane Heritage-operated two-seater 'BE505', a seventh will be present in the form of the Shuttleworth Collection's Sea Hurricane Mk 1b, Z7015, from Old Warden. Admission to 'Hurricane: Unsung Hero' will



Martin Needham

be included in the regular museum entry price. A variety of related activities are set to take place for an additional fee: 60-minute guided tours by IWM experts in January and February – £15 per person; a display by Airfix on January 15 explaining the research, design and production processes that go into making the company's model aircraft

– £30 pp; a Duxford in a Different Light photographic event after-hours on February 4, with the Hurricanes specially illuminated – £50 pp; and the Hurricane Conference on February 18, with guest speakers – £40 pp.

Also, IWM Duxford's Conservation in Action Hangar was reopened on November 17 after eight months of refurbishment.

Restored Hunter breaks cover Down Under



Hunter Fighter Collection

Former Royal Singaporean Air Force (RSAF) Hawker Hunter F.74S 546 was unveiled to the public on October 26, 2022 during a special ceremony at its Hunter Warbirds Aviation Centre home, Scone, New South

Wales, Australia, wearing Royal Air Force (RAF) colours following an extensive 100-day restoration. On long-term loan to the Hunter Fighter Collection (HFC) from the Fighter World collection at RAAF

Base Williamtown, the jet now wears representative 20 Squadron markings.

Originally rolling off the Hawker production line as an F.6 with the RAF and assigned the serial XF460 in early 1956, the jet was transferred to the RSAF as an F74S in 1973. With the type withdrawn from use in 1992, 546 was one of 21 surviving Singapore airframes sold to Australian warbird broker Pacific Hunter Aviation in 1995.

Following its relocation to Scone in March 2022, the aircraft underwent an incredibly extensive rejuvenation led by HFC conservation volunteers, including treatment of some minor corrosion, refurbishment of the cockpit, ejection seat restoration and a new canopy.

Facelift due for Aussie 'Dak'

Australia's Historical Aircraft Restoration Society (HARS) is to restore Douglas C-47A Dakota 43-48234.

The former USAAF aircraft was acquired by HARS in 2021, with the majority of the airframe arriving at the society's site at Parkes, New South Wales, in 2022.

Wings and engines – which are currently at HARS' Albion Park site – will be added to the exhibit, and it will then be given a fresh repaint.

After flying with the USAAF in the Pacific theatre during World War Two, the aircraft was registered as VH-DMV (later VH-CAO) on March 26, 1947 and assigned to the Department of Civil Aviation in Melbourne.

Its flying days ended in 1979, and it was repainted into a wartime scheme,



eventually acquiring the name *Oklahoma Girl* at Wangaratta, Victoria, but a plan to restore the machine to airworthy

status sadly did not come to fruition, with HARS acquiring the machine from David Kingshott's Pacific Dakota Restorations.

Sonaca completes final S.201 trainer

Belgian manufacturer Sonaca has ceased production of its Sonaca 201 Trainer Pro aircraft with 58 aircraft completed, the last one flying on September 5, 2022. Based on the South African TAF Sling, the Trainer Pro is a low-wing, all-metal

aircraft with side-by-side seating and a fixed tricycle undercarriage. It is a development of the original Sonaca 200 upgraded with a Garmin G500 TXi glass cockpit and has achieved significant sales to Estonia, France, Portugal, Switzerland

and Turkey, with four imported into the UK, including three operated by Blackbushe Aviation. Sonaca cites a slowdown in demand for trainers due to the COVID-19 pandemic, along with supply issues with subcontractors. (Photo Rod Simpson)



Rod Simpson

ACE reveals brisk demand for private air charter

While the COVID-19 pandemic caused disruption for many, it has stimulated demand for the air charter industry.

During the pandemic, many companies and individuals had their first experience of the convenience and security of private aircraft for business and leisure trips. Now the COVID crisis has abated, charter companies have retained those clients. The air charter industry is now reporting a shortage of aircraft capacity and, according to operators at Biggin Hill's

recent Air Charter Expo (ACE), traffic to popular Mediterranean destinations is brisk, with aircraft being used by family groups who are willing to pay a bit more than the combined airline fares.

For one or two passengers, the Guernsey based Channel Jets uses an 18-strong fleet of Eclipse 500s and 550s, which are a familiar sight around Europe, particularly Ibiza and Majorca. Operators of larger aircraft include Luxaviation, which has a mixed fleet ranging from the Citation CJ2

and King Air 260 up to the Global 5000 and Challenger 604, and reports record bookings to destinations in Europe. It also showed a Dornier 328JET at Biggin Hill that is configured for larger groups of corporate passengers.

European business jet activity is 17% above 2019, according to industry experts WINGX Advance. This is against a backdrop of increased deliveries of new jets with a year-on-year gain of nearly 10% to 289 aircraft in the first half of 2022.



Rod Simpson

High demand for Elixir light aircraft

Elixir Aircraft, based at La Rochelle in southern France, reports a large backlog in orders for its Elixir two-seater, with aircraft Nos 99 to 101 earmarked for the Aeroclub de Boulogne-Billancourt at St Cyr near Paris and four examples going to the Airbus Flight Academy-Europe. The first delivery – c/n 005 – was made

to the Aeroclub de Pertuis at La Rochelle, while c/n 006 and 008 went to the Aero Club de Brocard at Etampes in mid-April.

The Elixir is an all-composite aircraft with just eight main airframe components and is fitted with a BRS emergency parachute and a Garmin G3X flight deck. It is EASA-certified under

CS-23 regulations and cruises at 170kts with an endurance of six hours. While the base model is powered by a Rotax 912iS engine, buyers can opt for the 140hp turbocharged Rotax 915iS. The latter was recently exhibited at the AirVenture show in the US, where Elixir hopes for strong sales as a trainer and a private aircraft.



Rod Simpson

Domus III hangar expansion at Farnborough Airport

Farnborough Airport plays a key role in business aviation in southern England and, on August 22, work started on a new hangar complex that will add 175,000sq ft to available capacity.

The £55m Domus III facility will be able to accommodate eight large jets in the

Gulfstream or Global categories in four separate air-conditioned bays, along with a number of smaller aircraft, and it increases Farnborough's hangar space by more than 70%. The design has paid special attention to future demand for VTOL aircraft and includes eco-friendly features including

rainwater harvesting and a state of the art heating system.

While COVID-19 impacted Farnborough's movements in the early part of the year, traffic bounced back in the summer of 2021 and there were nearly 27,000 movements, of which 93% were business aircraft.

Farnborough Airport





In desert skies

Barry Ambrose shares his images from the Aviation Nation Airshow, which took place at Nellis Air Force Base, Nevada in early November. The event mixed home team heavy metal such as A-10 Thunderbolt IIs, F-15s, F-16s, F-22 Raptors and F-35 Lightning IIs alongside crowd pleasers including the USAF's Thunderbirds and warbirds such as Mustangs and Shooting Stars

Above left: North American P-51D Mustang *Wee Willy II*, which is owned and operated by the Chino, California-based museum and restoration outfit Planes of Fame, is joined by examples of the Lockheed Martin F-22A Raptor and F-35A Lightning II

Above right: Tim Tibo shows the upper surfaces of Canadair T-33 Ace Maker during his display in the former Royal Canadian Air Force Shooting Star

Below: The USAF's Thunderbirds display team break in front of the crowd. The team is based at Nellis AFB and appears at Aviation Nation every year



Major Kristin 'BEO' Wolfe taxis back in following her display in US Air Force Lockheed Martin F-35 A Lightning II, 18-5454 (c/n AF-282)



Left: This Northrop T-38C Talon of the 25th Flying Training Squadron based at Vance AFB, Oklahoma, wears a colour scheme inspired by US Army Air Force 52nd Fighter Group North American P-51B Mustang, 43-24853 *Little Ambassador*, which fought in the skies over Europe during World War Two before being shot down over Switzerland in 1945

Right: North American P-51D Mustang, N2869D, has recently been repainted in the 'Bardahl Special' colours it wore while owned by Charles 'Chuck' Lyford between 1963 and 1972. Lyford regularly flew the Mustang in the National Championship Air Races during this period, where it became the first aircraft to use a nitrous system competitively

Below: An F-15E Strike Eagle of the 17th Weapons Squadron bears down on an A-10C Thunderbolt II during the flying display



East Coast '75

Richard Vandervord shares a selection of Kodachromes and an eclectic mix of proliners and jets in this snapshot from a visit to the US east coast in 1975



Below: This immaculate Air Haiti Curtiss C-46, HH-222 (c/n 26496), encapsulates the heady atmosphere of the propliner days at Miami as it lumbers out for a trip across the Caribbean. First flown by the USAAF in 1943 but quickly transferred to the USMC, this Commando was converted to Super 46C standard in 1957 and joined VARIG, then went to Haiti as HH-222 in 1970. Re-registered as HH-AHA in 1978, it was withdrawn at Port-au-Prince a decade later



Left: NYA used to offer scheduled helicopter services from atop the Pan Am Building in Midtown Manhattan to airports in the area. Founded in 1949, an accident in 1977 on top of the Pan Am building precipitated the closure of this heliport and the airline stopped operating two years later. Sikorsky S-61, N620PA, was registered in 1968 and is seen here at JFK. It later flew in Canada with Okanagan as C-GJDR and then as N614RM before reverting to its earlier Canadian identity with Coulson Aircrane and Sunwest Helicopters in a rebuilt, modified form. The aircraft continues to fly to this day, serving with Helicarriers

Below: This Douglas DC-6B, 301 (c/n 45078), began its service life with Canadian Pacific as CF-CZQ in 1956 before being leased to Cunard Eagle as G-ARZO in 1962. It was sold to Aerolineas El Salvador becoming YS-32C in 1969, moving on to the Salvadoran Air Force shortly before this 1975 photo was taken at Miami, where it became a regular visitor. It retired in 1998 and is now preserved at Ilopango AB, San Salvador

Bottom left: Typical of the exotic range of piston-liners to be found in Miami's NW 'Corrosion Corner', this Douglas DC-6, 8R-GEC (c/n 43296), was first of several leased by Guyana Airways for freight work, but the only one to gain a Guyanese registration. It was initially delivered to Slick Airways in 1951 but was sold two years later to Japan Airlines, later serving Transavia, Germanic, Transportflug, Elbeflug and the International Red Cross before joining Span East in 1973. It was eventually acquired by Everts for spares at Fairbanks, AK





Left: A polite enquiry would almost always yield access to the maintenance area ramps in Miami's legendary NW corner. This Lockheed L-188 was originally part of Eastern's large Electra fleet, before being sold to SAM Colombia in 1970 and named 'Saturno'. It was returned to Eastern in 1977 and after conversion to L.188A(F) status, joined Hawaiian Airlines as N343HA before moving on to Zantop. A familiar sight in Europe while leased to Channel Express, it ended its days as a spares ship for Air Spray at Red Deer, Alberta, Canada

Right: By 1975 Southeast Airlines was one of the last scheduled operators of the Martin 4-0-4, but N40425 was looking fine in the Miami sunshine on this occasion. The Convairliner rival was first delivered to TWA in 1952, moving to Piedmont in 1962 as 'Manassas Pacemaker'. After passing through the hands of corporate owners, it found employment with Southeast in 1972. After a three-year stint with the company, it went on to Naples-PBA three months after this August 1975 photo was taken. The 4-0-4 was later destroyed in Hurricane Hugo at St Juan in 1989 while owned by Aero Virgin Islands



Left: A Douglas DC-4 taxiing to the soundtrack of a Lancaster. This Canadair C-54GM North Star, CF-UXA (c/n 109), was operated by the Royal Canadian Air Force as 17502 from 1947 to 1966 and then by Air Turks and Caicos Air. This picture may well have captured this aircraft's last ever departure as it was ferried from Miami to Sarasota for storage and was later scrapped around the time of my visit to the United States

Right: The Puerto Rico ANG was the last operational user of the Lockheed Starfighter in the USAF, retiring its F-104s in 1975. This particular F-104C, 57-0916 (c/n 183-1233), had just arrived at Langley Air Force Base to be exhibited at the nearby Virginia Air and Space Center, Hampton, VA, where it currently hangs from the roof. This photo was, bizarrely, taken from the open top of a London double-decker bus!



Below: Resplendent in its psychedelic livery, this Boeing 720-023B entered service with American Airlines in July 1961, joining Pan Am in 1963. Ecuatoriana operated it as HC-AZQ from 1975-1984, latterly in a more sober scheme. It became a parts donor at Davis Monthan AFB, before being broken up in 1996



This 'Scooter', 153471 (c/n 13537), was built as a TA-4F in 1967 and converted to 'J standard in 1970. It is framed against a gathering storm at Cecil Field NAS, Florida, while in service with VA-45 'Blackbirds'

Right: Douglas DC-6A N6539C was a familiar sight in Miami for 30 years, being acquired from Trans Caribbean Airlines by NOAA as a 'Hurricane Hunter' in 1960 and serving the US weather service with the modifications seen in this 1975 photo. Sold to Bellomy Lawson Aviation in 1976, it was converted for freighter operations. I enjoyed a sunrise flight in her from Atlanta to Miami just after. By September 1979 it had the orange and black livery of Challenge Air Transport. It was broken up at Miami in 1991



Right: Lockheed L-188A Electra, N5517(c/n 1023), was delivered new to Eastern Airlines in January 1959 and served with the firm until 1977. It was converted to a freighter and placed with Zantop the following year, but was destroyed by fire at their Detroit Willow Run base on April 14, 1993. When this photo at La Guardia was taken in August 1975, the famous Eastern New York-Washington National-Boston Shuttle was mostly flown by 727s and DC-9s, but Electras continued as backups, seats always being guaranteed regardless of demand. Note the US Bicentennial sticker



Left: This is a genuine CC-106 Yukon delivered to the Royal Canadian Air Force as 15925 in 1961 and acquired by AER in late 1970. On September 27, 1975 – just a couple of weeks after this photo was taken – the aircraft crashed following an aborted take-off at MIA after the groundcrew failed to remove the gust lock on the right elevator. Four of the ten people on board survived but the aircraft burnt out after hitting a canal bank at the end of runway 27L

Left: This Curtiss C-46A was operated by the US Marine Corps between 1945 and 1956 before serving with a variety of operators, which included AAXICO, Capitol, Zantop, Universal and Shamrock as N7769B before it was leased to Bahamasair by FA Conner between 1975 and 1977 for use on the cargo air bridge to Nassau. Continuing as N355M, it was seen regularly at Miami in an overall natural metal scheme until its withdrawal from use. One source has suggested that the aircraft was broken up in Mexico some time after the mid-1980s

This Kodachrome picture was taken from the roof of JFK's Worldport T3 as Boeing 720-059B HK-724 pulls on to stand. The aircraft joined Avianca fresh off the Boeing line in November 1961 and became N4451B with Jet Star Inc in 1983. It was later stored and subsequently broken up at Miami



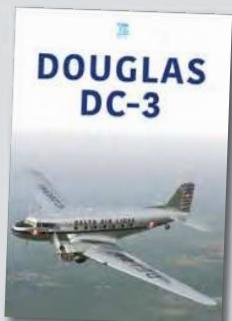


Our bumper roster of releases this month includes a historic legend, Taiwan's fascinating airline and a must-have for all flight simulation enthusiasts.

Douglas DC-3

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China Airlines: The Wings of Taiwan

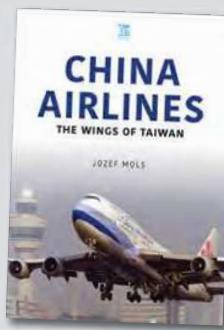
By Jozef Mols

Born with US help in Taiwan after China's civil war, China Airlines has long been forced to cope with obvious tensions with mainland China. It has also had to compete with new Taiwanese private airlines, set up after the end of martial law on the island and the liberalisation of civil aviation. Finally, in 2009, regular flights between Taiwan and China were introduced, enabling citizens on both sides of the Taiwan Strait to visit relatives on the other side. In the meantime, China Airlines has grown to become an internationally respected intercontinental airline,

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Microsoft Flight SIM Yearbook

By Derek Davis

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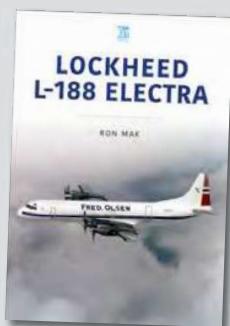
Lockheed L-188 Electra

By Ron Mak

In January 1955, an industry-wide call from American Airlines for a new aircraft resulted in Lockheed's newest creation – the L-188 Electra. American ordered 35 straight from the drawing board, and this was quickly followed by Eastern Air Lines' order for 40 aircraft. Despite being a turboprop in an increasingly jet world, the Electra continued to be used by US airlines across the country, and the US military also used a prototype as the basis for the P-3 Orion anti-submarine aircraft. While the Electra found success in both North and South America, sales to Europe were much more limited, with only KLM placing an order for the aircraft.

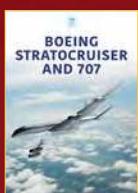
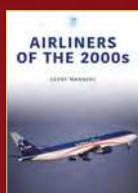
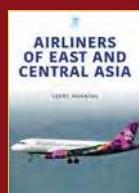
There were 170 Electras built in total, and, incredibly, a few are still in service today. With over 180 images, this book details the L-188 Electra across the globe, showing the different variants and liveries throughout the years.

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Au Revoir Alouette

Between August and December 2022, the French Navy retired its last five operational Alouette III helicopters, ending a 60-year service career.

From 1962, French Naval Aviation (Aéronavale) operated a total of 37 Alouette IIIs in two variants. The first of these was the Turbomeca Artouste IIIB-powered SA.316B that entered service with Escadrille 20S at Saint Raphaël. A second unit, 23S, was stood up at Saint-Mandrier the same year.

During deployments of the Foch and Clemenceau aircraft carriers, stationed at Toulon, the two squadrons conducted search and rescue (SAR) missions, remaining operational until 1991 and 1999, respectively.

A third squadron of SA.316Bs, 22S, was formed at Lanvéoc-Poulmic in 1964 and carried out the same mission as 20S and 23S, albeit from aircraft carriers based at Brest. Following the SA.316B's retirement in 2019, 22S continued to use the more advanced SA.319B until the type's eventual retirement in 2022. The SA.316B's SAR role

Above: A Sud Aviation SA.316B Alouette III hovers close to the guided-missile destroyer **USS Bulkeley** US Navy/French Chief Petty Officer Frederic Duplouich

would be passed largely to SA.365F Dauphin Pedro and AS.365N Dauphin SPs.

The SA.319B, which entered service in 1974, was an improved version of the earlier SA.316B, powered by a Turbomeca Astazou XIV that offered 600shp, an increase of 30shp over the Artouste IIIB. Some 18 examples of the '319B were delivered by 1979 and assigned to Flottille 34F Saint Raphaël and 35F at Saint-Mandrier. Having

The French Navy has withdrawn its final Sud Aviation Alouette IIIs after an illustrious career spanning six decades on land and at sea, reports **Babak Taghvaee**

been optimised for the anti-submarine warfare (ASW) role, the later variant could be equipped with Mk.46 torpedoes and would often be deployed on board Tourville-class frigates due to their ASW mission.

The two units would later both relocate to Lanvéoc-Poulmic, with the SA.319B's ASW tasks passed on to the Westland Sea Lynx HAS.2 in 1980 and the Aerospatiale AS.565F Panther from 1991.

While the Alouette III had lost its ASW role, it continued to conduct SAR and logistics/liaison missions, albeit in a reduced capacity.

Following the retirement of the earlier SA.316B in 2019, the '319B was the only Alouette version remaining in Aéronavale service, flying with 22S and 34F.

Early days

After eight years with the standard SA.316B, 22S began receiving upgraded 'B VSV models that enabled pilots to fly in zero visibility conditions. The Aéronavale would



One of the last public appearances made by a French Navy Alouette III was at Aérodrome de Cholet's L'Hélico 2022 event in May 2022

AirTeamImages.com/Wouter Cooremans



continue to introduce a training element into the squadron's responsibilities, establishing in 1976 the Ecole de Spécialisation sur Hélicoptères Embarqués (EHSE) – a training unit specialising in the operation of helicopters at sea and landing procedures aboard warships.

After 35F's last six SA.319Bs were replaced by half a dozen Lynx HAS.2s in 2003, 22S/ESHE became the French Navy's sole Alouette III user. By 2007, 22S had 27 Alouette IIIs at its disposal, comprising nine

SA.316Bs and all 18 SA.319Bs. The unit flew the SA.316B for 57 years, primarily in the SAR role in support of carrier operations and close to its Lanvéoc-Poulmic base. There were also pilot training roles as part of the EHSE and support missions during assignments to the French Navy's *Henri Poincaré* and, later, *Monge* test and measurement ships (BEMs) of the French Navy. An SA.316B was last used for SAR taskings on board the *Charles de Gaulle* aircraft carrier during its 2016 deployment to the eastern Mediterranean in support of Operation Chammal. The final SA.316B was retired in July 2019, leaving 22S with a fleet of just eight SA.319Bs.

Despite this, the Alouette III soldiered on, even outlasting the Lynx that superseded it in the ASW role, as the Westland type was phased out in September 2020. A few days after the Lynx bowed out, its former operator, 34F, was absorbed by 22S and

handed control of EHSE.

However, numbers of SA.319Bs continued to dwindle as the type was gradually removed from service. Just six – serials 106, 160, 161, 298, 302 and 997 – remained active with the French Navy by 2021, all equipped with the Goodrich Rescue Systems 76300 cable hoist for SAR operations. Of these half dozen, 997 was unusual in being the sole example equipped with the nose-mounted Thales OMERA ORB-32 SAR radar since 2007.

On ops

During the first two weeks of October 2021, 997 was assigned to anti-submarine frigate (FASM) *Latouche-Tréville* as part of an intense fortnight-long operational refreshment course (RANO). The Alouette III logged 18 flight hours and enabled the frigate to regain its helicopter operations capability of helicopter operations that



Two Alouette IIIs, 106 and 302, fly in formation with a NH90 NFH, a SA365F1 Dauphin and an AS365UA Panther during the 2022 Bastille Day Military Parade

Babak Taghvaei

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Top: Pilots and flight deck crewmen stand in formation beside a French Alouette III helicopter on the helipad of the French replenishment tanker *Var* in 1986 US Navy

Above: The cockpit of Alouette III, 997, which was the last Thales OMERA ORB-32 SAR radar-equipped example in French naval service Babak Taghvaei

Right: The final public appearance of a French Navy SA319B took place between September 9-11, 2022, when 2161 attended the Paris-Villaroche Air Legend event Babak Taghvaei

Far right: The final three Alouette IIIs were retired in December 2022 Babak Taghvaei

it had lost since retirement of the Lynx in 2020. In the most recent deployment of a French carrier strike group (CSG) to the Mediterranean as part of the Clemenceau 22 mission, the *Charles de Gaulle* was accompanied by a destroyer, two frigates and a replenishment oiler. The last of these, the Durance class tanker, *Marne*, sailed with a 34F SA.319B, 106, on board.

