Mach 2

Concorde magazine

Celebrating Delta Golf

50 years on from her maiden flight

Concorde watch

Exciting news from Barbados

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Introduction

On 13 February 1974, British development Concorde 202 (G-BBDG, or Delta Golf) made her maiden flight, from Filton to Fairford. In this issue we commemorate the 50th anniversary of that flight, and look back over some of the highlights of Delta Golf's history – from her flying career of nearly eight years, to her retirement, then relocation to Brooklands Museum for display to visitors. We end the feature with the latest news on the celebrations held at Brooklands to mark the anniversary. We also remember Delta Golf's French counterpart, F-WTSB, who also first flew 50 years ago, on 6 December 1973.

Coming back to the present day, we have great news for Concorde Watch. We hear the latest from Heritage Concorde about their work on G-AXDN at Duxford and G-BOAC at Manchester. Even more exciting, we have news of Concorde G-BOAE in Barbados. Captain John Hutchinson reports that Alpha Echo is shortly to go back on display as part of a terminal for passengers transferring between cruise ships and aircraft, with a view to being reopened for special tours.

In this issue

Editor: Katie John

Cover photo: Concorde G-BBDG seen from above, on display at Brooklands Museum.
Photo: Justin Robson

Celebrating Delta Golf

Tuesday 13 February 2024 saw the 50th anniversary of the maiden flight of Concorde 202: G-BBDG (Delta Golf). In this feature we look back at some of the stand-out events of this aircraft's history before bringing her story right up to the present day.

Concorde 202 (G-BBDG) operated at the crossover point between the development of Concorde and the early years of service. After her maiden flight on 13 February 1974, she was utilized to carry out the later stages of flight testing that would lead to certification of Concorde. As the first production Concordes went into passenger service, Delta Golf carried on flying to test further refinements such as improvements to the air intakes and the control surfaces. She would fly for nearly 8 years, making her last landing at Filton, where she was built.

For a couple of years after her retirement, Delta Golf was kept in readiness for any further test flights; but in 1984, British Airways acquired the aircraft as a source of spare parts for the production Concordes. For the next two decades Delta Golf would be kept in storage in a purpose-built hangar.

The aircraft's fortunes changed in 2003, when the Concorde fleets retired from service and British Airways gave Delta Golf to Brooklands Museum. She was dismantled and taken to Brooklands by road, then, after re-assembly, she underwent two years of intense work by more than 100 specialists and volunteers.

In July 2006 she was put on display to the public to give visitors the "Concorde Experience" of a virtual flight. In July 2016, to mark the 10th anniversary of the Concorde Experience, a ceremony was held at Brooklands in which Delta Golf's droop nose was re-activated for the first time in over 30 years. More recently she has undergone a re-paint to keep her looking fresh, and on Tuesday 13 February, to mark the 50th anniversary of her maiden flight, the museum held a day of commemorative events to celebrate the career and future of this remarkable aeroplane.

For more information on Delta Golf, see the Brooklands Museum website: brooklandsmuseum.com/explore/exhibitions/Concorde-Experience

From development to production
November 1975: G-BBDG parked with G-BOAA at Fairford. DG is well into her test programme, while G-BOAA, the first production aircraft to be delivered to British Airways, has just made her maiden flight.
Photo: Robin Crossan

Delta Golf takes flight

British Aircraft Corporation (BAC) engineer Richard Harris *worked with G-BBDG at the very start of the aircraft's career. He looks back at her maiden flight and the early months of the test programme for the aircraft.*

Having worked at Fairford as a test engineer in Flight Test since the first flight of 002 in 1969, and returning to Filton for the pre-flight work-up of Concorde 101 during systems test and preparation for ground running, I returned to Filton in the autumn of 1973 for the work-up of aircraft 202, G-BBDG, in preparation for a scheduled first flight in early 1974.

Concorde 202 was a significant development towards the production-standard aircraft from the earlier prototype aircraft. It was the first production aircraft to carry British Airways livery, as opposed to the earlier dual BAC/Aerospatiale livery carried by previous Concordes.

The first flights

With system testing completed, the ground runs and taxy trials were all relatively straightforward. Then, on 13th February 1974 – after a high-speed taxy run and a return to the gate – Concorde 202 took off from Filton on its maiden flight to the test base at Fairford.

First taxy run
Top: G-BBDG is guided in by a marshal after her taxy run. Above: Awaiting passengers at the gate before take-off.
Photos: RIchard Harris

Taking to the air
This time it's for real. Delta Golf is watched by a scattering of spectators, as she begins her take-off roll, rotates, and finally gets airborne on her maiden journey from Filton to Fairford – and her first supersonic flight.
Photos: Richard Harris

Subsequent weeks saw the aircraft put through a series of test flights from Fairford, following which it was prepared for a month of trials in August of that year, based in Bahrain.

Hot trials in Bahrain

One of DG's major flight test programme objectives was to undertake the certification hot trials in the coming summer months as well as providing an opportunity to undertake some demonstration flights whilst in the Gulf. The ground support team, together with necessary ground equipment and spares, were pre-positioned to Bahrain, and the old RAF Hunter Hanger at Muharraq was used as an operations base by the BAC team.