The helicopter became the last 34F Alouette III ever assigned to a Groupe Aéronaval, carrying out logistical support missions including airlifting pallets of fresh food and equipment from the *Marne* to *Normandie*, a multi-mission frigate. It also visited *Alsace*, an Aquitaine-class multi-purpose air defence frigate on February 23, 2022, performing several touch and goes on the helipad, while the *Marne* completed its 2,500th refuelling.

The same month, with 106 embarked, the *Marne* had also participated in joint exercises with the Royal Moroccan



After a six-decade-long flying career with the French Navy, the Alouette III is now being replaced by the Airbus Helicopters AS365N3 and H160 AirTeamImages.com/Wouter Cooremans



and Egyptian navies. During these, the helicopter had performed touch and goes on the helipad of Morocco's Sigma-class frigate, *Sultan Moulay Ismael*, and Egypt's *El-Fateh* corvette.

The SA.319B remained embarked on the *Marne* during the posting of the *Charles de Gaulle* to the Mediterranean – from where its Rafale Ms could bolster NATO's air defences over its eastern flanks by flying combat air patrol missions. However, while the Alouette's retirement was in sight, this was not the end of its operational life.

Final deployment

The final operational mission of a French Navy Alouette III took place during the RIMPAC22 multinational exercise last July. Prior to this, the French surveillance frigate *Prairial* conducted joint patrols in the Pacific Ocean with the New Zealand oiler HMNZS *Aotearoa* and two Japanese ships – the helicopter carrier JS *Izumo* and the destroyer JS *Takanami*. An Alouette III, 303, was assigned to the French frigate during the mission.

Following this, the frigate headed to Tahiti, where on August 5, 2022, SA.319B, 303, was delivered to a training facility close to Base Aérienne Julian Alain where it is now used as a ground instructional

airframe. As a replacement for the Alouette, the French Navy sent a newly delivered AS365N3 Dauphin by sea to Tahiti; arriving on October 4. It was then reassembled and flown to the *Prairial* as a replacement for the retired SA.319B.

The Alouette bows out

As part of the withdrawal of the Alouette III, the type capped off its 60-year career with a final Bastille Day flypast. Two SA.319Bs from 34F joined 23 helicopters and 62 fixed-wing aircraft in the skies over Paris on July 14. A five-ship, arrow-head formation led by an NH90 Caiman also comprised examples of two Dauphin variants and a pair of venerable Alouette IIIs bringing up the rear. The SA.319Bs were deployed to Villacoublay Air Base from where they flew over the Champs-Élysées, Paris. That afternoon, along with a spare airframe positioned at Villacoublay, the pair returned to Lanvéoc-Poulmic.

A final airshow appearance came two months later when one of the last four active Alouette IIIs, 2161, visited Villaroche, close to Paris, to join the static display at the Paris-Villaroche Air Legend event on September 9-10. Following this, the drawdown of SA.319B operations was accelerated with one aircraft retired to the Air and Space Force Non-Commissioned Officer Training School (EFSOAAE) at Base Aérienne 721 Rochefort as a ground instructional airframe. This aircraft, 2106, had logged in excess of 11,000 flying hours since delivery on March 4, 1974, and was later joined by sistership 2114, delivered to Rochefort by road for training use.

The last three Alouette IIIs, 1997, 2161 and 2302, were retired during an official ceremony at Lanvéoc-Poulmic in December 2022. Deliveries of the type's replacements have begun; the French Navy has received seven of 12 Dauphin N3s and the first of six H160 utility helicopters. AN



Old whale, new t

What do you do with a fleet of five now-redundant, incredibly specialised freighters? That was the question Airbus asked of itself earlier this year. **Ian Harbison** reports on the European manufacturer's creation of an out-sized cargo subsidiary.

Earlier this year, Airbus announced plans to enter the outsize cargo market as the current fleet of five A300-600ST BelugaST were replaced by a soon-to-be six-strong fleet of the larger A330-743L BelugaXL.

In late September, the fifth Airbus Beluga XL, F-GXLN, c/n 2027, was rolled out of the conversion facility in Toulouse to join Airbus Transport International, the manufacturer's heavy lift operation that supports the assembly lines in Toulouse and Hamburg by ferrying large fuselage sections and wings from production facilities in Bordeaux, Bremen, Chester, Madrid and Saint Nazaire. The sixth and final aircraft is expected to be delivered late next year, while the first aircraft will remain a test aircraft for a while longer before completing the operational fleet of half a dozen BelugaXLs.

Meanwhile, the original five aircraft have a design life of 40,000 flight cycles but an average of 15,000 between them, meaning

they could be used for another 20 years. It was also decided that they would be operated by a brand new subsidiary airline with its own Air Operator Certificate (AOC), flight crew and staff. It has now been confirmed that this will be called Airbus Beluga Transport. The initial operating base will be Toulouse but an alternative location is a possibility.

The AOC taskforce is progressing well, says Airbus, using 25 years of experience with the Beluga to rewrite the various Operating Manuals. The French civil aviation authority, Direction Générale de l'Aviation Civile (DGAC), will receive the initial elements in the first quarter of 2023 for their approval and the full submission is expected by the end of March.

Both the ST and XL have unpressurised cargo compartments due to their cavernous size. Any missions with non-inert payloads need specific approvals from the authorities but the plan is to make the ST cargo

compartment Class E, with fire and smoke detection. This will make it easier to respond to commercial requests. As those requests could see the aircraft flying worldwide, a new generation Flight Management System (FMS) with ADS-B will be installed by STC in 2023. For the same reason, 180 minutes ETOPS operations are being reactivated. It was already fully approved but there was no requirement on the short runs in Europe on the production site network.

Two aircraft, F-GSTB (c/n 761) and F-GSTC (c/n 765), have already been allocated to the new organisation while a third, F-GSTA (c/n 655), is being refurbished to join the fleet in late 2023. This will be followed by F-GSTD (c/n 776) and F-GSTF (c/n 796) in 2024. The other aircraft will be modified progressively.

The first mission undertaken by the new organisation was the delivery in December 2021 of an Airbus Helicopters H225 from Marseilles to Kobe, Japan. A total of five missions have been carried out so far, with



ricks?

two flights to Singapore and, in July, a first time visit to Brazil, landing in Fortaleza before continuing to the Campinas Viracopos International Airport near São Paulo. The mission was to transport the very first production Airbus Helicopters ACH160 to the Azul Linhas Aereas MRO facilities for preparation before delivery to a Brazilian operator.

The latest flight took place in October, when F-GSTB landed at the Kennedy Space Center at Cape Canaveral in Florida to deliver the Airbus-built HOTBIRD 13G telecommunications satellite for Eutelsat. This was the first time since 2009 that the Beluga had visited the USA, when it transported the European Tranquility module for the International Space Station.

As Sustainable Aviation Fuel (SAF) was available in Toulouse, the aircraft was fuelled with a 30% blend, although BelugaST, like all Airbus aircraft, is certified for up to 50% SAF. Airbus Beluga Transport will try to use SAF whenever possible.

The landing took place just hours after HOTBIRD 13F, was successfully launched by a SpaceX Falcon 9 rocket.

HOTBIRD 13F had been delivered by an Antonov AN-124 but Airbus Beluga Transport sees space as one of their key markets, alongside aircraft, helicopters, large aircraft

Five BelugaSTs have been responsible for transporting major aircraft sub-assemblies between Airbus production facilities since January 1996
Daniel Crawford



engines, humanitarian aid, big machinery, energy, maritime, and oil and gas.

Another important sector is the defence market and, in response, Airbus Defence and Space recently demonstrated a new cargo loading system and jig for outsized military cargo, with a capacity of more than 40 tonnes. This has been completely funded and designed by the company and has taken 18 months to develop and manufacture from scratch, from the initial exchange of ideas with the German armed forces to a verification exercise at Manching, north of Munich, in September.

Michael Schoellhorn, CEO of Airbus Defence and Space said: "The demand for

outsized air cargo capability is on the rise. Capacity is scarce and, in light of current geopolitical developments, many customers are looking for new, fast and efficient solutions. This is exactly what we offer with our BelugaST fleet. Our teams have been working on a remarkable solution to facilitate a speedy, efficient and autonomous handling to load heavy military cargo on to the aircraft. Speed, agility and autonomy are crucial elements for our customers when it comes to such operations."

The demonstration involved loading a Sikorsky CH-53G medium- ►



While the BelugaXLs will be initially rostered on services between Airbus' manufacturing sites, they will be available to Airbus Beluga Transport as and when needed
Daniel Crawford



Left: A BelugaST visited the US for the first time in 13 years in October when F-GSTB, (c/n 761), landed at the Kennedy Space Center to deliver the Airbus-built HOTBIRD 13G telecommunications satellite for Eutelsat, pictured on the Outboard Platform



Below left: In September, Airbus used a German Army Sikorsky CH-53G to trial a new loading system and jig for outsized military cargo

Airbus



lift helicopter into the Beluga under the watchful eye of the Bundeswehr Technical and Airworthiness Center for Aircraft (Wehrtechnische Dienststelle für Luftfahrzeuge – Musterprüfgesessen für Luftfahrtgerät der Bundeswehr). Using the new system, the helicopter required less dismantling than usual for movement by air.

Although it looks similar to the commercial Outboard Platform (see below) the loading system is focused on military needs and requirements but could also be used for commercial payloads. It works completely without cranes and has a lifting function, with roller tracks to move the load into the cargo compartment. There is no closed floor between the roller tracks, which translates into weight savings, and means it is very robust and easy to set up. With preparation time and positioning the system

at the nose of the aircraft, the entire process will take around 90 minutes, with the actual loading taking 60 minutes.

Due to the specific dimensions of the CH-53G, the Airbus Defence and Space loading system employed a special jig based on the standard ones used to move aircraft assemblies. Its size means it cannot be transported in the empty BelugaST. It will have to be pre-positioned before the aircraft's arrival. In contrast, the commercial cargo handling system is designed for much greater flexibility. It consists of three main components – the Multi-Purpose-Pallet (MPP), the Outboard Platform (OP) and the On-Board Cargo Loader (OBCL).

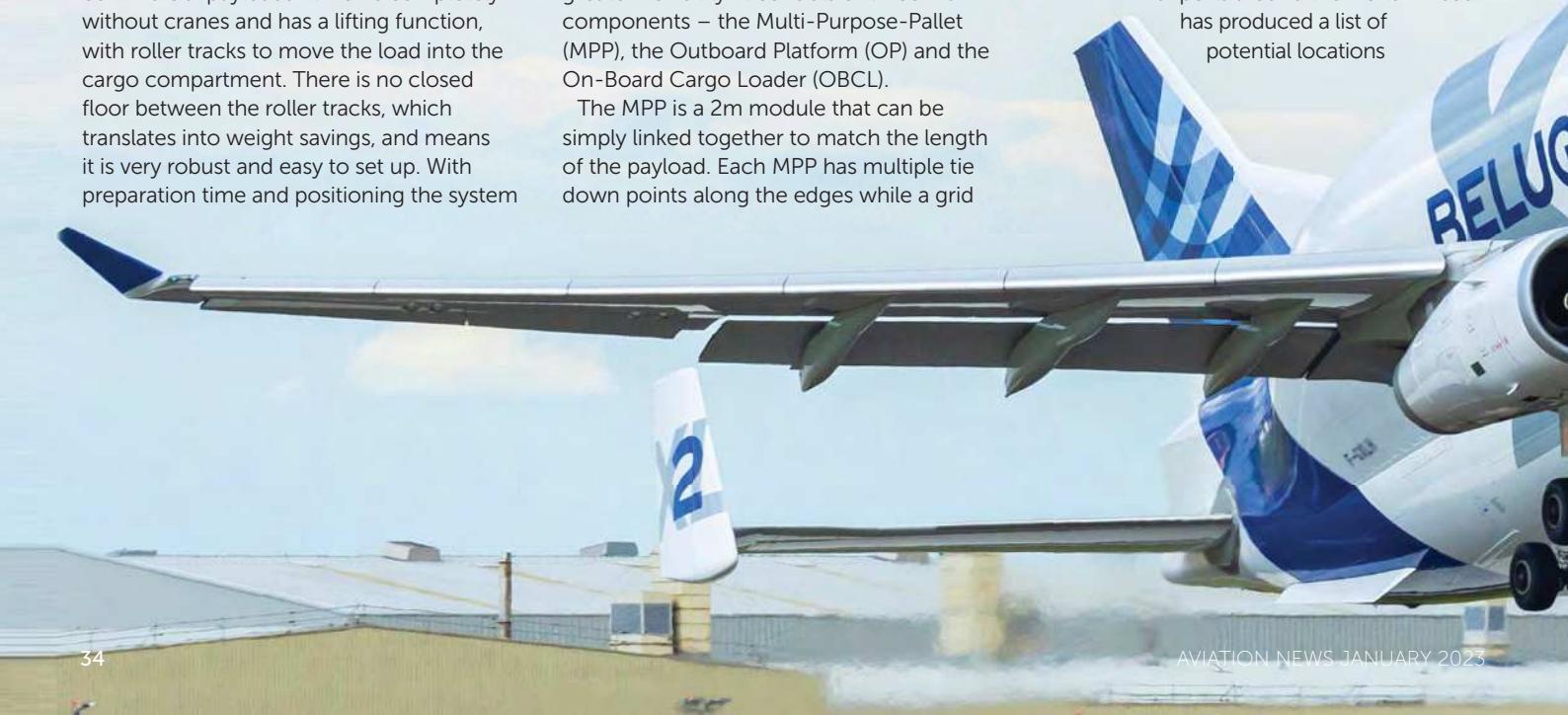
The MPP is a 2m module that can be simply linked together to match the length of the payload. Each MPP has multiple tie down points along the edges while a grid

pattern within the platform area allows further mounting positions to be added to ensure the different sizes, weights and shapes of payloads can be securely attached. Production line loads are carried in special jigs that attach to load-bearing attachment points in the roller floor of the cargo compartment and the MPP uses the same methods.

There are two ways of getting the payload into the cargo compartment of the aircraft.

For the heaviest and longest payloads, a redesigned OP consists of 6m sections that are linked together to match the length of the payload, equipped with the same roller floor as the aircraft for seamless movement between them. The payload is pushed on to the platform and raised to the level of the aircraft cargo bay. They can be deployed in ISO 20ft containers by air, land or sea and assembled and taken apart in under a day.

The OPs (at least six to start with) will be strategically pre-positioned at various airports around the world. Airbus has produced a list of potential locations





Left: The On-Board Cargo Loader enables the BelugaST to be used anywhere in the world. It is stored at the front of the cargo compartment and can be automatically rigged to the aircraft
Airbus

Above right: The BelugaSTs could last for another 20 years
Daniel Crawford

Right: The five A300-608ST BelugaSTs have each averaged around 15,000 flight cycles of the 40,000 they were designed for
Daniel Crawford

and, while it doesn't confirm any customers, some of the locations seem to be obvious choices. For airframe work, these include Marseille (Airbus Helicopters, Marignane); Mirabel, Canada (Airbus A220); and Seattle (Boeing). Engines are covered at Cincinnati (GE) and Derby (Rolls-Royce) and space by Cape Canaveral; and Cayenne, French Guiana (for the Arianespace launch facility at nearby Kourou). The rest include Beijing, Doha, Dubai, Hong Kong, Liège, Los Angeles and Singapore. Bangui, CAR, has been selected as being in the middle of the African continent.

It is the OBCL/MPP combination that offers the greatest



flexibility. The OBCL is stored at the front of the cargo compartment and can be automatically deployed and rigged to the aircraft. It has a platform that is lowered to the ground, allowing the payload on MPPs to be simply rolled on and, as with the OP, raised to the level of the aircraft cargo bay, where it is pushed in and secured. It can be used for payloads up to 20 tonnes and 12m long. The combination means a single aircraft could carry out several missions without a return to base. It would be self-contained, with no need for ground support equipment at each airport. In taking enough MPPs for the longest load, smaller loads would also be accommodated by stowing the extra pallets in the cargo compartment.

The OBCL is expected to be used on more than 65% of all missions. **AN**

Six examples of the larger, Airbus A330-200-based A330-743L BelugaXL have been ordered, of which five have been completed
Daniel Crawford

Bruntingthorpe:

What next for aviation's land that time forgot?



For three decades, Bruntingthorpe Aerodrome, or 'Brunt' as it affectionately became known, established itself as a haven for Cold War aircraft and those interested in them.

Jake Wallace looks at the site's past, present and future

RAF Bruntingthorpe, near Lutterworth in Leicestershire, opened in late 1942 as the home of 29 Operational Training Unit (OTU) and its Vickers Wellingtons. The site was later used for the development of the Gloster Meteor – Britain's first operational jet aircraft – before being allocated to the US Air Force in 1953.

The airfield was transformed into a Strategic Air Command (SAC) base which played host to Boeing B-47 Stratojets and later Douglas RB-66B Destroyers. The wartime A-frame runway configuration was removed in favour of a single 06/24 runway lengthened from 6,000ft to 9,800ft with a parallel taxiway.

A new control tower and main hangar were built, along with numerous administrative buildings and vast dispersals for aircraft parking.

Despite massive amounts of SAC investment, there were only two deployments of B-47s, between March and November 1958 and during the summer of 1959. From that autumn, the base was handed over to the United States Air Forces in Europe and 18 RB-66B Destroyers from the 19th Tactical Reconnaissance Squadron arrived. The jets would spend just shy of three years in Leicestershire before moving to Toul-Rosières Air Base in France and bringing US operations at Bruntingthorpe to a close.

Disused, much of the facility was torn down on the request of the RAF ahead of it being auctioned off in 1965. The World War Two bomber base was purchased by Chrysler Motor Company before being sold again to the Walton family in 1983 for their vehicle auctions, storage and proving

ground business. Aircraft began to arrive around five years later, with English Electric Lightning F.6 XR728 one of the first to call the Leicestershire airfield home. Many more would follow, resulting in a unique collection of Cold War British aircraft, including Avro Vulcan, XH558 (c/n SET112), which arrived in March 1993. Another stalwart of the collection, Handley Page Victor K.2, XM715 (c/n HP80/83), arrived that November on the same day as English Electric Canberra, XH568 (c/n EEP71105).

A first event, organised by the Lightning Preservation Group (LPG), was held in 1989 and bi-annual open days continued for the next four years. In 1993, Bruntingthorpe held its first airshow, Big Thunder, with a second following in 1994. The event's unusual ability to combine airworthy acts in Leicestershire skies and their predecessors

Avro Vulcan, XH558 (c/n SET 12), performs a fast taxi run in 1997, shortly before the famous jet would undergo a decade-long restoration to flight
Francis Wallace



Handley Page Victor, XM715 (c/n HP80/83), 'Teasin' Tina', is framed against crowds assembled for the May 2017 Cold War Jets Open Day Jake Wallace

up close as they performed fast taxi runs were a hit with the public. However, from 1995, the show was downsized to focus on the based aircraft and occasional flying visitor, although it would be held twice a year, in May and August.

The collection began to grow further over the coming years with the arrivals of a de Havilland Sea Vixen FAW.2, Hawker Siddeley Nimrod MR.2, a pair of SEPECAT Jaguars, a Comet, an eventual quartet of Buccaneers, numerous Hunters, several Jet Provosts, a third Lightning, and a Sea Harrier, with one of the last major arrivals being a Tornado GR.1 in 2015. Many of these aircraft were restored over several years from a static condition to fully functioning runners. However, there were many that stayed purely as static exhibits.

Only one was ever restored to flight on-site, though. Undoubtedly the most well-known former Bruntingthorpe resident, Avro Vulcan XH558's return to flight effort began in 1997. After almost a decade and a mammoth effort from Vulcan to the Sky Trust (VTST) volunteers, the jet flew triumphantly in October 2007. But while Bruntingthorpe would

provide a suitable base for restoring the aircraft, it would prove to be less than ideal for operating a V-Bomber, with VTST moving to RAF Waddington shortly after the maiden post-restoration flight before eventually finding a more permanent base at Doncaster Sheffield Airport.

Bruntingthorpe was unique as it offered a rare opportunity to get up close and personal to live aircraft with no barriers in between. Cockpits would be regularly accessible, and even taxi rides on some of the aircraft were possible. The museum would be open most Sundays and continued to hold large events every May and August bank holiday. These being called the Cold War Jets open day. The events would consist of aircraft performing a figure of eight on the runway, just metres away from the crowd followed by a fast taxi run. Smaller events also took place from time to time, including photocalls, nightshoots and the LPG's Twilight Thunder events, to name but a few.

Additional acquisitions for the Cold War Jets Collection came from the aircraft recycling area on site. While a wealth of airliners including Qatar Airways Airbus

A300s and Transaero and Cathay Pacific Boeing 747s were parted out at the airfield, one of around half a dozen ex-RAF Vickers VC10s to have been retired to Bruntingthorpe, ZD241, was spared the chop and the VC10 Preservation Group was formed around it.

The group restored the aircraft back to running condition, a first public taxi run would take place in 2014 and rides on board the jet were later offered.

While owned by the Waltons, aviation at Bruntingthorpe had, understandably, always taken second place to the family's vehicle storage and auctions business. From 2018, an increasing number of cars were being stored on site, so open days were relocated to the western end of the airfield away from the majority of the remaining infrastructure.

As vehicles continued to encroach on the western end of the airfield, crews had to close the throttles earlier and earlier. However, it didn't diminish the spectacle of watching icons from Britain's aviation past up close at maximum power. Happily, this worked well until the August 2019 open day, which proved to be the last event of its kind. A handful of other events involving ►



the Lightning Preservation Group, The Buccaneer Aviation Group and TimeLine Events continued to take place.

Just days before the first COVID-19 lockdown in March 2020, it was announced that Cox Automotive UK had agreed to lease C Walton Ltd's three locations at Long Bennington in Lincolnshire, Wyton in Cambridgeshire and Bruntingthorpe. The three airfields' new tenant was quick to make it known that aviation played no part in its business plan and its appetite for vehicle storage space meant the Cold War Jets Collection would need to relocate in part or entirely by the year's end.

Every airframe on the site faced an uncertain future with owners needing to act quickly in the middle of a pandemic. Avro Shackleton, WR974, was moved to South Wales Aviation Museum, while Jaguar T.2A, XX145, was relocated to the UK's Jag retirement home at RAF Cosford's No. 2

School of Technical Training. TBAG moved Buccaneers XX894 and XW544 to Cotswold Airport, while another Buccaneer, XX900, moved to Tatenhill Airport. Although at a new location, XX900 still belongs to the Cold War Jets collection.

Despite lockdowns and COVID-19 restrictions, a lot of effort was put into relocating the smaller airframes to an area around the LPG's Quick Reaction Alert (QRA) shed at the non-leased northern end of the airfield. This began with a small number of trees being cleared from around the QRA shed and a hardcore gravel base being laid down. The basic groundworks were completed by November 2020 and on December 5, the smaller aircraft were towed off the airfield and into the new museum site ready for a security fence to be erected. At the time, there was no room near the QRA shed to fit the larger aircraft such as the Victor, Nimrod and Comet.

Lightning F.6, XS904/BQ, roars down Bruntingthorpe's runway during one of the airfield's popular fast taxi events Colin Collis



Above left: **Vulcan, XH558, undergoing restoration work ahead of a 2007 return to flight** Francis Wallace

Above: **Aircraft owners were given a few months to ensure the futures of their aircraft, organising residencies at other airfields and transportation to new homes, all during the pandemic** Jake Wallace

Above right: **Two former RAF Lockheed L-1011 TriStars await their fates as two ex-Traero Boeing 747-300s succumb to theirs** Damien Burke

Thankfully, space was allocated on the east of the airfield for their safe storage.

As 2020 drew to a close, attention turned to the larger airframes on site that had not been earmarked for further preservation. These included the former Olympic Airlines Boeing 747-200 and Aero Spacelines Super Guppy, which were both scrapped, and were followed to the smelter by





two former Transaero Boeing 747-300s, six ex-RAF Lockheed L-1011 TriStars and a brace of Vickers VC10s.

Not wanting to admit defeat, the groups and individuals involved at Bruntingthorpe were keen to demonstrate that the site's aircraft restoration and preservation scene was still very much alive and well.

Additional work to create a car park close to the LPG's Q Shed as part of a potential museum site was carried out, while aircraft were maintained so as to continue engine runs. From March 2021, the Classic British Jets Collection (CBJC) was running its aircraft regularly, as was the LPG. At the end of October that year, the Canberra WT333 group ran its aircraft for the first time since the last Cold War Jets open day in August 2019.

Over the course of 2022, a lot of focus was placed on completing the museum's



groundworks in a bid to welcome the public back to Bruntingthorpe by the end of the year. This was achieved in early November when the LPG greeted 200 members of the public back to Bruntingthorpe for a twilight reheat run and photoshoot event.

Speaking to *Aviation News* in October 2022, Richard Norris, LPG president, said: "Our two Lightning F.6s are fully serviceable and are both in good working order. Our engineering team have really done us proud."

The group's chairman, Dennis Brooks, added: "The Iskra is also very much still a runner."

Ben Belben of the Classic British Jets Collection was similarly upbeat: "We are currently in the best situation we've ever had; everything is serviceable, there or thereabouts. The Hunter GA.11 is working

brilliantly, the Meteor is fantastic, the Venom is in A1 condition. The Sea Vixen is currently having some work done with a possibility of having an engine replaced at some point."

Reflecting on the progress made towards a museum opening, the LPG chairman continued: "We would very much like to be welcoming people and showing them around our aircraft, but we're lacking the infrastructure to make this happen, the main requirement being toilet facilities. Additionally, more car parking space would enable us to welcome more visitors."

The groups are also passionate about inspiring younger generations and getting them interested and involved in engineering as well as aircraft preservation, reporting that they would be open to educational visits for young people to see the aircraft up close once the museum opens. ▶

De Havilland DH.106 Comet, XS235, is one of four aircraft stored on the airfield away from the site of the planned new museum Colin Collis





There is no current plan for the Comet XS235, Hunting Percival Jet Provost XW290, Nimrod XV226 and Victor XM715 to move across to the museum site and they will not be publicly accessible for the foreseeable. However, volunteers continue to ensure the quartet remain in as good a condition as possible and have even dry-spoiled the engines on the Comet and Victor.

Although it is no longer at Bruntingthorpe, Buccaneer XX900 is still very much a part of the Cold War Jets collection. It will continue to stretch its legs at Tatenhill Airport, Staffordshire, where it is now being repainted into the two-tone desert

Above: English Electric Lightning F.6s XR728 and XS904 about to set off for their last taxi run in November 2019. Unknown to all in attendance, this would be the last fast taxi event held at Bruntingthorpe Jake Wallace

Below: The Nimrod, Victor, Comet and Jet Provost are stored away from the museum site but still receive regular maintenance from volunteers Jake Wallace



camouflage it wore while participating in Exercise Red Flag in 1977.

It is a great shame the collection of aircraft at Bruntingthorpe has been dispersed and the Cold War Jets Open Days consigned to history. But had it not been for C Walton Ltd and the vision and generosity of David Walton, it would never have happened at all.

We may have lost Bruntingthorpe as the UK's mecca for Cold War aviation, but we're much richer for it having been there once. **AN**

Below: The beginning of an era – aircraft housed in a new site centred around the Lightning Preservation Group's QRA Shed as part of a new museum set to open in the near future Jake Wallace



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A Bell UH-1H Iroquois, NZ3808 (c/n 11707), attached to 3 Squadron, Royal New Zealand Air Force hovers over the wreckage of another Iroquois, NZ3803 (c/n 5158), as it prepares to recover spares on December 1, 1982. The ill-fated Huey had crashed while attempting to land personnel on Empress Glacier, close to Mount Cook on South Island, to rescue two trapped climbers. The Iroquois crew suffered only minor injuries and were quickly flown to Mt Cook village. The trapped climbers and their rescuers were flown off the following day.

Air Force Museum of New Zealand







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UK AIRSHOWS AND EVENTS

| DATE | EVENT | LOCATION | DETAILS |
|------------------|---|--|---|
| JANUARY | | | |
| 7-8th | Icicle Balloon Meet | Donnington Grove Hotel, Newbury, Berkshire | icicle-refrozen.com |
| 8th | Croydon Airport Aviation Collectors' Fair | Croydon Airport Hotel, South London | davidsutton16@aol.com |
| APRIL | | | |
| 7-9th | Classic Fighters Air Show | Omaka, New Zealand | https://www.classicfighters.co.nz/ |
| 8th | ACS Aviation Festival of Flight | Perth Airport, Perthshire | www.perthairport.co.uk |
| 15-16th | Newark Air Museum 50th Anniversary Event and Aeroboot | Newark Air Museum, Nottinghamshire | newarkairmuseum.org |
| 16th | Heathrow Aircraft Enthusiasts Fair | Kempton Park Racecourse, Surrey | aircraftenthusiastfair.co.uk |
| 19-23rd | AERO Friedrichshafen | Friedrichshafen, Germany | www.aero-expo.de |
| 22nd | Henstridge Airfield 80th Anniversary Fly-in | Henstridge Airfield, Somerset | henstridgeairfield.com |
| MAY | | | |
| 19-20th | Private Flyer Fest London | Wycombe Air Park, Buckinghamshire | www.privateflyershow.com/uk/ |
| 20th | Abingdon Air and Country Fayre | Dalton Barracks, Abingdon, Oxfordshire | abingdonairandcountry.co.uk |
| JUNE | | | |
| 28-29 | Oostwold Airshow | Oostwold, NL | https://www.oostwold-airshow.nl/ |
| 2nd-4th | Midlands Air Festival | Ragley Hall, Warwickshire | midlandsairfestival.com |
| 8th-10th | Aero Expo | Sywell, Northamptonshire | www.aeroexpo.co.uk/ |
| 11th | RAF Cosford Air Show | RAF Cosford, Shropshire | https://www.cosfordairshow.co.uk/ |
| 24-25th | Cockpit Fest and Aeroboot | Newark Air Museum, Nottinghamshire | https://www.cosfordairshow.co.uk/ |
| 24-25th | Duxford Summer Air Show | IWM Duxford, Cambridgeshire | iwm.org.uk |
| 30-July 2nd | Headcorn Battle of Britain Air Show | Headcorn Aerodrome, Kent | bobairshow.co.uk |
| JULY | | | |
| 1st | Wallop Wings and Wheels 2023 | AAC Middle Wallop, Hampshire | armyflying.com |
| 1-2nd | Wales Seafront Airshow | Swansea Bay, Glamorgan | walesnationalairshow.com |
| 7-8th | Private Flyer Fest Leeds | Leeds East Airport | www.privateflyershow.com/uk/ |
| 14-16th | Royal International Air Tattoo | RAF Fairford, Gloucestershire | www.airtattoo.com |
| 24-30th | EAA AirVenture Oshkosh | Wittman Regional Airport, Oshkosh, Wisconsin | eaa.org/airventure |
| AUGUST | | | |
| 12th | Texel Air Show | Texel, Netherlands | www.texelairshow.nl |
| 18th | Roskilde Air Show | Roskilde, Denmark | www.airshow.dk |
| 26th | Duxford Flying Evening | IWM Duxford, Cambridgeshire | www.iwm.org.uk |
| SEPTEMBER | | | |
| 16-17th | Duxford Battle of Britain Air Show | IWM Duxford, Cambridgeshire | www.iwm.org.uk |
| OCTOBER | | | |
| 14th | Duxford Flying Finale | IWM Duxford, Cambridgeshire | www.iwm.org.uk |

Plane Sailing's Consolidated PBY-5A Catalina, G-PBYA (c/n CV-283), has been confirmed for the Abingdon Air and Country Show in May Martin Needham



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ELECTRIC Avenues



The Heart ES-30 is set to be the biggest electric airliner around when it enters passenger service in 2028. But is it big enough... or is technology standing in the way of what airlines actually want? Richard Schuurman investigates

If you want to fly electric, your options are rather limited. A Pipistrel Velis Electro will take only two occupants, which Smartflyer intends to double with its SFX1 in late 2023. The Eviation Alice, which first flew in September, offers nine seats, while Tecnam and Rolls-Royce are working on the P-Volt, another nine-seater set for entry into service in 2026. And there's the 19-seat Heart Aerospace ES-19, launched in 2018 that won backing from Finnair, United Airlines and Mesa Airlines in 2021.

But before the ES-19 has ever flown, the aircraft has been ditched. Bring on the ES-30, the larger 30-seater that was unveiled during Heart's 'Hangar Day' in September at its headquarters at Säve Airport near Gothenburg, Sweden.

Speaking at the event, Heart CEO Anders Forslund said: "The ES-19 was tailor-made for the Nordic markets. But as we made the announcements, we started hearing from all over the world. There was a similar need

in the rest of Europe, the US, Canada and New Zealand. What started as a local, niche product had a global appeal."

Explaining the ES-19 redesign, Forslund added: "To make an airplane that can fly everywhere, the ES-19 needed to change. We needed to change the luggage capacity, which was greatly reduced because of battery capacity and the European Union Aviation Safety Agency's (EASA) CS-23 specifications which limits an aircraft to an 8,600kg maximum take-off weight."

Too small

Airlines had also pushed for a larger aircraft. Anko van der Werff, Scandinavian Airlines (SAS) CEO, said: "The 19-seater was just too small for what we like, that's why we and others have pushed to upsize the design." SAS signed a letter of support in September and intends to purchase an undisclosed number of aircraft. Van der Werff has joined the manufacturer's advisory board.

Air Canada became a launch customer for the ES-30, ordering 30 aircraft and investing \$5m in the manufacturer



SAS is an enthusiastic supporter of Heart and its ES-30 all-electric airliner. While it has yet to confirm how many aircraft it has committed to, the Scandinavian airline's CEO has joined the manufacturer's advisory board

All images Heart Aerospace, unless stated

Increasing the aircraft's size – which United Airlines and Mesa Airlines also wanted – and adding more batteries meant it would be impossible to certificate the aircraft under CS-23 regulations.

Heart has instead opted for CS-25, with the move transforming the once cute little ES-19 into something altogether more utilitarian. The ES-30 has grown a big belly to accommodate lithium-ion battery packs

previously positioned in the four engine nacelles. A 100ft (30m), high-aspect ratio wing is supported by beam-like struts and the airliner now also sports a huge vertical stabiliser.



Maeve is hopeful that its planned 44-seat all-electric regional airliner will make up for lost ground when it finalises a design in 2025 Richard Schuurman



United Airlines switched its 100 firm orders and 50 options from the ES-19 to the ES-30 when the larger design was unveiled



Above Left: Two Collins Aerospace turbogenerators – to be powered by sustainable aviation fuel – will allow the ES-30's range to be extended from 216nm to a maximum of 432nm

Left: The decision to use four powerplants has been carried over from the ES-19 to the ES-30

Below left: In redesigning its initial offering to accommodate 30 passengers, Heart Aerospace has moved the battery compartments from inside the electric motor housings to a centralised location in the lower fuselage

Bottom left: The ES-30 will be capable of accommodating 30 passengers, although customers are hopeful that battery technology will facilitate larger variants with as many as 50 seats



Looks

It destroyed the looks, but Heart had to do so, as a spokesperson for the company told *Aviation News*: "The sleek design of the ES-19 meant too much limitation on the performance of the aircraft.

"The design of the ES-30 has no negative impact on the aerodynamics, and we have placed great focus on the comfort and safety of the passengers."

Even with a larger battery capacity, the range of the ES-30 is rather limited. The ES-19 was intended to have a range of 216nm (400km), whereas the ES-30 can only travel half that distance with a full passenger load. To increase range, Heart has dropped a key design feature of its original aircraft: it is no longer all-electric. As a range extender, there are two Collins Aerospace turbogenerators at the back that use sustainable aviation fuel (SAF). If needed, they can double the range and, when seating is limited to 25 passengers, can even be stretched to 432nm (800km). However, this compromises the aircraft's economics.

Bigger

Heart isn't the only company contending with the delicate balancing act between cabin and battery capacities, as a Dutch start-up believes it can do better.



Launched in 2021 as Venturi Aero, but since renamed as Maeve, the company has designed a battery-only regional airliner with the batteries positioned in the cargo hold within the wide fuselage.

The high-wing aircraft with eight electric motors is expected to be able to fly 300nm (550km) with 44 passengers – for now, that is, said co-founder and CEO Jan-Willem Heinen: "Our current design is weight restricted; we have the volume for more seats, but we can't use it all as we are restricted by the capacity of the batteries. As battery technology develops, you could turn this 44-seater into a 60-seater."

Battery technology is the limiting factor for all-electric aircraft. This was also identified by Airbus when it opted to develop hydrogen-fuelled aircraft, as the European manufacturer's vice-president of ZEROe, Glenn Llewellyn, said in 2021: "The rate at which battery technology is developing is not going as quickly as we expected."

Heart said: "At type certification, we plan for an energy density in the range of 250wh/kg to 330wh/kg on the pack level. We also expect a continuously evolving battery technology and normal maintenance will require the batteries to be replaced approximately once a year, which means the airplane will be continuously upgraded. The reserve hybrid powerplant is installed to secure reserve fuel requirements without cannibalising battery range. It can also be used on longer flights to complement the electrical power provided by the batteries, providing the network flexibility that is required by airlines."

Heart said a bigger version with up to 50 seats could follow later, but from its own research, Maeve found that the market wants at least a 44-seater all-electric aircraft. "It's a simple calculation – the bigger the aircraft, the better the economics become. That's why we consciously started looking at the boundaries of the design of electric aircraft and, for now, we think the best option is a 44-seater. We think this is the limit of what an electric aircraft can be, given battery technology in 2030."

Maeve is to present an updated design this coming spring and hopes to attract funding and airline customers after that, having produced little effort on this until now. However, the company is around two-and-a-half years behind Heart.

Really talking

SAS' van der Werff is happy with the size of the ES-30: "This design is about 30 seats and could be stretched to 40 or 50. The planned 400km range is quite nice, you can have some domestic routes where you can fly with a 30-seater. But with a 50-seater, you are really talking. If you go to 40-50 seats and increase the range, we can design it around new secondary destinations in Norway and Sweden that don't currently connect, but which are incredibly important."

Heart hasn't ruled out larger versions: "In our ongoing dialogue with airlines and regulatory authorities we have got a lot of valuable input on what sort of product the airlines are looking for and what regulatory requirements look like around the world. We have taken this input and designed an electric aircraft that is cost efficient and allows airlines to deliver good service on a wide range of routes."

Despite the first flight being some years away, Heart has signed some interesting parties to the programme. The biggest are United Airlines and Mesa Airlines, which each have 100 aircraft on firm order plus 50 options. Air Canada has 30 firm orders and made a \$5m equity investment in the company. Heart also has letters of intent (LOI) for a combined 99 aircraft from SAS, Braathens Regional Airlines, Icelandair, lessor Rockton and New Zealand's Sounds Air. Portuguese regional airline and wet lease specialist Sevenair also announced an LOI in October for six aircraft while lessors CDB Leasing and Vmo Aircraft Leasing have consulting roles.

Finnair signed an LOI for 20 ES-19s in March 2021, but has yet to commit to the larger ES-30. Heart said it has an active dialogue with Finnair "to determine how the larger ES-30 could potentially support

the airline's business model of the future", adding: "It makes perfect sense for both Finnair and Heart Aerospace that the ES-19 LOI will not be renewed until that assessment reaches a conclusion."

Sustainability

Although still without customers, Maeve's Heinen is confident a strong market will emerge for sustainable, all-electric aircraft, as Heart is currently the only other major player in this sector: "We know that making aviation sustainable will become hugely important and priority number one. When all airlines want a fully sustainable aircraft at the same time, we know that the production capacity of the current OEMs won't be enough by far. We are seeing that airlines are taking up their positions, because if you are the last in the queue, you are in trouble."

Maeve's timeline is working towards a first flight in 2027, so it wants to finalise its design no later than 2025. The redesign of the ES-19 to the ES-30 will take Heart two more years, with entry into service now planned for 2028. It plans to roll out a proof-of-concept in 2024 and start flight testing in 2026.

Heart has already built an iron bird in Säve that will trial all systems. Flight characteristics will be tested by simulator. The company reported: "The ES-30 is in the conceptual design phase and will enter into preliminary design phase in Q1 2023." Heart will build the aircraft in new facilities at Gothenburg/Säve, known as the Northern Runway, as a campus for electric mobility and autonomous aircraft and road vehicles.

In November 2021, Heart signed Aernnova to co-design the main structure. The Spanish company is a tier one supplier to Embraer, Airbus, Boeing and Bombardier. Other partners include Sogecclair subsidiary MSB Aerospace (interior), Groupe Latécoère (doors) and Garmin (avionics). Heart also has support from compatriot Saab, which is keen to add electric aircraft to its military and civil aircraft programmes. Like Air Canada, Saab has taken a minority share in Heart Aerospace with a \$5m investment. **AN**

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Inside the Ho

The Swiss Air Force returned to the UK for its annual night-flying exercise at RAF Leeming.

Colin Norwood, Hugh Sawyer and Glenn Stanley visited North Yorkshire for Aviation News



During November and December 2022, three squadrons from the Swiss Air Force – Fliegerstaffels 11, 17 and 18 – deployed to RAF Leeming in North Yorkshire for the now-annual Exercise Yorknight.

First held in 2019 and again in 2021, a detachment of around 10 McDonnell Douglas F/A-18C/D Hornets is posted to Leeming so that the three units can amass around half of their annual night-flying experience. Now in its third year,

Above: Nine of the ten Hornets arrived in North Yorkshire on November 15, with J-5003 arriving two days later after reporting a technical issue over France Colin Norwood

Above right: A pair of Swiss F/A-18Cs break into the RAF Leeming circuit following a mission Hugh Sawyer

Right: Ground crew conducting pre-flight checks, including ensuring that the tail hook functions correctly Glenn Stanley



Hornet's nest



Top: The Swiss Air Force placed an order for 26 single-seat and eight twin-stick Hornets in 1992. The type entered service five years later and, in the past quarter-century, one F/A-18C and three F/A-18Ds have been lost in accidents Glenn Stanley

Above: Up to three waves of missions were conducted each day depending on the weather conditions Glenn Stanley

Below: The Swiss jets are understood to have exercised with F-35s embarked on HMS Queen Elizabeth, likely one of the first times that the Swiss Air Force has gone up against fifth-generation fighters Hugh Sawyer

the Swiss Air Force has chosen Leeming as a base for its month-long exercise due to the lack of aggressor aircraft available in its home nation.

Ten jets, comprising seven single-seat F/A-18Cs and three twin-stick F/A-18Ds, were noted as J-5001, J-5003, J-5005, J-5012, J-5013, J-5016, J-5018, J-5232, J-5234 and J-5238.

While at the North Yorkshire base, the trio of squadrons conducted training missions over the North Sea and in RAF ►



Above: Fliegerstaffel 18 was one of three squadrons involved in the deployment at RAF Leeming Colin Norwood



Left: This Hornet, J-5001, was the first to be delivered to the Swiss Air Force. It tends to be the aircraft that carries out most of the missile test firings and wears several different stencils below the cockpit. The jet also lacks a nose-mounted cannon Glenn Stanley



Spadeadam's electronic warfare range, as well as with F-35s operating from HMS *Queen Elizabeth*. The F/A-18C/Ds flew in three daily waves where possible, with the first fortnight of the exercise tailored to more experienced crews and the latter half comprising sorties that were designed to hone the skills of those with less time on the Hornet.

As Aviation News went to press, the exercise was due to have concluded on December 10. **AN**

Below: The first annual exercise of this kind was held at RAF Lossiemouth in late 2018, with the first Yorknight drills held at RAF Leeming in 2019 Colin Norwood





Above: Fliegerstaffel 18's specially marked jet, J-5018, is reflected in a puddle as the sun sets over RAF Leeming Glenn Stanley

Right: As well as flying with F-35s from HMS Queen Elizabeth, the Hornets have conducted exercises over the North Sea and RAF Spadeadam's warfare range Glenn Stanley

Below: McDonnell Douglas F/A-18C, J-5012, taxis out from RAF Leeming's northern hardened aircraft shelter (HAS) site ahead of an evening mission Colin Norwood





Challenging convention

As Bombardier begins to deliver its latest Challenger – the 3500 – **Paul E Eden** looks back on almost half-a-century of business jet development

Asksed to explain why the Challenger series remains a market leader almost 45 years since the CL-600 took its first flight on November 8, 1978, Bombardier president and CEO Éric Martel replies: "From the very beginning, these aircraft set themselves apart from other business jets thanks to their cabin size, performance and reliability. I see a lot of Challengers that I directly worked on still in service and performing at top levels or fetching a premium in today's pre-owned market. That type of dependability and comfort is what Challenger customers have come to expect."

Martel led the Challenger programme from 2005 to 2008, a time he says he recalls "very fondly", so it's unsurprising that his answers are laced with superlatives. Even so, pilots, operators and passengers are equally enthusiastic with their praise



Above: Bombardier claims that its latest variant, the Challenger 3500, sets new standards for cabin comfort, safety and sustainability

Left: Éric Martel, president and CEO of Bombardier

for the Challenger in all its forms for its fuel efficiency, reliability, performance and spacious cabin.

The Challenger story began in 1974, when William Lear, creator of the legendary Learjet series that later became a Bombardier product, began work on his LearStar 600 project. Equipped with a supercritical wing optimised for high-speed flight and fitted with a pair of Avco Lycoming ALF502D turbofans, the design failed to illicit interest after Lear sold the Learjet line to Gates. In April 1976, the Canadian government bought back

Canadair – which had been engaged in designing and building the CT-114 Tutor jet trainer and CL-215 amphibian, as well as manufacturing several hundred CF-104 Starfighters – from General Dynamics. Seeking a new programme, it invested in Lear's 4,000-mile range business jet.

Lear and the Canadair team disagreed on the design. There was no doubting the wing's efficiency, but Lear wanted a narrow fuselage cross-section while Canadair believed customers wanted a 'stand-up' cabin offering 6ft of headroom. Retaining performance with a wider fuselage meant carrying more fuel, increasing weight further. As a result, higher-thrust ALF502L engines were selected, while Canadair preferred a T-tail configuration to Lear's low-mounted tailplane.

Canadair won out and the spacious cabin became a cornerstone of the Challenger's success. In fact, it became essential to the type's development potential, allowing Canadair to evolve it into the revolutionary CRJ series of regional airliners and the long-range Global Express, which itself spawned the Global 5000 and 6000 and derivatives, including the latest Mach 0.94-capable Global 8000.

Evolution

The first production Challenger joined three pre-production airframes in the flight test programme, with successive aircraft incorporating changes as issues were identified. The first pre-production aircraft was lost in a fatal accident on April 3, 1980, after its spin parachute, used for stall trials, refused to detach, but Canadian type certification was nonetheless granted on August 11.

In 1982, the CL-600 gave way to the CL-601, an upgraded, better performing



Roland Dangerfield, the founder of Sentinel Aviation, pictured on the flight deck of a Challenger Sentinel Aviation

model powered by General Electric CF34 turbofans in revised nacelles, equipped with winglets and carrying more fuel. Several 601 variants followed, and the model remained in production until 1996, by which time the next major iteration, the Challenger 604, had already flown.

The new jet incorporated some technology matured in the CRJ programme, as well as introducing a new glass cockpit concept, in the form of the Rockwell Collins Pro Line 4 flight deck. It also carried more fuel, included structural improvements and stronger landing gear for higher weights and had more advanced CF34-3 engines.

Available from 2006, the Challenger 605 featured larger cabin windows and a distinctive new tail cone profile, plus a Pro Line 21 cockpit. The Challenger 650 succeeded it from 2015, equipped with

even more advanced avionics and other subtle refinements.

Setting aside engines and avionics, superficially the Challenger 600 series has changed remarkably little over the years, yet remains as popular as ever. So what are the fundamental differences and why do customers rate the aircraft so highly?

Laurence Casia, Bombardier's Manager, Industrial Design and Cabin Innovation, explained: "The cabin remains the widest in its class, while the larger windows increase the amount of natural light. Passengers enjoy a modern, user-friendly cabin management system, high-speed inflight connectivity, redesigned seats and lower cabin noise levels.

"Pilots appreciate the Pro Line 21 Advanced avionics suite, including autothrottle, integrated into the Bombardier Vision flight deck, which reduces pilot workload while increasing safety and comfort. The Challenger 650 also has a longer range than its predecessors, at 4,000nm and a maximum speed of Mach 0.85. And it has an anti-skid landing gear system and CF34-3B MTO engines, delivering increased performance, efficiency and dispatch reliability.

Challenger 'squadron'

Founder of Sentinel Aviation and a former British Army tank commander, Roland Dangerfield has many hours flying the Challenger. He jokes that his career progressed from commanding a squadron of Challengers (tanks) to flying one: "I started on the Challenger 604 and moved on to the 605. The real difference was in the avionics – Pro Line 4 compared to Pro Line 21. There was a dual type rating, so I just did a differences course for the 605 in 2010. I flew the 605 for about a year ►



The General Electric CF34-powered Challenger 601 marked a major upgrade in performance over the CL-600 Bombardier

The Challenger is a popular platform for upgrades. Collins Aerospace offers this Pro Line modernisation for the 604 Collins Aerospace



before doing recurrent training on the 604 in the simulator and found the differences between them quite difficult. In the end, I never flew the 604 again, but found that flying the 605 simplified the transition to the Global 5000/6000."

Dangerfield reckons every aircraft he has flown was fun, but rates the Challenger especially highly: "It was my first job in aviation. It was brilliant. I went from a piston twin to the jet. It was like passing your driving test and jumping straight into a Ferrari. I trained hard and learned fast to deal with the higher rate at which things happen in a jet.

"I did most of my flying in and out of Farnborough and, without a doubt, my best Challenger flight – when I thought 'this is what it's all about' – was a training flight to Samedan in Switzerland. It's a tricky airfield with a short runway and we knew we'd be flying there more in the coming winter, so three of us took the 605 over for familiarisation. It was a spectacularly sunny day, just brilliant, dropping down into valleys between the mountains on approach."

He says the Challenger is still a go-to choice for many of his charter customers.

Challenger 300

In 1999, Bombardier launched the Continental, a clean-sheet, super mid-size business jet powered by Honeywell AS907 turbofans and equipped with Pro Line 21 avionics. First flown in August 2001, the aircraft was delivered from 2004 under the designation Challenger 300, powered by the Honeywell HTF7000. Like the 600-series, the Challenger 300 series features a supercritical wing, but otherwise

One of several options for the Challenger 650's interior Bombardier



it might be considered a Challenger in name only.

However, just like the 'original', the 300 series is revered by pilots and passengers, as Mischa Loeffler explained: "The name 'Challenger' speaks to Bombardier's ambition to challenge, disrupt and re-shape the business jet industry. The 300-series has proven itself as an innovator and a disruptor, and its status as the best-selling business jet in its class certainly makes it worthy of the Challenger name.

"There are also common elements to both Challenger series in the cabin and the cockpit. The Challenger 650 and Challenger 350, for example, share some design elements and aesthetic sensibilities.

In the cockpit, the Pro Line 21 Advanced avionics suite is also common."

Available from 2014, the Challenger 350 introduced HTF7350 engines, delivering more thrust for take-off, and a revised wing. Another favourite with customers, especially fleet operators, it has dominated its class and continued to do so as the first Challenger 3500 was delivered in September 2022. "The Challenger



3500 takes the best elements of the Challenger 350 and transforms the cabin experience," Casia enthused. "It is the most technologically advanced cabin in its class, including voice control, wireless chargers, 4K displays and 24in monitors. But the crown jewel of the Challenger 3500 cabin is our exclusive Nuage seat, the first time a seat of this calibre has been available in the super-midsize segment."

Cabin altitude is also reduced compared to the Challenger 350, for a real improvement in passenger wellbeing, while the flight deck includes an autothrottle

Bombardier celebrated the delivery of its 350th Challenger 350 on July 9, 2020

Bombardier

system. Casia continued: "Thanks to its precise power management and the accuracy of speed control, operators will be able to take full advantage of what the aircraft has to offer in terms of fuel efficiency and flight performance while it will also provide additional safeguards."

Bombardier makes much of the fuel efficiency and sustainability of its latest designs and the Challenger 3500 follows the Global 7500 as only the second business jet ever to receive an accredited

Environmental Product Declaration, described by Casia as "an open book on the environmental footprint of the aircraft throughout its life cycle."

Between them, the Challengers have gained an unbeatable reputation in the industry. Fleet operators, corporate flight departments, private individuals and military customers continue to find transport and special missions applications for the Challenger lines. The Challenger 3500 continues that legacy with a modernised platform that has sustainability and fuel efficiency at its core. **AN**

Deliveries of the Challenger 650 began in 2015

Bombardier



From the terraces: Cologne

Köln-Bonn Konrad Adenauer (IATA: CGN, ICAO: EDDK) is Germany's sixth busiest airport. More than 12 million passengers passed through the airport in 2019, while it currently ranks as Germany's third largest cargo hub behind Frankfurt/Main and Leipzig/Halle, having handled 967,437 tonnes of cargo in 2021. Located nine miles south of Cologne, the country's fourth largest city, the airport also serves Bonn – once the West German capital. It sits on the edge of the Wahner Heide nature reserve, enabling aircraft to arrive and depart 24 hours a day due to the lack of housing close to the airfield.

The airport boasts excellent transports links to the

surrounding region thanks to a railway station beneath the main car park. This means neighbouring airports, such as Düsseldorf, are within easy reach and can be combined as part of a larger spotting trip to Germany if desired.

Airlines and destinations

Cologne boasts links to 120 destinations in 30 countries served by 30 airlines. Eurowings' short-haul schedules account for the majority of passenger movements, while Ryanair isn't far behind. However, there is a broad selection of other low-cost carriers from Europe and further afield to add some variety, including Wizz Air, Air Arabia Maroc, Corendon Airlines, Pegasus Airlines. Due to the strength of Cologne-Bonn's low-cost offering, legacy carriers are limited to Air Serbia, Egyptair, Iran Air and, unsurprisingly, Lufthansa.

However, this is more than made

Cologne-Bonn Airport's terrace offers excellent views of a broad selection of passenger and cargo aircraft, as **Gary Morris** discovers. Additional photography by **Steve Kilvington** and **Matt Sudol**

up for by the wealth of cargo airlines that frequent the Rhine-Westphalia hub. UPS opened its Köln Air Hub in 1986 and has since turned the airport into its biggest European centre. The cargo giant connects its Louisville, Kentucky hub with the German facility using Boeing 767-300ER(F)s as well as both the 747-400F and 747-8F, while the company's white, brown and gold widebodies also fly to a diverse selection of destinations including Shenzhen, Bangkok/Suvarnabhumi, Dubai, Newark/Liberty, Istanbul, Madrid, London/Stansted, East Midlands, Malmö and Paris.

FedEx Express also has a major presence at Cologne, with regular 777F services to its largest US and European sorting facilities at Memphis, Tennessee and close to Paris/Charles de Gaulle. Many other freight airlines feed into FedEx's and UPS' operations at Konrad Adenauer, among them Star Air and its 767s, European Air



Single-aisle jets such as this Luftwaffe Airbus ACJ319 can be photographed using a focal length of around 350mm on a full-frame DSLR camera Steve Kilvington

Military visitors from elsewhere in Germany and further afield are frequent visitors. This LTG 62 Airbus Military A400M was visiting from Wunstorf Air Base, Lower Saxony

Gary Morris



Right: The terrace's central position offers the opportunity to capture moments, such as the pushback of this Malta Air Boeing 737-800, 9H-QEL (c/n 44831), in far greater detail than at more remote locations on the perimeter

Matt Sudol

Transport, Bulgaria's CargoAir, Swiftair, ASL Airlines, Bluebird Nordic and Tunis-based Express Air Cargo. Like at many other airports, the majority of cargo movements arrive and depart either early morning, late evening or at night.

Executive Transport

As well as a host of low-cost and full-service airlines and a bustling cargo apron, Cologne-Bonn Airport is also home to the Luftwaffe's Flugbereitschaft des Bundesministeriums der Verteidigung otherwise known as the German Air Force's Executive Transport Wing (ETW). The unit was formed in 1957 and moved ►





Left: An Airbus A320ceo, D-AEWG (c/n 7121), is framed against Cologne-Bonn's cargo centre as it taxis out for departure. This image was taken with a 200mm lens on a full-frame camera Steve Kilvington

Below left: The German Air Force has recently inducted a pair of Airbus A321LRs. While used for troop transport and aeromedical evacuation missions, they are operated by the air arm's Executive Transport Wing, based at Cologne-Bonn Matt Sudol

Airbus A340s, which are set to be replaced with three ACJ350-900s. At the time of *Aviation News* going to press, one of these VIP-configured jets had been delivered. Additionally, the airport is a forward operating base for the NATO Multinational Multi-Role Tanker and Transport Fleet (MMF).

While the comings and goings of military aircraft are much harder to predict, the ETW aircraft were active during this visit, with several aircraft flying each day. However, both domestic and foreign military aircraft are frequent visitors.

Terrace observations

There are several locations around the airfield perimeter that allow for photography, but the Visitors' Terrace at the top of Terminal 1 is arguably the best. With great views to the south across the majority of the terminal and cargo areas, it provides a good vantage point for arrivals and departures on Runway 14L/32R, to the east of the terrace. Aircraft using the airfield's other two runways, 14R/32L and 25/07, are visible, but are more distant, as are the general aviation ramp and the military areas beyond.

In the morning, the sun rises beyond 14L/32R resulting in backlit images, but this improves as the day wears on with much better light in the afternoon and evening.

To get to the terrace from Terminal 1, there is a staircase at Stern C or a lift from staircase area four, which gives step-free



to its present base in April 1957 as part of Lufttransportgeschwader 62 (LTG 62) which now flies Airbus Military A400Ms from Wunstorf Air Base.

It became an independent unit in April 1963 and now flies a fleet of six Bombardier Global 5000/6000s for short- to medium range governmental air transport and

a trio of ACJ319s including one example configured for Open Skies missions. It also operates three Airbus A321s, comprising two A321LRs delivered new in summer 2022 and a 22-year-old former Lufthansa CEO, which are deployed on medium-range governmental air transport missions as well as troop transport and aeromedical evacuation sorties. The largest members of the fleet is a pair of soon-to-be-retired



UPS opened its Köln Air Hub in 1986 and the cargo giant now operates regular widebody flights from the German airport to destinations in Asia, North America, the Middle East and Europe
Steve Kilvington

Right: Best known for its UPS Air Hub, Cologne is also a focus city for FedEx Express
Steve Kilvington

Below right: Prime Air Boeing 737-800, EI-AZB (c/n 29925), operated by ASL Airlines Ireland for the online giant, taxies on to stand
Gary Morris

access to the fifth floor. The observation area is split over three levels with the top level giving the best and least interrupted views. The lowest level is glazed, which hinders photography. Seating is available on all three floors and there are canopies on the top level to shield visitors from inclement weather.

Officially, the Visitors' Terrace is open from 06.30 to 22:00 each day, however this doesn't appear to be a hard and fast rule as on one occasion during our visit, it did not open until 08:30am. The Cologne Bonn airport website has details of the opening times, and it is worth checking before your visit to make sure it is not closed for any special events. That being said, the Visitors' Terrace page does refer to COVID restrictions and closures in May 2018, so it isn't clear how often it is updated. There is no charge to access the terrace, nor are there any security checks to pass through, and several food and drink outlets can be found a short distance away via the lift.

For more information on the facilities, visit www.cologne-bonn-airport.com/en/airport/services-for-visitors

Photographer's view

The majority of passenger movements pass in front of the terrace on the closest taxiway, although some general aviation aircraft use runway 14R/32R, which makes photographing them more difficult due to the distance and the airport infrastructure in the way.

An Airbus A320 or Boeing 737 landing on Runway 14L/32R requires a focal length of around 350mm on a full-frame 35mm



DSLR camera, while taxiing narrowbody airliners will need a lens of up to 200mm on a full-frame camera.

The cargo ramp can also be seen clearly from the terrace with jets parked on the closer stands – E09, E10, E12 and E13 – easy to photograph. The view of the cargo ramp is excellent, especially in the dark.

For visitors thinking of spending several days at the airport, there are two hotels

nearby: Leonardo Hotel Köln Bonn Airport and Moxy Cologne Bonn Airport.

Cologne Airport is well worth a visit for people who collect registrations as well as those more interested in photography as its terrace offers easy viewing of a broad variety of passenger, cargo, business and military aircraft. Additionally, very reasonably priced flights are available from a handful of UK airports. [AN](#)





Air Base Movements

A selection of the most interesting aircraft to visit air bases in the UK recently

MoD BOSCOMBE DOWN

25/10 02/709-FD, 03/709-FE, 05/709/FG,
08-709-FJ & 10/709-FL PC-21s EPAA00.315,
French AF.

RAF BRIZE NORTON

1/10 07 blue C-27J Lithuanian AF. 3/10
0010/F-RBAC A400M ET01.061, French AF n/s.
6/10 556 A320-214(CJ) Royal Air Force of Oman;
N67AU LM-100J Pallas Aviation. 7/10 044/F-UJCJ
A330-MRTT French AF. 11/10 026 C-295M Polish
AF n/s. 17/10 047/F-UJCM A330-MRTT French
AF. 18/10 09-0042 & 11-0060 CV-22Bs 7th SOS,
352nd SOW, USAF. 19/10 1505 C-130E Polish
AF. 21/10 130617 CC-130J 436 Sqn, RCAF. 27/10
177705 CC-177 429 Sqn, RCAF. 30/10 0841
C-295M Czech AF. 31/10 ZP806 Polaris MRA1
120/201 Sqns, RAF dep 3/11.

RAF CONINGSBY

4/9 021 C-295M 13 ELTr, Polish AF n/s. 5/9
ZM705 AH-64E 662 Sqn, AAC. 20/9 ZB134 Hawk
167 JHTS. 19/10 ZM149/015 F-35B 207 Sqn, RAF

n/s; ZP805 Polaris MRA1 120/201 Sqns, RAF n/s.
28/10 G-ANAF C-47B Aero Legends arrived on
loan to BoBMF.

RAF COSFORD

21/10 XX743/EF Jaguar GR1 ex DSAE, Cosford dep
by road to Moravia Museum at Kinross

RAF CRANWELL

12/9 264 PC-9M FTS, Irish Air Corps n/s.

RNAS CULDROSE

5/9 1118 M-28B 43.BLotM, Polish Navy, dep 9th.

RAF FAIRFORD

21/10 60-0002/LA B-52H 73rd BS, AFRC, dep
31st.

RAF LAKENHEATH

3/10 T.24-01/452-01 A330-202 452 Esc, Spanish
AF. 6/10 11-5738/RS C-130J-30 37th AS, 86th
AW, USAF also 7th. 13/10 FA-102 & FA-121
F-16AMs & FB-15 F-16BM Belgian Defence - Air

Component. 26/10 20-5581 & 20-5583 F-35As
arrived on delivery.

RAF LEEMING

13/10 T-786 PC-24 LTDB, Swiss AF. 17/10
MM81781/EI-704 ICH-47F 28 Gr, Italian Army;
MM81565/EI-248 UH-90A 27 Gr, Italian Army
& MM81629/3-57 MH-60A Grupelicot 4, Italian
Army all dep, present since 29/9. 18/10 ZM706
AH-64E 3 Regt, AAC. 19/10 MM62196 C-130J-30
46 BA, Italian AF n/s, collected A-129D MM18407/
EI-937 49 Gr, Italian AF.

LEUCHARS STATION

15/9 C-GLTO/069 & C-GVTA/009 Alpha Jets
Top Aces. 20/9 84-0087 C-21A 76th AS, 86th
AW, USAF. 6/10 02-1102 C-17A 758th AS, AFRC
dep 10/10. 12/10 ZZ394 Wildcat AH1 847 NAS,
RN n/s.

RAF LOSSIEMOUTH

10/10 ZZ387 & ZZ394 Wildcat AH1s 847 NAS, RN
both dep 26th. 13/10 N-175 NH90-NFH 860 Sqn,

This Royal Canadian Air Force Lockheed Martin CC-130J Hercules, 130617 (c/n 382-5690),
was one of the highlights of the RAF Northolt Night Photoshoot on October 13 Paul Goldsmith





This Top Aces Dassault-Dornier Alpha Jet, C-GVTA (c/n 009), was one of a pair to visit Leuchars Station on September 15 Steve Lynes

Royal Netherlands AF, dep 19th. 25/10 84-0087
C-21A 76th AS, 86th AW, USAF.

RAF MARHAM

3/10 ZZ385 & ZZ390 Wildcat AH1s 1 Regt, AAC, both dep 5th. 19/10 N-175 NH90-NFH 860 Sqn, Royal Netherlands AF.

RAF MILDENHALL

3/10 68-01609 C-130E 222 Filo, Turkish AF dep 5th; 16-46020 KC-46A 133rd ARS, NH ANG dep 9th; 18-46042 KC-46A 22nd ARW, dep 6th; 87-0169/MO, 87-0173/MO, 87-0183/MO, 87-0198/MO, 87-0202/MO, 87-0207/MO, 87-0209/MO, 87-0210/MO, 88-1678/MO, 88-1697/MO, 88-1699/MO & 90-0277/MO F-15Es 389th FS, 366th FW, USAF all dep 6th, except 88-1699 which dep 14th. 6/10 11-5719/DM & 13-5782/DM HC-130Js 7th RQS, USAF both n/s. 8/10 11-5738/RS C-130J-30 37th AS, 86th AW, USAF. 10/10 15-46069 KC-46A 305th AMW, USAF n/s, also 12th-14th; 16-46022 KC-46A 22nd ARW, USAF dep 15th, also 26th; 18-46049 KC-46A 22nd ARW, USAF also 12th-14th. 11/10 16-5835 AC-130J 73rd SOS, USAF. 12/10 87-0193/SJ, 88-1671/SJ, 88-1703/SJ, 88-1708/SJ, 89-0474/SJ, 89-0483/SJ, 89-0478/SJ & 89-0503/SJ F-15Es 4th FW, USAF all dep 14th; 20-5933 MC-130J AFSOC. 13/10 87-0181/SJ, 87-0192/SJ, 88-1670/SJ, 89-0487/SJ, F-15Es 4th FW, USAF all dep 15th. 14/10 168205 UC-12W USMC. 18/10 130617 CC-130J 436 SQN,

RCAF. 19/10 165349/AX C-130T VR-53, USAF. 21/10 11-5735 AC-130J AFSOC. 22/10 16-46018 KC-46A 133rd ARS, NH ANG. 23/10 169792 C-40A VR-51, USN. 24/10 17-028 & 17-029 F-15QAs Qatari AF on delivery, both dep 26th. 27/10 60-0353 KC-135R arrived on delivery to 100th ARW. 28/10 87-0044 C-5M 60th/349th AMW, USAF, unloaded AH-64Es ZM720, ZM724 & ZM726.

RAF NORTHOLT

7/10 283 PC-12NG 104 Sqn, Irish Air Corps; 9/10 168205 UC-12W VMR-4, USMC. 13/10 130617 CC-130J 436 Sqn, RCAF; 280 PC-12NG 104 Sqn, Irish Air Corps; G-BVGE Whirlwind HAR10 ex XJ729; 258 Learjet 45 102 Sqn, Irish Air Corps. 24/10 01-0076 C-37A 76th AS, 85th AW, USAF n/s. 27/10 4/F-RAFQ Falcon 900 ER60, French AF.

RAF SHAWBURY

1/9 ZZ500 & ZZ501 Avenger T1s 750 NAS, RN; ZJ208 & ZJ226 Apache AH1s 4 Regt, AAC. 21/9 ZH839 Merlin HM2 814 NAS, RN. 26/9 ZJ990/AA & ZJ992/AB Merlin HC4As 846 NAS, RN not n/s. 29/9 C-FPSH Do.228-202 Summit Air.

RAF VALLEY

17/10 XX157 & XX332 Hawk T1s dep by road to Ramco, Skegness after completion of RTP. 18/10 XX200/CO Hawk T1 entered RTP process. 26/10 XX161/161 Hawk T1 arrived by road from

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Culdrose, for ground instructional use with Babcock. 27/10 ZB131, ZB132 & ZB136 Hawk 167s JHTS.

RAF WADDINGTON

3/10 81 Xingu EAT319, French AF. 6/10 084/YH Xingu EAT319, French AF; J-3082, J-3083, J-3085, J-3087, J-3088, J-3090, J-3091 F-5Es Patrouille de Suisse, all dep 10th; T-751 Challenger 604 LTDB, Swiss AF. 7/10 87 Xingu EAT319, French AF. 10/10 T-721 Beech 350C & T-786 PC-24 LTDB, Swiss AF. 11/10 280 PC-12NG 104 Sqn, Irish Air Corps; 103/YT Xingu EAT319, French AF. 12/10 099/YP Xingu EAT319, French AF. 17/10 078/YE Xingu EAT319, French AF; 18/10 19/10 MM62196 C-130J-30 46 BA, Italian AF. 20/10 MM55097/4-24 TF-2000A 4 St, Italian AF. 21/10 MM6330/4-56 F-2000A 4 St, Italian AF finally dep, had been u/s since end of Exercise Cobra Warrior. 24/10 992 KC-130R Chilean AF dep 26th.

AAC WATTISHAM

28/10 ZM720, ZM724 & ZM726 AH-64Es arrived by road from Mildenhall.

RNAS YEOVILTON

10/10 N-175 NH90-NFH 860 Sqn, Royal Netherlands AF. 20/10 MM62211 Avanti Italian Navy. 26/10 02/709-FD, 03/709-FE, 05/709-FG, 08-709-FJ & 10/709-FL PC-21s EPAA00.315, French AF.

The Irish Air Corps continued its long-running support of events at RAF Northolt, with Pilatus PC-12 Spectre, 280 (c/n 1898), paying a visit to the London airfield on October 13 Paul Goldsmith





Airport Movements

A round-up of notable aircraft visiting UK airports

ABERDEEN AIRPORT

1/9 9H-TGR CitationJet 525B CJ3. OO-HHO Falcon 8X. 3/9 N75EK Falcon 2000EX; F-GRNT Merlin IIIB Airlec Air Espace; F-HFTV Beech 200. 4/9 OY-HWP AW139 Blackbird Air Charter. 6/9 OY-JRU Citation 560XL; EI-JMMM Global XRS. 7/9 VQ-BXD Falcon 8X. 8/9 N722NK Gulfstream IVSP; D-CJPG Learjet 35A; D-BERT Falcon 2000EX; D-FWIT PC-12NG. 9/9 SE-MDC ATR 72-212A Danish Air Transport; OY-SWO Falcon 2000S; LX-FHL PC-12NGX. 10/9 9K-AKO A320-251N Kuwait Airways. 11/9 OK-JRS Citation 680 Sovereign+; SE-RNR Challenger 350. 12/9 OY-JPJ Citation 650 III; OE-FME Commander 690A. 13/9 08-0050 CV-22B 7th SOS, 352nd SOW, USAF. 14/9 OO-PCA PC-12NGX. 15/9 HB-ZSC Robinson R44. 21/9 D-ARIE Falcon 7X. 24/9 84-00181 C-12U-3 204th MIB, US Army; 09-0042 CV-22B 7th SOS, 352nd SOW, USAF; D-AJET Legacy 650. 25/9 OY-CRV ATR 72-500(F) on delivery to Loganair, to become G-LMVR. 26/9 F-GKOM & F-GOFX Falcon 900Bs; C-FBKD Challenger 605; N516MF Falcon 900EX. 27/9 VQ-BXD Falcon 8X. 29/9 VP-CUA Gulfstream G550.

BIRMINGHAM AIRPORT

1/10 OK-PHM Phenom 300. 2/10 OK-DJB Nextant 400XTi; VP-BZE Falcon 7X. 3/10 D-FBOX & OH-RJD PC-12NGXs; PH-CGV Falcon 2000LX; T7-MCDAN Challenger 604. 4/10 UR-CKL An-12BK Cavok Air; VP-BGV 737MAX-8 Lease Co to STS Aviation. 5/10 A6-YMA Gulfstream G550; D-BHDC Praetor 600; OK-BBA Beech 90GTx. 6/10 HB-JSF Challenger 650. 7/10 D-ATON & N479W Falcon 7Xs; OO-WLP Global 5500; VH-PPD Falcon 900C. 8/10 EJ-REVA Hawker 800XP; SE-RGB Global XRS. 9/10 D-BOSS Praetor 600. 11/10 D-CAAE Learjet 45; I-TOPD Beech 400XP; OE-GMM Citation 680 Sovereign; OO-CCJ CitationJet 525 CJ1+. 12/10 N524EA Gulfstream G650ER; N833QS Citation 700 Longitude. 13/10 9H-JCE HondaJet; EC-LAE

Ex-S7 Airlines Boeing 737 MAX 8, VQ-BGV (c/n 44297), was returned to Aviation Capital Group in early October. The single-aisle jet was ferried from Novosibirsk/Tolmachevo to Birmingham via Istanbul, arriving in the West Midlands on October 5 AirTeamImages.com/Dave Sturges

Gulfstream G200; EC-LPG CRJ1000 Air Nostrum; N602EE Praetor 600; N688CB Gulfstream G550; N888WL Falcon 2000EX; OH-BSL PC-12NG; SP-CUD Learjet 75. 14/10 LX-TRO Legacy 650. 15/10 HA-LZQ A321-271NX Wizz Air; N661CH Gulfstream G650ER; PH-IWS Falcon 7X. 16/10 LZ-DBT A320-232 Corendon Airlines; SP-LWF 737-86N LOT, to STS Aviation. 17/10 D-AEUA A321-211(P2F) Lufthansa Cargo. 18/10 TC-SPJ 737-82R SunExpress. 19/10 D-CIRP Do.328-120 MHS Aviation; EC-MRL Gulfstream G550; F-HETS Beech 1900D Chalair; HA-LZW A321-271NX Wizz Air; OH-ZRH PC-12NG. 20/10 5Y-FDR Citation 550 Bravo; D-ARMY Legacy 650E; HB-JST Falcon 7X; OO-GLM Citation 680 Sovereign; YL-CSG A220-300 Air Baltic, ops for Eurowings; YU-TBA Citation 560XLS+. 21/10 D-ABMR Gulfstream G500; OY-NBS PC-12NG; UR-CNN An-12B Cavok Air also 24th. 23/10 SP-ESH 737-81M Enter Air. 24/10 EC-NXV 737-8FE(BCF) Swiftair; F-HGET PC-12NG; I-ZACK Citation 560 Encore+. 25/10 D-AEUC A321-211(P2F) Lufthansa Cargo; F-HOND HondaJet; N702HT PC-24; TC-SPI 737-82R SunExpress. 27/10 D-AFAA Challenger 604; F-GLNE Beech 1900D Twin Jet; N827Z Gulfstream G550; OE-HUB Citation 750 X; OK-KIN CitationJet 525B CJ3; UR-CQV An-26B Vulkan Air. 28/10 7T-VJJ 737-8D6(BCF) Air Algerie; LX-EVM Falcon 2000EX; TC-SEY 737-8HC SunExpress; VP-BMP Gulfstream G650. 29/10 LY-MLK A320-232 SunExpress; F-HLTT HondaJet; SX-FDK Citation 650 III. 30/10 OK-AST Citation 560XL. 31/10 G-UZME A321-251NX easyJet Gatwick diversion; I-TOPF Beech 400XP.

BLACKPOOL AIRPORT

4/8 N906AF MD900. 6/8 TC-ACN Global XRS. 11/8 D-CDGM Citation 560XLS+. 12/8 D-ICBA

CitationJet 525A CJ2. 13/8 D-CRTP Citation 560XLS+. 16/8 OK-JFA Nextant 400XT. 18/8 F-HASP DA40D. 20/8 D-CMXM Phenom 300. 22/8 CS-DOS CitationJet 525B CJ3. 24/8 2-FFLY Cirrus SR22T. 25/8 OE-GKW Gulfstream G100. 28/8 CS-DOG Citation 510 Mustang. 30/8 N133KQ Quest Kodiak 100; TC-RSC Learjet 45. 31/8 PH-WMM CitationJet 525 CJ1.

BRISTOL AIRPORT

1/8 D-CQAA Learjet 45. 4/8 D-CPMU Learjet 60; EC-KPB Citation 560XLS; HB-LYY Cessna 414A; OK-DJB Nextant 400XTi. 5/8 D-CMED Learjet 55. 6/8 C-GRJP Gulfstream G100; I-DEUM CitationJet 525A CJ2. 27/8 D-AFAD Challenger 604. 8/8 HB-VAJ Phenom 300. 10/8 87 Xingu French Navy. 11/8 HB-VTW CitationJet 525M2. 13/8 LZ-LAB A320-231 European Air Charter f/v. 15/8 OH-WWW PC-12NG. 16/8 OE-GKW Gulfstream G100. 19/8 D-CVMS PC-24; F-HICU Hawker 900XP. 20/8 D-GEHB PA-30-160. 22/8 2-FIFI Beech 250. 24/8 N30LB Falcon 7X. 26/8 D-BEER Legacy 500; D-EESU DA40NG; D-IPPY Avanti EVO. 27/8 D-BFIL Legacy 450; D-EAIT Mooney M.20K. 28/8 I-ZACK Citation 560 Encore+; 9A-JSD CitationJet 525A CJ2. 29/8 2-MATO Challenger 601-3A. 30/8 LX-LCB PC-24.

EAST MIDLANDS

1/10 9H-CCH Challenger 650. 2/10 9H-JAD Challenger 850. 3/10 9H-RFX Legacy 500. 4/10 F-HANE Avanti. 5/10 OE-GBD Gulfstream G100. 8/10 N390CM 767-381(ER)(BDSF) ABX Air f/v. 9/10 D-CMSL PC-24. 10/10 EI-FAS ATR 72-600 for painting for Air Serbia. 11/10 LX-FPF CitationJet 525B CJ3+. 12/10 UR-82008 AN-124-100M-150 Antonov Airlines; SX-DGP A321-232 Aegean

Airlines for painting all white; 9H-LOA A320-214 Lauda Europe, Stansted diversion; HB-IGV Falcon 50EX. 13/10 LX-RSQ Learjet 45; VQ-BOK Global 7500. 14/10 SE-RNP CitationJet 525B CJ3+. 16/10 9H-IRC Global 6000; OE-IVZ A320-214 EasyJet Europe for painting for MyAirline.MY. 17/10 VP-CMM Global 6000; N884FD 777-FS2 FedEx. 18/10 HB-AFW ATR 72-202(F) Zimex Aviation. 19/10 G-RUKG 737-8AS Ryanair UK Stansted diversion. 23/10 9H-DFS Falcon 50; 9H-KFX Praetor 600; OO-CLA CitationJet 525C CJ4; SE-DJL Falcon 7X. 24/10 TF-AMU 747-48EF Astral Aviation; OO-SSR A319-112 Brussels Airline for painting; N889FD 777-FS2 FedEx. 26/10 166378 C-37B VR-1, USN; HB-JSG Challenger 650. 27/10 D-AAUL 777-F1H Aerologic. 28/10 OE-IZU A320-214 EasyJet Europe. 29/10 OK-CAA Citation 560XL; 9A-JET CitationJet 525A CJ2.

GATWICK AIRPORT

3/10 LN-NIP 737-86N Norwegian. 10/10 HA-LTJ A321-321 Wizz Air. 12/10 D-FULI & G-ISJE PC-12NGXs. 14/10 EC-NVP 737-8AS Air Europa; EI-RZC 737MAX-8 Neos ops for TUI Airways. 15/10 D-IPPY Avanti EVO; 9H-JIVA Falcon 2000S. 19/10 TC-SPD 737-8AS SunExpress. 20/10 D-CBBB Citation 560 Encore+. 22/10 CN-NMQ A320-214 Air Arabia Maroc; TC-CJB Legacy 650 Turkish Ministry of Health. 24/10 9H-HUB A320-232 Airhub Airlines ops for Air Malta. 25/10 G-NEWG 737-76N 2Excel Aviation. 26/10 N4064J A321-271NX JetBlue Airways f/v; 9H-WAL A321-271NX Wizz Air Malta. 27/10 9H-WAA A321-271NX Wizz Air Malta; 84-00181 C-12U-3 204th MIB, US Army. 29/10 9H-WAG & 9H-WAM A321-271NXs Wizz Air Malta; N83WG Global Express; T7-DYN Challenger 604 f/v. 30/10 TC-SPJ 737-82R SunExpress; VN-A818 787-9 Bamboo Airways; 9H-WAJ A321-271NX Wizz Air Malta f/v. 31/10 9H-WAC A321-271NX Wizz Air Malta.

GLASGOW/PRESTWICK

1/9 130606 & 130617 CC-130Js 436 Sqn, RCAF remain based at CFB Prestwick; 1223 C-17A UAE AF; G-DHLW 777-F6N DHL delivered ex Chevron to EMA; 04-4128 C-17A 305th/514th AMW, USAF; 01-0029 C-37A 76th AS, 86th AW, USAF; 168980 C-40A VR-58, USN; 164762/JW C-130T VR-62, USN; LY-BJZ 737-8EH Air Ukraine colours ex UR-PSX, to Chevron hangar; T7-DAT Avanti II; OE-GBH Phenom 300. 2/9 09-9209 C-17A 62nd/446th AW, USAF; 00-0175 C-17A 305th/514th AMW, USAF; 05-5145 C-17A 729th AS, AFRC; M-ODUS Falcon 50EX; 18-5921 C-130J-30 165th AS, Ky ANG; 4K-SW008 747-4R7F Silk Way West Airlines; 92-1454, 93-1455, 95-6709 & 96-7325 C-130Hs 186th AS, Mt ANG. 3/9 1301 A330-MRTT UAE AF; 08-8196 C-17A 62nd/446th AW, USAF. 4/9 00-0177 C-17A 137th AS NY ANG; N960EE TBM 960; A41-208 C-17A 36 Sqn, RAAF. 5/9 HB-FRA PC-12NGX c/n 2201 on delivery; N5000X Gulfstream V; N588HP Falcon 900LX. 6/9 M-ABRB Learjet 45 Ryanair new comms aircraft. 7/9 03-3125 C-17A 305th/514th AMW, USAF. 8/9 07-7173 C-17A 436th/512nd AW, USAF; M-CUZU Falcon 900EX; HB-FWO PC-12NGX; 165378/JW C-130T VR-62, USN; LX-JVC & PH-EBM PC-24s; 140116 CP-140 14 Wing, RCAF dep 10th as top cover for CF188. 9/9 188769 CF-188 433 Sqn, RCAF with; 15005 CC-150T 437 Sqn,

RCAF both dep n/s; 95-0102 C-17A 437th/315th AW, USAF; 9H-QAI & 9H-QDA 737-8AS Ryanair to hangar. 11/9 02-1110 C-17A 62nd/446th AW, USAF dep 12th; N111CQ Gulfstream G450; 11-00282 MC-12S-G B/15th MIB, US Army; 9H-BFS A330-202 Maleth Aero; KAF342 C-17A 41 Sqn, Kuwait AF. 12/9 N193WS HondaJet: 15+03 A319-133(CJ) FBS, German AF training; 03-3120 C-17A 62nd/446th AW, USAF. 13/9 165313/AX C-130T VR-53, USN; N814CV TB-20GT; LY-BJX 737-8QS Air Ukraine colours ex UR-PSP, to Chevron; 900528 C-26D AOD Naples, USN; 59-1523 KC-135R & 58-0077 KC-135T 171st ARW, Pa ANG; 9H-QAJ 737-8AS Ryanair Malta to hangar. 14/9 N133KQ Quest Kodiak 100. 15/9 N5000X Gulfstream G5; C-GMSY Learjet 45; 9H-TQZ A340-313 HI Fly Malta; N113CS Gulfstream G650; 08-8192 C-17A 62nd/446th AW, USAF. 16/9 165349/AX C-130T VR-53, USN; N936CA 747-446(BCF) National Airlines. 17/9 N729CA 747-412(BCF) National Airlines; 10-0221 C-17A 437th/315th AW, USAF; 2-FIFI Beech 250; 166696 C-40A VR-57, USN; 9H-QEG 737-8AS Ryanair Malta to hangar, dep 21st. 18/9 144618 CC-144C 412 Sqn, RCAF. 19th 97-0041 C-17A 437th/315th AW, USAF; C-GHCW Citation 560 Ultra; 15002 CC-150 RCAF dep 20th. 20/9 07-7178 C-17A 437th/315th AW, USAF; 98-0057 C-17A 137th AS, NY ANG; HB-FRH PC-12NGX PCH c/n 2208 on delivery; N21UC Gulfstream G550. 21/9 G-UNET 747-433(BDSF) One Air; 9H-QED 737-8AS Ryanair Malta to hangar, dep 25th. 22/9 N499WR Global 5000; 01-0030 C-37A 76th AS, 86th AW, USAF; 09-0640 & 09-0641 MC-12Ws USSOC; LN-AWF Learjet 45. 23/9 07-7179 C-17A 60th/349th AMW, USAF; G-EUYY A320-232 British Airways diversion due to drone on Glasgow approach; YR-TRO Legacy 600. 24/9 96-0005 C-17A 137th AS, NY ANG; 06-6162 C-17A 60th/349th AMW, USAF; OH-TFA Phenom 300; N21UC Gulfstream G550. 25/9 00-0183 C-17A 156th AS, NC ANG; N828KD Gulfstream G500; LX-LXL Falcon 8X; 152/64-IP CN235M-200 ET01.062, French AF; OH-SWI CitationJet 525B CJ2+; OH-RBX Citation 560XL; UR-CNN An-12B Cavok Air; 9H-QEF 737-8AS Ryanair Malta to hangar. 26/9 99-0167/AK C-17A 144th AS, Ak ANG. 27/9 63-8884 KC-135R USAF 6th ARW, dep 1/10. 28/9 58-0038 KC-135R 328th ARS, AFRC; 10-0217 C-17A 62nd/446th AW USAF. 29/9 05-5140 C-17A 729th AS, AFRC; OO-SLM Citation 560XLS; OO-PCA PC-12NGX; 15005 CC-150 RCAF; 9H-QAQ 737-8AS Ryanair Malta to hangar. 30/9 06-6154 C-17A 60th/349th AMW, USAF; EI-GRN DA-42NG; 15001 CC-150 437 Sqn, RCAF VIP cols.

GUERNSEY AIRPORT

1/8 HB-LVB DA42NG; D-ENYB Cirrus SR20. 2/8 N70AS Islander; EC-LYJ ATR 72-500 Swiftair. 3/8 SP-CIT CitationJet 525 CJ1. 5/8 F-BOKH DR.220; OH-SSS PC-12NG; D-EABY Mooney M.20J. 7/8 HB-KLA Robin DR.400/140B. 8/8 PH-KFB DA42NG; EC-NRA PC-24. 9/8 HB-IBJ Falcon 2000LX; PH-OLL Socata TB-20. 10/8 F-HUMM DA40NG; 2-RUFF Quest Kodiak 100 on delivery; OO-GHI Cessna T.210N. 11/8 N135GB Cirrus SR20, to ASG, to become G-YYES; F-GGTL PA-46-310P; F-BGBH TBM 850. 13/8 PH-PDN Cessna 182P; OO-AYZ Beech 36. 14/8 F-HBTB Citation 525M2; 9H-TMD Citation 560XL. 15/8 D-EJFF PA-28R-200; EC-INV ATR 72-212(F) Swiftair. 16/8 D-EAPS Beech 24R; D-FWIT PC-12NG. 16/8 PH-DKF Cessna F.172P. 18/8 T7-PET Phenom 300; HB-PRD PA-32R-301. 20/8 D-EHID Aquila A211 o/s; OO-SKU Robin DR.401/155cdi. 21/8 N542GP Falcon 7X. 24/8 F-GCUM Robin DR.400/180. 26/8 HB-KHK Columbia 400. 27/8 F-GKVE Socata TB-20; F-GBQB Cessna F.182Q. 28/8 D-ELLT Cirrus SR20. 29/8 F-BTZZ Robin DR.400/160. 30/8 F-HYAH DA40NG. 31/8 OY-MPV PA-46-M600TP.

LONDON/HEATHROW

1/9 9H-JFX Praetor 600; 9H-MLD & 9H-MLL A320-214s Eurowings. 2/9 9H-LDN Global 6000; B-652L Falcon 7X. 4/9 HS-TWB 787-9 Thai Airways International; N650ER Gulfstream G650ER. 5/9 SX-NAK A321-271NX Aegean Airlines. 7/9 B-304N A350-941 China Eastern Airlines. 9/9 N8290V 787-10 Vietnam Airlines. 12/9 OO-SNO A320-214 Brussels Airlines. 13/9 B-8863 A330-343E China Eastern Airlines. 14/9 C-FAJA 787-9 WestJet. 17/9 G-ZBLF 787-10 British Airways on delivery; TF-ICS 737MAX-8 Icelandair. 20/9 SX-NAG A321-271NX Aegean Airlines. 21/9 G-EXTB Dash 8-402NG Flybe. 22/9 OY-PGA Falcon 7X. 23/9 F-HDSJ A319-112 Amelia International; G-MCGK S-92A Bristow Helicopters; N786QS Challenger 350. 24/9 A6-XWF A350-1041 Etihad Airways. 27/9 SX-NAL A321-271NX Aegean Airlines. 28/9 A6-XWC A350-1041 Etihad Airways; EI-NSA A320-271N Aer Lingus. 29/9 HS-TWA 787-9 Thai Airways International.

JERSEY AIRPORT

1/8 F-HTIR PA-39-160C/R; I-SIMI PA-28R-180. 2/8 HB-LYY Cessna 414A. 3/8 HB-FVD PC-12NG. 4/8 C-FXFY Challenger 350; D-CCCB Learjet 35A. 5/8 01-AJF/F-JGRK Aerosport WT9 Dynamic. 6/8 F-HTSY PA-28R-201; HB-FOW PC-12; HB-KLA Robin DR.400/140B. 8/8 CS-DOS CitationJet 525B CJ3. 9/8 9A-JSD CitationJet 525A CJ2;



This Nigerian Air Force Gulfstream 550, 5N-FGW (c/n 5310), visited Manchester on October 10, flying from Farnborough and returning to the Hampshire airfield later that day Richard D Porter

D-ERAQ Cirrus SR22; F-HAJL PA-32R-301T; F-HASP DA40D; HB-PIK PA-28R-201T. 11/8 D-EWYL Socata TB-20. 12/8 D-EHPB PA-28RT-201T; F-GSNZ Socata TB-20; F-HACF Aquila A210. 13/8 2-WOWS Cirrus SF50; F-GUST Cessna 421B. 14/8 D-CJMS PC-24. 15/8 9H-ZFX Legacy 500. 16/8 N70AS BN-2B-20. 17/8 HB-FZZ PC-12NG. 18/8 9H-JCE HondaJet; D-EJFF PA-28R-200; F-HABQ DA40D; F-HJFP PC-12NG. 19/8 9H-IFX Praetor 600; D-FCOB PA-46-M500. 20/8 D-EHID Aquila A-211; D-ESRR Cessna 172R; F-HGJC Robin DR.400/140B. 21/8 PH-HJG Socata TB-20. 22/8 D-CNMB Learjet 45. 23/8 CT-05 A400M 15 Wing, Belgian Defence - Air Component. 24/8 F-GTZH Robin DR.400/120; LN-AWB Learjet 45. 25/8 9H-AOA Citation 680A Latitude; F-GFQY Socata TB-20; F-HUMM DA40NG; CT-04 A.400M 15 Wing, Belgian Defence - Air Component. 26/8 D-EAWP Mooney M.20K; D-EMLF Cirrus SR22T; F-GBQB Cessna F.182Q; LN-BEH Cessna F.150L. 28/8 D-MZZY Remos G-3. 29/8 9H-LFX Praetor 600; N209DW Lancair Columbia 400. 30/8 F-HGSM Robin DR.400/160.

LEEDS BRADFORD

1/8 SP-CIT CitationJet 525 CJ1. 2/8 N968FA Gulfstream G650ER. 3/8 N394WJ Global 6000; N102BQ Gulfstream IVSP. 4/8 OE-EHA PC-12NG. 6/8 N613LF Gulfstream G550. 7/8 N718MM Falcon 900EX; F-HMXL Citation 550 II. 8/8 D-CVMS PC-24; HB-LYY Cessna 414A. 10/8 D-IWAW Beech 200. 11/8 F-HGJF PC-12NGX; OE-HUB Citation 750 X. 13/8 OH-CHF Citation 550 II; HA-JEX Citation 650 VI; D-CJPG Learjet 35A; LZ-LAB A320-231 BH Air. 14/8 N111SC Beech N35; 9H-DOM Challenger 850. 16/8 N694GS Gulfstream G650ER. 19/8 LN-NWC Learjet 45. 21/8 N632QS Citation 680A Latitude; YU-PCC Citation 560XLS+. 25/8 N616QS Citation 680A Latitude; PH-DIX PC-12. 26/8 D-CRTP Citation 560XLS+. 27/8 OK-AST Citation 560XL. 29/8 YU-TBA Citation 560XLS+; EC-LPG CRJ1000 Air Nostrum. 30/8 N9527C Gulfstream G650ER. 31/8 EC-LYL Citation 560XLS+.

LIVERPOOL/JOHN LENNON

2/6 F-HROI Avanti II. 3/6 OK-EAS Beech 400XP; PH-ZEZ Beech 200; D-ATWO Challenger 604. 4/6 D-CDIM Learjet 35A; OK-OZZ PC-12; D-CITA Learjet 60. 5/6 LX-FPF CitationJet 525B CJ3+; D-CJMS PC-24; D-CAWX Citation 680 Sovereign. 6/6 LY-FLT 737-522 KlasJet; YU-PAA Legacy 600.



Air Moldova Airbus A319, ER-AXL (c/n 2849), was used by FC Sheriff – a football club based in Tiraspol, Moldova, and part of the unrecognised breakaway state of Transnistria – for their Europa League tie against Manchester United on October 27 Martyn Cartledge

7/6 A9C-BAH Gulfstream G650; D-CHMS PC-24. 8/6 F-HIPE Phenom 300; D-ERDH PA-46-M350. 9/6 TC-RSA Challenger 605; N203CK Gulfstream G450; 10/6 OM-ATN Citation 550 Bravo; A9C-HIA AW139 Bahrain Amiri Flight. 11/6 F-GTZH Robin DR.400/120. 13/6 YU-PNK Citation 560XLS+; 9H-RMD Citation 560XLS. 14/6 UR-CQE An-26B Vulkanair; SX-KKA Legacy 600. 15/6 TC-RSF Challenger 605. 16/6 YU-BZZ Citation 550 Bravo; UR-CIC An-12BK Meridian. 17/6 OH-BSL PC-12NG; PH-JUR PA-32R-301T; 5N-CAB Phenom 300. 18/6 UR-CQD An-26B Vulkanair; OY-MIT CRJ900LR Copenhagen Air Taxi. 20/6 9H-CLG Challenger 850; OK-OKL PA-42-720 Cheyenne 3A Air Bohemia. 21/6 F-HANE Avanti; OO-NZC Cessna 172S; OO-NZV Robin DR.400/135. 22/6 F-GRNT Merlin IIIB Airlec Air Espace; UR-CQV An-26B Vulkanair. 25/6 D-IBBB Premier 1; D-AIRG Legacy 650E; 27/6 9H-MSS Learjet 45. 29/6 OE-GKW Gulfstream G100. 30/6 D-CQAA Learjet 45. 1/7 YU-GIN CitationJet 525 CJ1. 2/7 D-CETB Hawker 750. 3/7 SE-RLP CitationJet 525B CJ3; 9H-HAM Falcon 2000LX. 4/7 F-HLRS Phenom 300; D-CVMS PC-24. 5/7 OE-HOP Gulfstream G200. 6/7 OE-FTF DA42NG; D-BAHB Falcon 2000LX. 7/7 N305TC Gulfstream IV; D-ANCE & EC-KBZ Legacy 650s; EC-LBB Gulfstream G200; EC-KBZ Citation 550 II; YR-IGP Legacy 600. 8/7 HB-JRJ Global 5500; LY-BGD Hawker 850XP. 9/7 C-FPSH Do.228-202 Summit Air; OK-MPM PA-42-720 Cheyenne 3A Air Bohemia. 10/7 I-EPAM Hawker 750XP. 11/7 ES-NSF Saab 2000 NyxAir; C-GOAB Global 6000; CN-TKC Hawker 800XP; S5-CEG CitationJet 525 CJ1; D-CCCA Learjet 35A; EC-JFT Citation 560 Ultra. 13/7 OH-ZRH PC-12NG; 14/7 UR-CEZ An-12B Cavok Air; SE-RHJ Citation 560XL. 15/7 UR-CNN An-12B Cavok Air; LN-AWE Learjet 45; TC-SMY Legacy 600; D-ERAW Mooney M.20M. 16/7 TS-ICA 737-330(QC) Express Air Cargo; EC-KRN Gulfstream G200; UR-CKM An-12B Cavok Air. 17/7 UR-CQV An-26B Vulkanair; OK-AST Citation 560XL; PH-JAD Challenger 850. 18/7 F-HMXL Citation 550 II. 19/7 EI-IKU A320-214 ITA Airways; EC-KVI ATR 72-500 Swiftair also 22nd. 20/7 OK-IMO Beech 400XP; 9H-DOM Challenger 850; TF-FIC 757-23N Icelandair; D-BALL Praetor 600. 21/7 9H-MPW 737-4Q8 Air Horizont; N90FX Global Express; OE-HWJ Citation 750 X also 29th; 9H-JPC Legacy 600; 298/F-RACC DHC-6-300 French AF. 22/7 D-CITO Do.328-110 Private Wings; UR-CBG An-12B Cavok Air; D-BSEA Do.328JET Luxaviation; EC-NLK 737-81M AlbaStar; OK-MPM PA-42-720

Cheyenne 3A Air Bohemia. 23/7 OK-JRE Citation 700 Longitude also 29th; F-HRAM ERJ145EU Amelia International. 24/7 OY-VIK Falcon 7X; PH-MYX Citation 650 VII; 9H-RMD Citation 560XL. 25/7 OK-JFA & OK-NTD Nextant 400XTs. 27/7 D-CAPO Learjet 45. 28/7 OK-BZZ Beech 400A. 29/7 UR-PSF 737-84R Ukraine International; OY-GSB PC-12; LY-BGD Hawker 850XP; D-BOSS Praetor 600; EC-KBL Gulfstream G200; EC-MTV 737-86J AlbaStar; D-CFAZ Learjet 60. 30/7 OY-JPJ Citation 650 III; YR-TYA Citation 560XLS+; UR-PSL 737-9XER Ukraine International; OK-PPP Nextant 400XTi; F-HRGD ERJ145LU Amelia International. 31/7 9H-TEN Phenom 300; OE-GTI Citation 525C CJ4. D-ANNI Lineage 1000

LONDON/BIGGIN HILL

1/4 PH-GHZ Citation 560XL. 3/4 N206QS Challenger 650; N888XM Gulfstream G650. 4/4 N176HS Global 6000; N4868 Challenger 605. 5/4 N165QS Global 6000. 6/4 017 C-295M Polish AF. 8/4 D-EMXM Cirrus SR-22; D-FCRA PA46-500TP; G-TCHI/BS410:PK-A Spitfire T.9 first post-rebuild flight; 2-FFLY Cirrus SR-22T. 9/4 D-FNGX PC-12NG. 10/4 EJ-GABJ BAe.125-800B; LX-ICE Gulfstream G650ER; T7-MYC Citation 525M2. 11/4 D-EBIE PA-28R-200. 12/4 298/F-RACD DHC-6-300 French AF; OE-LVA Gulfstream G500; OK-OZZ PC-12NG. 14/4 9H-RMD Citation 560XL; F-HHCB Falcon 8X; I-MCAM Citation 525M2. 17/4 PH-WOH DA40; PH-ZEZ Beech 200; P4-BFW Global Express. 18/4 C-FTMI Falcon 2000EX; N404RS Global Express; T7-BBK Global 7500. 19/4 HB-NDC Commander 114B; LN-EUJ Citation 680A Latitude; PH-OHM Socata TB-9. 20/4 D-CAAЕ Learjet 45. 21/4 1502 C-130E Polish AF. 22/4 9H-FAB Lineage 1000. 24/4 9H-AMF Global XRS; N66HR Cirrus SF50; N221CB Falcon 50EX; PH-VDH DA62; 9H-SSE Global 6000. 26/4 N24TH Falcon 7X. 27/4 ES-FLG PA-46R-350T; N144S Gulfstream G500; N177LN Cirrus SF50. 28/4 D-FWIT PC-12NG; N543GL Global 6000. 29/4 D-IJPM DA62; TC-DDD Global XRS. 30/4 HB-AZH E190E2 Helvetic Airways; OK-TBE PC-12NG; OK-VOS Gulfstream G500.

LONDON/SOUTHEND

1/9 OE-GBD Astra SPX. 2/9 D-CJBH PC-24; OY-JRU Citation 560XL. 3/9 N685AB Falcon 7X. 4/9 D-CKVI Phenom 300E; 9H-VIC Global 7500 VistaJet. 6/9 9H-MSA Medsky Airways; YR-FZA Fokker 100 Carpatair; HS-KVS Gulfstream G650ER; D-CTRI Learjet 35A. 7/9 9H-JOY Challenger 850; D-HKMB AS355B3; 5Y-EXZ Beech 200 to Avioncare, dep 11th. 8/9 M-LCFC BBJ1. 10/9 9H-WFC Legacy 600. 11/9 C-FSRJ Dash 8-Q402 on delivery to UmzaXpress, registration 5N-CAE taped over. 13/9 C-GWLL Challenger 604; 9H-ASU Citation 550 S/II. 16/9 9H-VIB Global 7500 VistaJet. 17/9 9H-MAC 737-548(WL) Comlux Malta 19/9 9H-NEC A320-251N Air Malta f/v. 26/9 9H-ICE A318-112(CJ) to Air Livery f/v, dep 20/10. 29/9 N115TR Global Express.

MANCHESTER AIRPORT

1/10 A6-ENY 777-31HER Emirates, resumption of 3rd daily service; LY-MLK A320-232 Avion Express f/v, ops for SunExpress; 9H-VII Global 7500 VistaJet f/v; LV-JQF Falcon 7X. 2/10 YL-CSG A220-300 Air Baltic, ops for SAS; TC-TJO 737-86N



Former easyJet Airbus A320ceo, OE-IUZ (c/n 4013), emerged from Airbourne Colours' East Midlands paintshop in the livery of new Malaysian carrier My Airline. It arrived at the Castle Donington site on October 28, positioning to Lasham, Hampshire on November 8 after its transformation Karl Nixon

Corendon Airlines. 3/10 EI-IPF 737MAX-8200 Ryanair; HB-AZD E190E2 Helvetic Airways, ops for Swiss; LN-NIP 737-86N Norwegian. 4/10 OY-JZS 737-8K5 Jetttime. 5/10 OY-JZP 737-8U3 Jetttime. 6/10 EI-SIP A320-251N SAS f/v; SX-NAG A321-271NX Aegean Airlines. 7/10 B-3988 Gulfstream G550; D-FLYW PA-46-500TP. 9/10 2-JDEJ Agusta A109E. 11/10 5B-DDO A320-214 TUS Airways; 5N-FGW Gulfstream G550 Nigerian Air Force. 12/10 EI-SIS A320-251N SAS; SX-NIG A320-251N Sky Express Greece; OM-GTH 737-8BK Go2Sky/ Corendon Europe. 13/10 9A-BTK A320-214 Trade Air; OE-GLC Citation 680A Latitude. 14/10 SX-CRE A320-251N Sky Express Greece; D-AEUC A321-211(P2F) Lufthansa Cargo, last Manchester flight & last dedicated scheduled freight service at MAN. 17/10 EI-SIT A320-251N SAS; EC-NHM A330-343E Wamos Air, ops for TUI. 18/10 ET-AYM A350-941 Ethiopian Airlines. 19/10 TC-RBK A321-251NX Pegasus Airlines; N9997X Falcon 7X. 21/10 OK-CAA Citation 560XL; 9H-IRL Citation 560XL. 22/10 TC-SNN 737-8HC SunExpress. 23/10 EI-NSB A320-251N Aer Lingus, Heathrow weather diversion; YR-WNT Citation 560XLS+. 24/10 OO-SNO A320-214 Brussels Airlines. 26/10 ER-AXL A319-112 Air Moldova. 27/10 TC-RBP A321-251NX Pegasus Airlines; F-GMZC A321-111 Air France; D-AENG A320-251N Eurowings; OY-ASA 737-405 Air Seven; ER-AXL A319-112 Air. 28/10 OY-ASB 737-430 Air Seven. 30/10 9K-APH A330-841N Kuwait Airways type f/v. 31/10 SE-RPL 737-8JP Norwegian; SP-RZM 737MAX-8200 Buzz; HB-AZE E190E2 Helvetic Airways, ops for Swiss; C-GTCY A321-211 Air Transat, for Maintenance at STS.

NORWICH AIRPORT

1/8 F-HGJF PC-12NGX. 2/8 LX-TWO Learjet 45; D-AIUQ A320-214(SL) Eurowings Discover dep from Air Livery. 4/8 LZ-LAB A320-231 European Air Charter; OH-CHF Citation 550 II; SE-RSM E195LR SAS Link dep ex KLM Maintenance. 5/8 EC-NLK 737-81M AlbaStar; F-HEMI CitationJet 525A CJ2+. 6/8 OO-TBB Cirrus SF50; D-CARO Citation 680 Sovereign+. 7/8 SE-RML Citation 501 1/SP; 8/8 PH-BGF 737-7K2 KLM to KLM Maintenance, dep 2/9; PH-BXV 737-8K2 KLM dep ex KLM Maintenance. 9/8 D-ILAV Eclipse EA550. 10/8 PH-SPF PA-28RT-201T. 11/8 N95TA PA-31-310B. 12/8 9Y-MBJ 737-85P dep ex Air

Livery; EC-MUB 737-86J Albastar. 17/8 PH-NCI Jetstream 32 ASI Airlines. 18/8 2-PASD DA40D-TDi; SP-DLV CitationJet 525 CJ1. 19/8 ZJ210 Apache AH1 3/4 Regts, AAC. 23/8 OE-LFS Global 6000 to Air Livery. 24/8 ZM149 F-35B 207 Sqn, RAF o/s; OY-TBM TBM 940; D-CAPO Learjet 35A. 25/8 D-CSCA CitationJet 525B CJ3; PH-DWS ERJ135LR Air Charters Europe; LZ-LAC A320-231 European Air Charter. 26/8 PH-TXA Citation 510 Mustang; G-LCYO E190SR BA Cityflyer to KLM Maintenance, dep 18/9. 27/8 2-PASD DA40D-TDi. 28/8 LX-AWE Learjet 45. 30/8 OE-IIS Gulfstream V. 31/8 2-SKYW ERJ146LU Typhoon Investments to Air Livery dep 9/9; OY-YDA E175LR Azorra Aviation to Air Livery. 1/9 G-LCYX E190LR BA Cityflyer dep ex KLM Maintenance; N966MS Lineage 1000 to KLM Maintenance, dep 28th; LZ-LAC A320-231 European Air Charter. 2/9 EC-MUB 737-86J AlbaStar. 3/9 D-CAWB Citation 680 Sovereign. 5/9 G-LCYR E190SR BA Cityflyer to KLM Maintenance, dep 7th; G-LCYZ E190SR BA Cityflyer to KLM Maintenance, dep 8th. 7/9 G-LCYM E190LR BA Cityflyer to KLM Maintenance, dep 24th. 8/9 OK-NTU Nextant XTi; D-AIUR A320-214(SL) Lufthansa to Air Livery, dep 18th; G-LCYN E190LR BA Cityflyer to KLM Maintenance. 10/9 N126SL 737MAX-8 UMB Bank to KLM Maintenance; N131SL 737MAX-8 UMB Bank to KLM Maintenance. 12/9 D-CELI Citation 550 Bravo. 13/9 OK-PPP Nextant 400XTi. 14/9 9A-JSC CitationJet 525A CJ2; EC-NAB 737-81Q AlbaStar; G-BCEN Islander Britten-Norman Ltd to Air Livery, dep 29th. 15/9 SE-RSI E195LR SAS Link dep ex KLM Maintenance. 16/9 G-LCYO E190SR BA Cityflyer to KLM Maintenance; EC-NGC 737-809 AlbaStar. 18/9 D-AIUS A320-214(SL) Lufthansa to Air Livery, dep 30th. 19/9 ZA682 Chinook HC6A & ZK551 Chinook HC6 7 Sqn, RAF. 20/9 G-LCYV E190SR BA Cityflyer to KLM Maintenance, dep 22nd; D-CMSL PC-24. 22/9 OE-LFS Global 6000 dep ex Air Livery; 9A-JSD CitationJet 525A CJ2. 23/9 OK-DJB Nextant XTi; C-GTQB 737-8Q8 Air Transat to Air Livery, dep 2/10 all white; G-LCAH E190LR BA Cityflyer dep ex KLM Maintenance; EC-NLK 737-81M AlbaStar. 24/9 G-LCYK E190LR BA Cityflyer to KLM Maintenance, dep 16/10; G-LCYP E190SR BA Cityflyer to KLM Maintenance, dep 6/10. 25/9 D-IAAW Phenom 100. 26/9 VH-

PNI 737-36N Nauru Airlines to KLM Maintenance. 27/9 OY-NPF Metro 23 North Flying; 2-DALE DA62; G-LCYL E190LR BA Cityflyer to KLM Maintenance, dep 8/10. 28/9 M-ABOT RJ100 Eastgate Investments dep ex KLM Maintenance; D-CITA Learjet 60; D-CHMS PC-24. 30/9 D-AIUV A320-214(SL) Lufthansa to Air Livery, dep 9/10 all white; D-GHSB PA-34-220T; TF-FXA Dash 8-Q402 Icelandair to Air Livery, dep 9/10.

TEESSIDE AIRPORT

1/7 PH-WTC Falcon 2000S. 2/7 D-EGGR Beech F33A. 3/7 LZ-BHD A320-214 BH Air. 6/7 9H-GIB Legacy 650. 7/7 YU-PMK Citation 560XLS+. 8/7 D-ATMJ Challenger 604. 9/7 EC-MJP CRJ1000 Air Nostrum type f/v; D-CMMH PC-24. 10/7 9H-JPC Legacy 600; EC-NLM CRJ200ER Air Nostrum. 12/7 2-NGUS DA42NG. 13/7 OE-GDS Citation 560XLS+. 14/7 PH-DKI Partenavia P68C; SP-ESB 737-8Q8 Enter Air. 15/7 D-GKRE Partenavia P68C; D-CARO Citation 680 Sovereign. 16/7 SE-KSZ AG-5B Tiger. 18/7 D-CITA Learjet 60. 20/7 C-FPSH Do.228-202 Summit Air Charters also 21st. 22/7 2-HELI AW109SP Grand New; OK-JRS Citation 680 Sovereign; EC-MSL CRJ1000 Air Nostrum; N807LA Global 7500; F-HVJL Aerospool. WT9 Dynamic LSA. 23/7 2-COOL Avanti II. 24/7 9H-ZFX Legacy 500. 25/7 HB-PRO PA-46-500TP. 27/7 T7-36A Beech A36. 29/7 OK-EMA Citation 680 Sovereign n/s. 30/7 PH-CTH Falcon 2000EX. 2/8 9H-XFX Legacy 500 n/s. 3/8 N46GJ Gulfstream G550; 2-NGUS DA42NG. 4/8 LZ-FBD A320-214 BH Air; SE-RLP CitationJet 525B CJ3. 9/8 LX-PCB PC-24. 10/8 PH-DKI Partenavia P68C. 11/8 OO-AIE Falcon 7X. 12/8 N980AE Commander 980; D-AIRZ Legacy 650E. 19/8 D-ALOA Legacy 650. 20/8 D-AKJC E190SR German Airways. 21/8 OE-EGO PC-12NG; YU-TBA Citation 560XLS+; N542AP Gulfstream G500. 23/8 ZJ191 & ZJ221 Apache AH1s 3/4 Regts, AAC; N70FK Falcon 900LX. 24/8 D-CMED Learjet 55C; OO-PCN PC-12NG. 25/8 OK-JRS Citation 680 Sovereign. 27/8 OO-PCK PC-12NG; F-HMED Hawker 1000B. 26/8 OK-VAN Phenom 100. 27/8 9H-WFC Legacy 600. 28/8 I-VFAB Citation 525M2; LX-JVC & LX-PCE PC-24s. 30/8 LX-PCH PC-24. 31/8 EC-MTV 737-8K5 AlbaStar.

Key: f/v first visit; n/s night stop; o/s overshoot

With thanks to: D Apps, D Bougourd, S Boyd, J Brazier, N Burch, P A Clarke, I Cockerton, KW Ede, M Farley, N French, P Gibson, G Green, J Gregory, I Grierson, D Haines, M Harper, G Hocquard, S Lane, G Morris, S Morrison, R Roberts, RJ Sayer, A Smith, D Turner, Blackpool Aviation Society, Solent Aviation Society/'Osprey', South Wales Aviation Group, CIAN, GSAC, The Aviation Society, EGPE ATC, www.dtvmovements.co.uk, Aerodata Quantum Plus and RHADS.

Register Review

The latest changes on the UK, Irish, Isle of Man and Guernsey registers



RESTORATIONS

| REG'N | MODE(S) | TYPE | C/N | OWNER |
|--------|---------|--------------------------|-----------|--|
| G-BGCZ | 407EBD | Bell 212 | 30668 | FB Heliservices Ltd trading as Draken Europe, Bournemouth, Dorset |
| G-BGLJ | 407EBC | Bell 212 | 30548 | FB Heliservices Ltd trading as Draken Europe, Bournemouth, Dorset |
| G-BGMG | 407EBB | Bell 212 | 30549 | FB Heliservices Ltd trading as Draken Europe, Bournemouth, Dorset |
| G-CHFD | 406738 | Agusta AW109SP Grand New | 22262 | Castle Air Ltd, Trebrowan, Liskeard, Cornwall |
| G-CHZI | 4069FE | Cessna 172RG Cutlass | 172RG0549 | Aeroplano-Planeamento Exploracao E Manutencao de Aeronaves LDS, Santa Cruz, Portugal |
| G-LEAS | 404186 | Sky 90-24 | 158 | CI Humphrey, (Tilehurst, Berkshire) |
| G-SNSB | 40663D | Agusta AW139 | 31295 | Macquarie Rotorcraft Leasing Holdings Ltd, (stored at Denham, Buckinghamshire) |

| | | | | |
|--------|--------|--|---------------|---|
| G-CMKW | 407ED5 | Zenair CH750 Cruzer | LAA 381-15677 | A Alazia, (Stanley, Falkland Islands) |
| G-CMLX | 407EA8 | Flyflight Skyranger Nynja | 258-17 | HD Colliver, Trustee of G-CMLX Group, Landmead Farm, Garford, Oxfordshire |
| G-CMMD | 407EB9 | McQuik GT300 | IM2022 | IA MacAdam, (Hove, East Sussex) |
| G-CMNB | 407EC7 | Flyflight Adam | DA257 | S Barbour, (Hassocks, West Sussex) |
| G-CMOZ | 407ECA | Van's RV-8 | PFA 181-12303 | JC Secker, (Nailsea, Somerset) |
| G-DKNB | 407D80 | Aero L-159E | 156019 | FR Aviation Ltd trading as Draken Europe, Teesside, Durham |
| G-DKNC | 407D81 | Aero L-159E | 156020 | FR Aviation Ltd trading as Draken Europe, Teesside, Durham |
| G-DKND | 407D83 | Aero L-159E | 156039 | FR Aviation Ltd trading as Draken Europe, Teesside, Durham |
| G-ECLF | 407E79 | Airbus A340-541 | 783 | European Aviation Ltd, Bournemouth, Dorset |
| G-ESGC | 407DDC | Aeropro EuroFOX 2K | 65322 | East Sussex Gliding Club Ltd, Ringmer, East Sussex |
| G-GNEE | 407E9C | Comco Ikarus C42 FB100 Charlie (assembled by The Light Aircraft Company Ltd) | 2202-7678 | JM Morris & CJ Hayward, (Llanmaes & Barry, Vale of Glamorgan) |
| G-ILLL | 407A43 | Robinson R66 Turbine | 975 | D Gill, Fielden House, Silsoe, Bedfordshire |
| G-JJSN | 407EBB | Robinson R44 Clipper II | 11799 | Heatherway Taverns Ltd, (Baltinglass, Co. Wicklow, Republic of Ireland) |
| G-LMSB | 407E75 | ATR-42-500 | 1004 | Loganair Ltd, Aberdeen, Aberdeenshire |
| G-LXXI | 407EA2 | Piper PA-18-135 Super Cub | 18-5261 | PJ & RV Tucker, Newtownards, Co. Down |
| G-NGSA | 407E6A | Extra NG | NG044 | Addy Aviation LLP, Sherburn in Elmet, North Yorkshire |

NEW REGISTRATIONS

| REG'N | MODE(S) | TYPE | C/N | OWNER |
|--------|---------|---|--------------|--|
| G-CMEV | 407D43 | Aeropro EuroFOX 2K (assembled by Ascent Industries Ltd) | 64822 | RM Cornwell, Lukes's Field, Marden, Kent |
| G-CMFP | 407DEC | Cameron Z-140 | 12539 | Bailey Balloons Ltd, (Pill, City of Bristol) |
| G-CMJG | 407DF4 | Cameron C-70 | 12563 | GJ Madelin & JA Lawton, (Farnham, Hampshire & Godalming, Surrey) |
| G-CMJP | 407E43 | TL Ultralight TL-3000 Sirius 600 | 22 SI 225 | E Watson, (Hertford, Hertfordshire) |
| G-CMJZ | 407E59 | Diamond DA50C | 50.C.A.A.027 | Gemstone Aviation Ltd, Retford Gamston, Nottinghamshire |
| G-CMKF | 407E76 | Airbus EC130 T2 | 9275 | Airbus Helicopters (Marseille, France) |
| G-CMKG | 407E77 | Airbus EC130 T2 | 9297 | Airbus Helicopters (Marseille, France) |
| G-CMKN | 407E90 | Comco Ikarus C42 FB80 Charlie (assembled by The Light Aircraft Company Ltd) | 2203-7681 | MC Edwards, Old Buckenham, Norfolk |



British Airways' latest Airbus A320neo, G-TTNT (c/n 11092), was delivered to London/Heathrow on October 28
AirTeamImages.com/Martin Stoye

| | | | | | | | | | |
|--------|--------------|--|---------------|--|--------|--------------|-----------------------------|----------------|---|
| G-NHVL | 407E10 | Airbus EC175B | 5057 | NHV Helicopters Ltd, Norwich International, Norfolk (NB) | EI-PHL | Not Allotted | Ozone Power Speedster 13 | SP33-0-33B-075 | S Shannon, (Burren, Co, Clare) |
| G-NIIX | 407EC8 | Flylight Skyranger Nynja | 331-16 | N Buckley, (Winterley, Cheshire) | EI-PHN | Not Allotted | Dudek Nucleon XX | P-173885 | S Donohoe, (Dublin 5) |
| G-ROHI | 407BF3 | Yakovlev Yak-18T | 2202047817 | R Jagoi, Lower Wasing Farm, Brimpton, Berkshire | EI-SIS | 4CAD87 | Airbus A320-251N | 10941 | Scandinavian Airlines Ireland Ltd, Stockholm-Arlanda, Sweden |
| G-TALZ | 400D88 | Piper PA-24-250 Comanche | 24-2117 | Tatenhill Aviation Ltd, Tatenhill, Staffordshire | EI-TCN | 4CAC97 | Diamond DA62 | 62.044 | Flight Calibration Services Europe Ltd, Dublin Weston, Co. Kildare |
| G-TREL | 407EBE | Van's RV-14 | LAA 393-15720 | JE Gattrell, (Bretby, Derbyshire) | M-AAHA | 43E982 | Bombardier Global 6000 | 9525 | AH Aviation Ltd, Sharjah International, UAE |
| G-TTNT | 407D74 | Airbus A320-251N | 11092 | British Airways PLC, London Heathrow, Middlesex | M-ANTA | 424C0D | Gulfstream G600 | 723090 | Hampshire Aviation LLP, Farnborough, Hampshire |
| G-VALL | 400FC5 | Piper PA-32R-300 Lance | 32R-7780515 | V Kadirzade, Rochester, Kent | M-ASTR | 424C01 | Eurocopter EC155B1 | 6807 | 5-15 Global Energy Italia S.R.L, (Camaiore, Lucca, Italy) |
| G-VBBD | 407D69 | Cameron A-400 | 12518 | Aircxite Ltd trading as Virgin Balloon Flights, (Telford, Shropshire) | M-OEWD | 424C11 | Raytheon RB390 Premier 1 | RB-126 | Avidus Jet Management Ltd, Bournemouth, Dorset |
| G-VJAZ | 407DA5 | Airbus A330-941 | 2018 | Virgin Atlantic Airways Ltd, London Heathrow, Middlesex | M-OPED | 424C12 | Sikorsky S-76C | 760506 | Nordic Aircrafts Holding Ltd, (Douglas, Isle of Man) |
| G-XITE | 407E7A | Bell 505 JetRanger X | 65388 | Vantage Leasing Ltd, Gloucestershire | 2-BDPF | TBA | Boeing 737-8AS | 55387 | UMB Bank NA, (Guangzhou Baiyun, People's Republic of China) |
| EI-GZT | 4CAD16 | Airbus A320-232 | 1697 | Aercap Ireland Ltd, (stored Tarbes-Lourdes, France) | 2-CLLP | TBA | Agusta AW139 | 31476 | Vertical Aviation No.2 Ltd, TBA |
| EI-GZU | 4CAD17 | Airbus A320-232 | 1732 | Aercap Ireland Capital DAC, (stored Tarbes-Lourdes, France) | 2-EMKA | TBA | Boeing 737-8AS | 33566 | UMB Bank NA, (Guangzhou Baiyun, People's Republic of China) |
| EI-HHK | 4CAD55 | Bombardier BD-500-1A11 (Airbus A220-300) | 55177 | ALC Blarney Aircraft Ltd, (leased to ITA Airways, Rome-Fiumicino, Italy) | 2-FWSN | TBA | Boeing 737-8EH | 34280 | UMBF Trust & Agency Services (Ireland) Ltd, (stored at Lasham, Hampshire) |
| EI-HHL | 4CAD55 | Bombardier BD-500-1A11 (Airbus A220-300) | 55180 | ALC Blarney Aircraft Ltd, (leased to ITA Airways, Rome-Fiumicino, Italy) | 2-HELX | TBA | Airbus EC135T3 | 2176 | TAK Aviation Holdings Inc, Elstree, Hertfordshire |
| EI-HJA | 4CADA1 | Airbus A320-232 | 2422 | SASF III (A17 Aviation Ireland DAC, (stored Castellon-Costa Azahar, Spain) | 2-HELY | TBA | Airbus EC135T3 | 2173 | TAK Aviation Holdings Inc, Elstree, Hertfordshire |
| EI-HJB | 4CADA2 | Airbus A320-232 | 2430 | SASF III (A17 Aviation Ireland DAC, (stored Castellon-Costa Azahar, Spain) | 2-JALQ | TBA | Embraer 190 | 190000287 | Drake Jet Leasing 6 DAC, (stored Macon, USA) |
| EI-KGJ | 4CAD30 | Airbus A321-271NX | 10916 | ALC Aircraft Ltd, (operated by Air Astana, Almaty, Kazakhstan) | 2-JGAF | TBA | Embraer 190 | 190000666 | Wells Fargo Trust Company NA, (stored Macon, USA) |
| EI-MAW | Not Allotted | PZL-Okocie PZL-110 Koliber 160A | 04010087 | M Whelehan, Newcastle, Co. Wicklow | 2-JGAW | TBA | Embraer 190 | 190000679 | Wells Fargo Trust Company NA, (stored Macon, USA) |
| | | | | | 2-KCMQ | TBA | Boeing 737-8BK | 29676 | AWAS 29676 Trust, (stored Jakarta, Indonesia) |
| | | | | | 2-THCL | TBA | Cessna 525C CitationJet CJ4 | 525C0200 | Tower House Consultants Ltd, Jersey |



This BAE Systems Jetstream 31, G-BWWW (c/n 614), was used for unmanned aircraft technology testing until 2017 but has only now been removed from the UK register. It had most recently been acquired by Cranfield University to use as a source of spare parts in support of their own Jetstream 31, G-NFLA Martin Needham

CANCELLATIONS

| REG'N | TYPE | C/N | REASON |
|--------|---------------------------------|-------------|---|
| G-AGYD | Auster J1N Alpha | 1985 | Cancelled by CAA (CofA expired 24.11.90, last known stored at Fir Grove Farm, Wrenningham, Norfolk 11.21) |
| G-AMPY | Douglas C-47B-15-DK Dakota | 15124/26569 | To USA |
| G-AMZI | Auster J5F Aiglet Trainer | 3104 | Cancelled by CAA (CofA expired 30.09.16, last known stored at Biggin Hill 04.22) |
| G-ARKS | Piper PA-22-108 Colt (modified) | 22-8422 | Cancelled by CAA (CofA expired 05.03.19, Last known stored at Wolverhampton Halfpenny Green, Staffordshire 06.22) |
| G-AZIP | Cameron O-65 | 29 | Cancelled by CAA (CofA expired 05.05.81) |
| G-BAGY | Cameron O-84 | 54 | Cancelled by CAA (CofA expired 16.06.81) |
| G-BETM | Piper PA-25-235 Pawnee D | 25-7656066 | To Germany |
| G-BFLZ | Beech 95-A55 Baron | TC-220 | Cancelled as Destroyed (CofA expired 27.08.09, last known at Blackpool 03.14) |
| G-BHBG | Piper PA-32R-300 Lance | 32R-7780515 | Re-registered as G-VALL |
| G-BJNZ | Piper PA-25-250 Aztec F | 27-7954099 | Cancelled as Destroyed (force landed off Halsey Road, Trent Park, Enfield, Greater London 02.04.22) |
| G-BNIN | Cameron V-77 | 1079 | Cancelled as Permanently WFU (CofA expired 18.08.09, preserved by Old Balloon Collectors) |

PREVIOUS IDENTITIES

| REG'N | P.I. | REG'N | P.I. |
|--------|-----------|--------|-----------|
| G-BGCZ | ex ZH815 | EI-HHL | ex C-FOVL |
| G-BGLJ | ex ZJ969 | EI-HJA | ex HL8065 |
| G-BGMG | ex ZH816 | EI-HJB | ex HL8066 |
| G-CHFD | ex VP-CFL | EI-KGJ | ex D-AXXJ |
| G-CHZI | ex EC-HVP | EI-MAW | ex G-CCIZ |
| G-DKNB | ex N264EM | EI-SIS | ex D-AUBV |
| G-DKNC | ex N265EM | EI-TCN | ex G-TACN |
| G-DKND | ex N267EM | M-AAHA | ex M-AHAA |
| G-ECLF | ex 2-EALG | M-ANTA | ex N690GA |
| G-ILL | ex G-JDUN | M-ASTR | ex G-HBJT |
| G-JJSN | ex N158WF | M-OEWD | ex G-OEWD |
| G-LMSB | ex 2-ATRO | M-OPED | ex M-AKAR |
| G-LXXI | ex D-EBZR | 2-BDPF | ex 2-VKSA |
| G-NHVL | ex F-WWOE | 2-CLLP | ex G-CLLP |
| G-ROHI | ex G-RGTX | 2-EMKA | ex EI-DCH |
| G-SNSB | ex 5N-BVQ | 2-FWSN | ex LY-BJV |
| G-TALZ | ex G-ARBO | 2-HELX | ex D-HCBI |
| G-TTNT | ex F-WWID | 2-HELY | ex D-HCBL |
| G-VALL | ex G-BHBG | 2-JALQ | ex XA-ALQ |
| G-VJAZ | ex F-WWCG | 2-JGAF | ex XA-GAF |
| G-XITE | ex SP-DLC | 2-JGAW | ex XA-GAW |
| EI-GZT | ex SU-NMA | 2-KCMQ | ex PK-CMQ |
| EI-GZU | ex SU-NMB | 2-THCL | ex ZJ-THC |
| EI-HHK | ex C-FOVK | | |

| | | | |
|--------|--|----------------|---|
| G-BPLV | Cameron V-77 | 1822 | Cancelled as Permanently WFU (CofA expired 15.09.16) |
| G-BRSP | MODAC (Air Command) 503 | PFA G/04-1158 | Cancelled as Permanently WFU (Permit to Fly expired 29.06.11) |
| G-BSIH | Rutan Long-EZ | 1200-1 | Cancelled as Permanently WFU (No Permit to Fly issued, believed not completed) |
| G-BTPV | Colt 90A | 1956 | Cancelled as Permanently WFU (CofA expired 05.06.19) |
| G-BWHR | Tipsy Nipper T.66 Series 1 | PFA 025-12843 | Cancelled by CAA (No Permit to Fly issued, rebuild abandoned?) |
| G-BWWW | BAe Jetstream 3102 | 614 | Cancelled as Permanently WFU (CofA expired 26.06.17, parted out at Cranfield 2020) |
| G-BYAW | Boeing 757-204 | 27234 | Cancelled as Permanently WFU (CofA expired 23.09.20, Broken up at Lasham, Hampshire 10.22) |
| G-BYZS | Avtech Jabiru UL-450 | PFA 274A-13489 | Cancelled by CAA (Permit to Fly expired 16.05.18, last reported at Ince Blundell, Merseyside 09.17) |
| G-CCEH | Best Off Skyranger 912(2) | BMAA/HB/267 | Cancelled as Permanently WFU (Permit to Fly expired 04.11.22, damaged at Cae Mawr, Gwynedd 11.08.22) |
| G-CCIZ | PZL-Okecie PZL-110 Koliber 160A | 04010087 | To Republic of Ireland as EI-MAW |
| G-CDNO | Westland SA341B Gazelle AH.Mk.1 | 1385 | To South Africa |
| G-CDYG | Cameron Z-105 | 10870 | To Sweden |
| G-CEHZ | Airborne Windsports Edge XT-912-B/Streak III-B | XT912-144 | Cancelled by CAA (Permit to Fly expired 02.05.13) |
| G-CFNS | Glaser-Dirks DG-300 Club Elan | 3E314C23 | Cancelled as Destroyed (CofA current to 25.09.23, details unknown) |
| G-CGFS | Nanchang CJ-6A | 4532008 | To Norway |
| G-CHAC | PZL-Bielsko SZD-50-3 Puchacz | B-2035 | Cancelled as Destroyed (CofA expired 28.06.22, details unknown) |
| G-CHZI | Cessna 172RG Cutlass | 172RG0549 | Cancelled by CAA 12.10.22 (restored again later in the month) |
| G-CIRU | Cirrus SR20 | 2023 | To Netherlands as PH-CRU |
| G-CJSF | Piper PA-28R-180 Cherokee Arrow | 28R-30877 | To Germany |
| G-CLFO | Airplay Grif Zip/Eurofly Snake | 19003 | Cancelled as Destroyed (SSDR microlight, no Permit to Fly required) |
| G-CLLP | Agusta AW139 | 31476 | To Guernsey as 2-CLLP |
| G-CMJT | Westland SA341B Gazelle AH.Mk.1 | 1941 | To South Africa |
| G-CTSR | Diamond DA40NG Star NG | 40.N304 | Cancelled as Destroyed (crashed just short of Cranfield, Bedfordshire 09.09.21) |
| G-DEOX | CARMAM M200 Foehn | 54 | Cancelled by CAA (CofA expired 16.04.12) |
| G-DHLF | Boeing 767-3JHF | 37806 | To Australia as VH-XQU |
| G-EFTF | Aerospatiale AS350B Ecureuil | 1847 | To Romania |
| G-EICK | Cessna 172S Skyhawk SP | 172S10426 | To Republic of Ireland |
| G-ENKH | Cirrus SR22 | 3065 | To Germany |
| G-FBEH | Embraer 195 | 19000128 | To Sweden as SE-RSL |
| G-FLKY | Cessna 172S Skyhawk SP | 172S8952 | To Republic of Ireland |
| G-HBJT | Eurocopter EC155B1 | 6807 | To Isle of Man as M-ASTR |
| G-JDUN | Robinson R66 Turbine | 0975 | Re-registered as G-ILL |
| G-JMBO | Embraer EMB-505 Phenom 300 | 50500366 | To USA as N223JT* |
| G-LGNE | SAAB 340B | 340B-172 | To USA as N3172 |
| G-MCGN | Agusta AW189 | 92001 | To Netherlands as PH-NCG |
| G-MVPR | Solar Wings Pegasus XL-Q | SW-WQ-0163 | Cancelled as Permanently WFU (Permit to Fly expired 11.04.19) |
| G-MVYD | Solar Wings Pegasus XL-Q | SW-WQ-0240 | Cancelled by CAA (Permit to Fly expired 28.09.13) |
| G-NXTE | Electroflight NXTE | 1 | Cancelled as Permanently WFU (set new electric powered world record of 345.4 mph 16.11.21, donated to Science Museum, but currently stored) |

This ex-Brittannia Airways, Thomsonfly, Thomson Airways and TUI Airways Boeing 757-200, G-BYAW (c/n 27234), was acquired by 2Excel Aviation for use as a testbed for the planned BAE Systems Tempest sixth-generation fighter. However, its registration was cancelled in October with reports stating that the aircraft had been scrapped at Lasham, Hampshire Steve Lynes



| | | | |
|--------|-------------------------------|-------------|--|
| G-NZOC | Le Vier Cosmic Wind | 101 | Re-registered as G-AYRJ |
| G-ODDF | Siren PIK-30 | 728 | To Netherlands |
| G-OEWD | Raytheon RB390 Premier 1 | RB-126 | To Isle of Man as M-OEWD |
| G-ORED | Britten-Norman BN-2T Islander | 2142 | Cancelled by CAA (CofA expired 18.07.17, last known stored at Faa'a, Tahiti 09.18, F-OKGB NTU) |
| G-OZIP | Christen Eagle II | 249 | Cancelled by CAA (but restored again later in the month) |
| G-RGTX | Yakovlev Yak-18T | 22202047817 | Re-registered as G-ROHI |
| G-RVRJ | Piper PA-23-250 Aztec E | 27-7305004 | To Kazakhstan |
| G-SAJR | Embraer EMB-135ER | 145431 | To France |
| G-SBIZ | Cameron Z-90 | 10348 | Cancelled by CAA (CofA expired 28.05.21) |
| G-TACN | Diamond DA62 | 62.044 | To Republic of Ireland as EI-TCN |
| G-TAJF | Lindstrand LBL 77A | 905 | Cancelled by CAA (CofA expired 04.08.17) |
| G-TUKU | Stemme S10-VT | 11-126 | To Germany |
| G-UCCC | Cameron Sign-90 | 3918 | Cancelled as Permanently WFU (CofA expired 28.10.10) |
| G-VINK | Sikorsky S-92A | 920223 | To Brazil as PR-JKK |
| G-VINL | Sikorsky S-92A | 920226 | To Brazil as PR-JKM |
| G-VLNM | Airbus A330-223 | 322 | To Guernsey as 2-CMDR |
| G-XXSF | Bell 505 JetRanger X | 65198 | To Czech Republic |
| EI-DBK | Boeing 777-243 | 32783 | To USA as N268GE |
| EI-DBL | Boeing 777-243 | 32781 | To USA as N267GE |
| EI-DCH | Boeing 737-8AS | 33566 | To Guernsey as 2-EMKA |
| EI-DHV | Boeing 737-8AS | 33582 | To Malta as 9H-QER |
| EI-DYF | Boeing 737-8AS | 36569 | To Malta as 9H-QEU |
| EI-GBB | Boeing 737-86N | 36809 | To Slovakia as OM-GTK |

| | | | |
|--------|----------------------------------|----------|--|
| EI-GSZ | Airbus A320-214 | 5653 | To Malta as 9H-MLO |
| EI-GWS | Boeing 737-8GJ | 37366 | To Argentina as LV-KFW |
| EI-GZF | Boeing 737-8 | 63974 | To Mexico as XA-GNS |
| EI-GZI | Boeing 737-8 | 42844 | To Canada as C-GYLP |
| EI-GZJ | Boeing 737-8 | 63975 | To Canada as C-GLVU |
| EI-GZY | ATR-72-212A | 1471 | To United Kingdom as G-CMJN |
| EI-HCP | Airbus A320-232 | 5092 | To Indonesia as PK-SCB |
| EI-HCW | Airbus A320-232 | 4888 | To Malta |
| EI-HDL | Boeing 737-8AL | 39057 | To Denmark as OY-JZT |
| EI-RDD | Embraer 175 | 17000334 | To Poland as SP-LIP |
| EI-SON | ATR-72-201 | 195 | To Hungary |
| M-AHAA | Bombardier Global 6000 | 9525 | Re-registered as M-AAHA |
| M-ABOP | Airbus A320-214 | 4519 | To Libya as 5A-BRD |
| M-AKAR | Sikorsky S-76C | 760506 | Re-registered as M-OPED |
| M-ARJB | Gulfstream G650 | 6049 | To USA as N365LG |
| M-ELAN | IAI Gulfstream G280 | 2049 | To USA as N280TT |
| M-FINE | Bombardier Global 5000 | 9594 | Cancelled by Isle of Man registry (Russian owned, now RA-73577) |
| M-IBAQ | ATR-72-212A | 932 | To Guatemala as TG-ATB |
| M-LLJB | Bombardier Global 6000 | 9507 | To Bermuda |
| M-SCOT | Dassault Falcon 7X | 54 | To Germany as D-ALIN |
| ZJ-THC | Cessna 525C CitationJet CJ4 | 525C0200 | To Guernsey as 2-THCL (NB The Jersey Register has now been officially closed down) |
| 2-ATRO | ATR-42-500 | 1004 | To United Kingdom as G-LMSB |
| 2-DHIA | Bombardier Challenger 605 | 5904 | To Greece as SX-DHA |
| 2-DREM | Airbus A320-233 | 4118 | To Malta as 9H-MLV |
| 2-EALG | Airbus A340-541 | 783 | To United Kingdom as G-ECLF |
| 2-EIBD | Airbus A320-232 | 5024 | To Indonesia as PK-BKK |
| 2-EIFZ | Airbus A320-232 | 5030 | To Indonesia as PK-BKL |
| 2-HZPN | Embraer 190 | 19000312 | To South Africa |
| 2-JETS | Embraer EMB-135LR | 145715 | To USA as N494AT |
| 2-LRG | Boeing 737-86N | 38039 | To France as F-HUYI |
| 2-MAHY | Airbus A330-343 | 1475 | To Malta |
| 2-NGUT | Diamond DA62 | 62.066 | To United Kingdom as G-LDNG |
| 2-OCST | Agusta Bell 206B-3 JetRanger III | 8694 | To United Kingdom as G-OSAF |
| 2-POWR | Boeing 737-8 | 60458 | To Malta as 9H-ETA |
| 2-ROLL | SAAB 2000 | 2000-036 | To USA as N536FR |
| 2-SAIL | Agusta Bell 206B-2 JetRanger II | 8440 | To Australia as VH-PEU |
| 2-SKYW | Embraer 145EP | 145012 | To Slovenia as S5-ASM |
| 2-VFNJ | Airbus A330-223 | 300 | Cancelled by Guernsey Aircraft Register (last reported stored at Roswell, USA 06.22) |
| 2-VIHC | Airbus A320-214 | 2584 | To Lithuania as LY-GYM |
| 2-VKSA | Boeing 737-8AS | 33587 | Re-registered as 2-BDPF |
| 2-VSYP | Boeing 737-7BK | 33026 | Cancelled by Guernsey Aircraft Register (Parted out at Hondo, TX 2021) |
| 2-WILD | Aerospatiale SA342J Gazelle | 1695 | To USA as N342WW |

UPDATES & CORRECTIONS

| REG'N | DETAILS | REG'N | DETAILS |
|--------|--|--------|---|
| G-AVKB | Builder officially changed to A Rochier 30.10.22 | G-IGIA | Became I-GGIA 07.22 |
| G-BFIE | Became I-BFIE 06.22 | G-ISHK | Became F-HBOZ 25.05.22 |
| G-BSEE | Became EC-547 08.21 | G-KAXF | Became N350AX 24.10.22 |
| G-BSMD | Became I-MESS 09.22 | G-LFSR | Became F-HTPG 21.07.22 |
| G-CCAY | Became OE-ZCH 07.07.22 | G-MRFX | Became 9H-RFX 13.06.22 |
| G-CDVE | Became XA-UZU | G-RENI | Became F-HFTB 24.08.22 |
| G-CHMG | Became YU-5399 10.22 | G-RVRZ | Became C-GYLD 16.09.22 |
| G-CIBA | Became I-CIBA 08.22 | G-XXSF | Became OK-SAS 06.10.22 |
| G-CKCY | Became LY-GSY 06.22 | EI-GGJ | Became PR-OTX 26.06.22 |
| G-CLVZ | Became SP-4137 06.07.21 | EI-GIM | Became ST-TAK 22.08.22 |
| G-CMGC | Became HA-BAV 22.05.22 | M-ABJO | Became YR-1ZF 09.22 |
| G-CMJR | Became PH-GLO 12.09.22 | M-ABKI | Became YR-ILE 08.22 |
| G-CXBH | Became 6V-HAG 08.22 | M-DRIL | Became ZS-CJT 07.06.22 |
| G-FBJI | Became C-GYFC 13.09.22 | M-KATE | Became T7-EKA 06.22 (cancelled 16.03.22 due to sanctions against Russia) |
| G-FBJJ | Became C-GYFH 03.10.22 | M-RONE | Became RA-09619 (cancelled 20.03.22 due to sanctions against Russia) |
| G-FEZZ | Became VH-POU 04.22 | M-TBEA | Became D-IFUN 25.05.22 |
| G-FIJJ | Became F-GOJY 19.09.22 | M-TSR | Became OK-ECL 06.06.22 |
| G-FXFX | Became 9H-XFX 04.22 | | |
| G-HOTY | Became 9H-VFK 05.22 | | |

Key: NB – Nominal Base
A place name in brackets relates to the owner's address, as where the aircraft is based is unknown.



At the fence

A selection of aircraft movements caught worldwide by the *Aviation News* community

Left: Kuwait Airways substituted the usual Airbus A320neo for an A330-800 on its Manchester run on October 30. The jet, 9K-APH (c/n 2005), was the first example of the neo variant to visit the northwest hub Nik French

Below: Airbourne Colours has recently opened its third paint facility, adding a site at Exeter Airport to its existing locations at Bournemouth and East Midlands Airports. This Olympic Airways ATR 72-600, SX-OBN (c/n 1073), was the first aircraft to be repainted in the company's new paintshop, arriving at the Cornish airfield on October 18 and departing 12 days later Ian Simpson



Above: This Spanish Air Force General Atomics MQ-9B Reaper, NR.05-04 (c/n 33689), was caught taxiing out at Lanzarote Airport. The aircraft is one of two on strength with the air arm, although another four are currently on order Mark Turner

Below: Boeing 737 Classics are becoming increasingly few and far between, so the visit of Air Seven Boeing 737-400, OY-ASB (c/n 27007), to Manchester on October 28 was welcomed by local enthusiasts. The airliner is understood to have been bringing in football fans for Manchester United's Europa League tie against Moldova's FC Sheriff Tiraspol Nik French





Marco Rossi reports that the prototype Leonardo M-345 remains active almost four years after its maiden flight. The photographer caught the trainer, C.P.X624, departing from Turin/Caselle in an unusual configuration equipped with two 265l external fuel tanks on November 11 Marco Rossi



It's not often that images from St Lucia grace the pages of *Aviation News*. This Airbus Helicopters H125, J6-AAQ (c/n 4656), belonging to St Lucia Helicopters, was photographed departing from the smaller of the island's two airfields – George F L Charles Airport – close to the capital, Castries Kevin Kennedy



Left: Spencer Bennett captured this image of Lumiwings Boeing 737-300, SX-LWA (c/n 25216), while visiting Milan Malpensa. The Athens-based carrier began operating a thrice-weekly connection between the northern Italian city and Foggia, between Rome and Bari in the southeast of the country

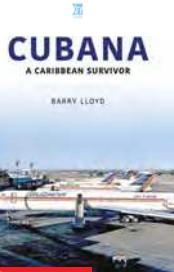
Spencer Bennett

Below: One of a pair of Airbus A319ceos operated by Air Senegal touches down at Milan Malpensa on October 31. The jet, 6V-AMA (c/n 2897), was first delivered to Iberia in 2006 and spent its entire working life with the Spanish flag carrier and its IAG stablemate Vueling prior to joining Dakar-based Air Senegal in November 2018 Spencer Bennett





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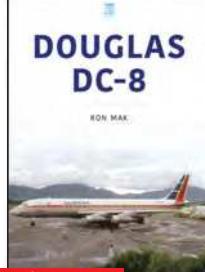
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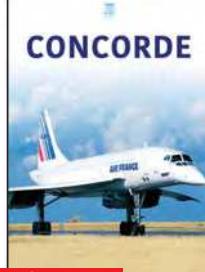
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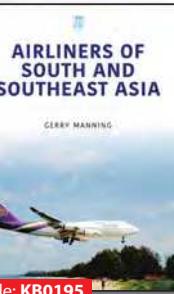
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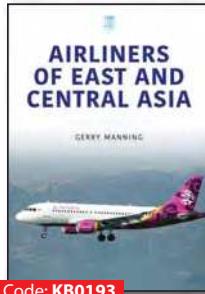
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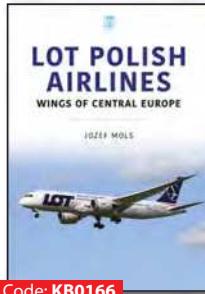
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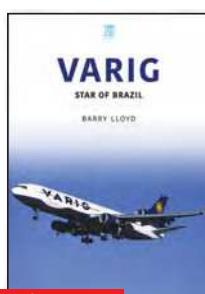
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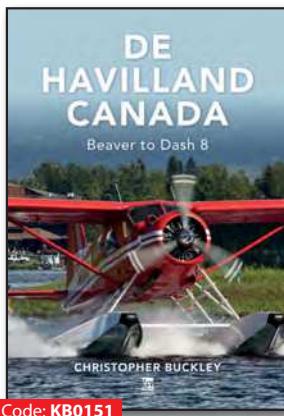
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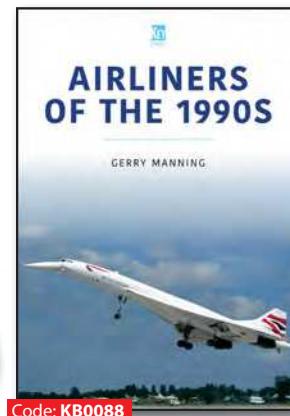
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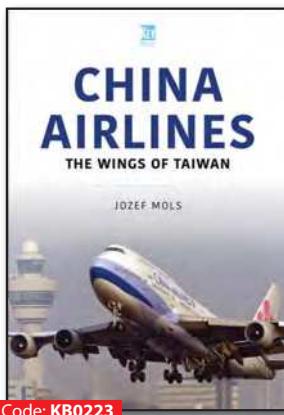
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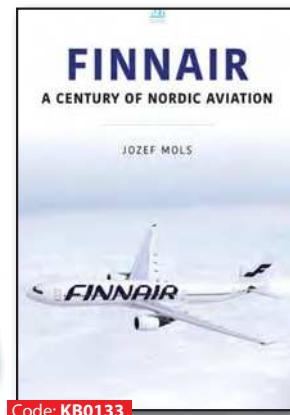
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New jet, new direction?

Simplification has been the watchword of the post-COVID-19 Virgin Atlantic, but does streamlining leave the Dreamliner out in the cold? **Tom Batchelor** gets acquainted with its biggest threat, the Airbus A330-900

The first of ten Airbus A330-300s, G-VSXY (c/n 1095), joined Virgin Atlantic in February 2011 Martin Needham



Virgin Atlantic prides itself on having one of the youngest fleets in the long-haul market and the arrival of its 50th Airbus airframe, an A330-900, and a brand-new type for the carrier lowers the company's average fleet age yet further.

The jet, G-VJAZ (c/n 2018) *Billie Holiday*, rolled off the production line in Toulouse in August 2022 and arrived at the airline two months later. It offers an 11% lower fuel burn versus the A330-300s that the new engine option (neo) variant will eventually replace. The airline says its new widebody jet also reduces the airport noise contour by 50%, improving the experience for those not just in the air but on the ground.

Juha Järvinen, Virgin Atlantic's chief commercial officer, told *Aviation News* from on board the new neo, which was completing the carrier's inaugural flight from London Heathrow Airport to Tampa International Airport at the beginning of November: "The average age for the whole Virgin fleet is around seven years, while the majority of our competitors are roughly 13-14 years average age. They have much lower next-generation share, many of them are only at 20-30%, whereas at Virgin we are around 70% next-gen already, and

by 2027 we will be at 100%. That is the biggest contribution we can make as an airline to make sure that we have the most fuel efficient and environmentally friendly aircraft we can."

UK debut

Virgin is the first and currently only UK operator of the A330neo, having ordered 16 of the larger '900 variant. Six of those will come courtesy of Air Lease Corporation, with all 16 due for delivery by the end of 2026. The second-generation A330 was launched in 2014 and flew its first revenue flight for TAP Air Portugal four years later, while the smaller A330-800 was delivered to its launch customer, Kuwait Airways, in 2020.

There are a number of features that give these aircraft the edge. The A330neo incorporates Airbus' advanced Skywise big-data analytics capabilities, providing real-time health monitoring and predictive maintenance, while the standout difference with the neo's airframe design is the new high-span wing – which at 210ft (64m) is 12ft wider than its ceo counterpart – which has been designed to achieve



greater aerodynamic efficiency with lower induced drag and higher lift at all speeds. The extensive use of composite and titanium parts keeps the weight down and Airbus' upgraded Airspace cabin has space for ten extra seats and two-thirds more overhead storage space compared with the first-generation A330. It also features a new rear galley complex, new lavatories and lower deck crew rest area.

Airbus claims that the impact of these improvements is a cash operating cost per seat up to 7% lower than the Boeing 787 Dreamliner can offer – as well as being 3db quieter in the cabin – though the European

Main photo: **Virgin is set to receive up to 16 Airbus A330-900s before the end of 2026. Six of these will be leased from Air Lease Corporation** Clément Alloing



aerospace giant states the aircraft is targeted primarily as a replacement for the A330-300, A340-300, 777-200 and '200ER.

A pair of Rolls-Royce Trent 700s are hung under the new high-span wing, offering a 10% improvement in specific fuel consumption and a 6db reduction in noise compared with the earlier

Trent 700s that power Virgin's A330-300s. Additionally, the A330neo is certified to operate on a 50% blend of sustainable aviation fuel (SAF), with the aircraft's delivery flight from Toulouse to Heathrow fuelled by a 35% SAF blend.

These are all steps towards the airline achieving its aim of reaching net zero by 2050, it having set targets along the way, including a 15% net reduction in total CO₂ emissions by 2030, aided by 10% of fuel sourced from SAF, and a 40% net reduction in total CO₂ emissions by 2040.

COVID recovery

The Crawley-based carrier's first airframe was delivered on October ►



An initial flight for G-VJAZ (c/n 2018) took place on August 12, 2022 Clément Alloing



In accepting its maiden example, the Crawley-based carrier became the UK's first A330neo operator Fabrizio Spicuglia

13, followed on November 16 by G-VTOM (c/n 2019) and it was due to have received a third, G-VLDY (c/n 2025), by the end of 2022. The carrier's remaining fleet totals 36 aircraft, including 17 Boeing 787-9s, ten Airbus A330-300s and nine Airbus A350-1000s. It's a stark transformation from the airline of three years ago.

A 27-year association with the Airbus A340 was abruptly axed as the pandemic began to bite in March 2020, followed quickly by the retirement of the Boeing 747 – a type that had then served the carrier for the entirety of its 36-year existence. The move not only eased pressure on the airline's accountants, but also helped to streamline the fleet from five to three aircraft types.

Crucially for Virgin, the A330neo's arrival only builds on these efficiencies. It boasts 95% commonality with the outgoing A330-300s across its parts and 85% of its tooling (by value), simplifying ground and maintenance operations. On the flight deck, switching between the ceo and neo

requires just a half-day of training, Airbus says, as the same type rating applies to both. The manufacturer says the neo's commonality with the Airbus A350 means pilots need eight days of additional training.

Virgin has configured its A330neos to accommodate up to 262 passengers, with 32 in Upper Class, including two in the 'Retreat Suite'; a new addition comprising two lie-flat seats that can accommodate up to four people seated in a private booth. On-board Wi-Fi provided by Viasat has improved bandwidth, speeds and satellite coverage, and there is Bluetooth-equipped inflight entertainment that enables personal devices to be connected to each seatback screen, plus wireless charging points. The aircraft also borrows the 'Loft' space where Upper Class passengers can help themselves to drinks and snacks, which was first found on the company's A350-1000s. There are a further 46 seats in Premium and 184 in Economy, fitted into an airframe that Airbus states can accommodate a maximum of 460

in an all-economy class configuration. Upper Class seats are manufactured by Thomson Aero, while the hard product in premium economy is made by Collins MIQ and the economy cabin is sourced from Recaro.

Not quite 'cattle class'

Sustainability is a major factor in the A330neo's appeal to airlines, from both a cost-saving and public relations perspective with Corneel Koster, the airline's chief customer and operating officer, describing the new widebody as "truly a plane for the future", adding that the neo "demonstrates our commitment to the planet".

But it's not just engines offering better efficiency and topping the tanks up with SAF where the twin-aisle newcomer comes into its own. In the cabin, all leather furnishings have been replaced with non-animal derived alternatives, which are up to 50% lighter than the hides of their moo-ing, grass-chewing equivalents. The vegan interior has prompted the airline to claim that the use of faux leather removes "around 3,000 cows from the supply chain" across its entire A330-900 fleet. In addition, up to 90% of single-use plastics have been stripped away: from meal trays to cutlery, recyclable and reusable products have taken their place.

As the newest aircraft to join the fleet, the A330neo was chosen to inaugurate the airline's new Tampa, Florida, route. The destination has a large business community that has swelled due to post-COVID changes to working habits plus a favourable tax environment, luring companies to the



The twin-aisle jet has been configured for 262 passengers in a three-class configuration Clément Alloing

A second example, G-VTOM (c/n 2019), was delivered to London/Heathrow on November 16 Clément Alloing



Sunshine State. This is reflected in the booking patterns for the new transatlantic connection; Juha Järvinen said around 40% of tickets were purchased by US travellers heading to London and beyond, compared with around 10-20% for services out of the nearby Floridian city of Orlando, where European leisure travellers dominate. He added: "From an airline's perspective, you want to balance the risks in such a way that you're not dependent on one market, and in the case of Tampa, you actually have a much more diverse mix of customers."

Dreamliner departure?

Virgin said it will continue to roster its A330-300s – which have an average age of

around 11 years – "[similar] to what we have seen in summer 2022 and what is on sale for winter 2022".

However, it added: "Deployments are reviewed regularly to ensure optimisation and the allocation of the right aircraft to the right routes, and to provide the best product fit to our customers."

Despite having spent little more than a month in service as *Aviation News* went to press, G-VJAZ had already been deployed on connections from London/Heathrow to Boston, Miami and Tampa and the neo is set to continue flying these routes through the 2022 winter season. The airline had yet to announce its summer schedules for 2023 but, in addition to the A330-900

gradually replacing the A330-300s, a Virgin spokesperson told *Aviation News* that the neo will also be deployed to destinations currently served by Boeing 787-9s.

The induction of the A330-900 has posed questions over the airline's future composition, including whether it could move to an all-Airbus fleet. The move seems to be a no-brainer in terms of commonality as the A330 and A350 share a type rating, where there would likely be other benefits including spares commonality. Were that to happen, the A330neo would likely play the "significant role in our multi-billion-dollar fleet transformation" that chief executive Shai Weiss has already predicted. **AN**

Initially, the new type is being deployed on transatlantic services to Tampa, Boston and Miami. However, it is expected to be placed on additional services currently operated by the A330-300 and Boeing 787-9 Dreamliner Clément Alloing



Virgin Atlantic was expected to have received a trio of A330neos before the end of 2022
AirTeamImages.com/Martin Stovey





Next Month

Skyvan at 60

It has been 60 years since Short's venerable Skyvan made its first flight. We look back on the Belfast-built brute's long career and the multitude of roles that it has undertaken both in military and civilian service.

Freedom from the Freedom Fighter?

Iran's sanction situation has long posed procurement problems for its air force, key among them how to replace the air arm's ageing F-5B Freedom Fighters. We learn how the country is working to build its own advanced jet trainer.

Autumn Falcon

We report from one of the biggest rotary-wing exercises to have been held in Europe in recent years, involving German, Dutch, American and Polish assets.

Guten tag, Herr NEO

We speak to Condor as the German airline prepares to receive its maiden Airbus A330neo, the second step in a major transformation for the carrier that kicked off with a striking striped livery in April 2022

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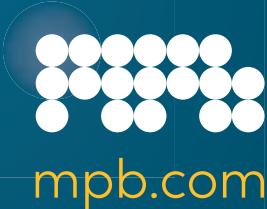
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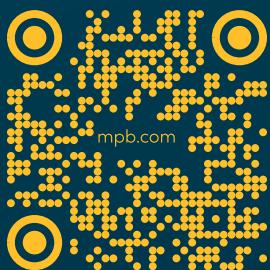


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