The test programme and engineering trials are detailed in the February 2021 issue of Mach 2 magazine, but one aspect not mentioned were the performance take-offs conducted in extremely high temperatures.

On three days we flew from Bahrain to Kuwait, refuelled, and then just waited for the temperature to rise, anticipated to be some time after 13:00 hours. Parked out on an open airfield, the only shelter we had was under the wing of the aircraft – and to this day I remember the sand in the wind biting into our legs through our slacks. We accomplished three measured take-offs at temperatures, as I recall, of 44 degrees, 45 degrees and the last one at 48 degrees Celsius.

Trials in the Gulf
Delta Golf parked in the desert heat. "Hot trials" in Bahrain and Kuwait formed an important part of the test flight programme.
Photo: Richard Harris

Relocation to Singapore

With the hot trials completed, the test equipment in the aircraft was removed and we positioned to Singapore for rough runway trials. The rough runway problem in Singapore resulted in some quite horrendous oscillations on the flight deck as they accelerated toward V_1, and I vividly remember Brian Trubshaw at the debrief graphically exclaiming that, in the event they experienced an emergency, up until that point (V_1), he couldn't be absolutely certain of being able to make any selections accurately, particularly if they were needed on the roof panel! There were a lot of exchanges between Design in the UK and 'our man on the spot' Bob Mckinley, and a number of suggested nose leg charging pressure changes were suggested, which were then tried in turn, to find an optimum.

A major repair

One other notable incident at Bahrain was the need to change a

Preparation for runway tests
Delta Golf at Paya Lebar, Singapore.
Photo: RIchard Harris

right-hand main landing gear leg. It had suffered damage from an airline pilot taxying back onto the dispersal shown in the photographs, failing to see the Bat Marshal until too late, and requiring a hard-right hand turn to realign himself. This resulted in a distortion of the main leg seal and a pressure loss over a period.

This pressure loss was monitored over a day or so to see if the aircraft could return safely to the UK, a gear-down ferry not being a practical consideration. It was decided that a leg change was necessary.

The change proved a major logistical task. A complete main gear assembly, together with a set of main aircraft jacks, tooling and test equipment, were ferried out on an RAF Belfast, and the handling logistics alone were significant. The team of fitters we had there were superb, particularly working of the top of the wing in those high temperatures. One beneficial spin-off, however, was that, whilst the fitters were changing the gear, we were able to monitor the procedures against the early issue of the Maintenance Manual and to add any amendments or changes necessary. With the gear change completed, we were able to carry out a full systems function, before returning to the test programme.

A highly successful operation, during which the aircraft performed extremely well.

An early passenger

As a development aircraft, G-BBDG was used for the later stages of the flight test programme. She was fitted with passenger seats as well as a flight test station. Engineer Robin Crossan *recalls both aspects of Delta Golf – the in-flight testing that he carried out, and the thrill of being a passenger on a Concorde at full power.*

I am typing this on my laptop on 20th January 2024 but remembering events from exactly 50 years before. Then, as a final year physics student at Glasgow University, I am stood on the viewing area on top of Prestwick airport terminal as I have found out, maybe through reading *Flight International*, that Concorde prototype 002 (G-BSST) will be visiting today.

Through the darkening gloom of a winter afternoon, I watch as this majestic, white, futuristic-looking aircraft taxies out and lines up to take off. I am helped in this memory as I filmed this event with my cine camera, and I can again watch the evening gloom being lit up as four reheats light and Concorde roars down the runway, pitches up and flies into the dusk. Reheat cancels just before ST disappears into the cloud. As I descend to the car park, I consider applying to the British Aircraft Corporation (BAC) for a job in system analysis – but little do I know that within a year I shall have flown on a production Concorde at Mach 2.04 at 56,000ft. As my well-worn joke goes, my career in aerospace has been downhill ever since!

An irresistible offer

In April I accept an offer from BAC as an acoustics engineer at Weybridge, as there are no system analysis jobs available, and start on Monday 15th July 1974. I join the BAC 1-11 section, which also did internal noise measurement on Concorde. By Thursday I am on the airfield at RAE Bedford being shown how to do noise measurement, with G-ASYD, fitted with hush kits, flying overhead. At the end of the next week, I am flying on YD conducting internal noise measurements. (If you are stood facing the nose of DG at Brooklands Museum, then YD is the first aircraft to the left just behind DG.)

Fast forward to Wednesday 15th January 1975. Just after lunch the phone on my desk rings, and after listening to my boss, I say, "What, you have to ask me that question, when you know what the answer is?" I have just been asked if I would like a flight in Concorde G-BBDG from Fairford!

At Fairford
"This sleek white machine" – Delta Golf parked in preparation for another day of flight testing.
Photo: RIchard Harris

Cabin noise tests

Following instructions, I get a van from the pool and fill it full of foam wedges from the anechoic chamber in the Acoustics Lab. I realise that I have no film for my cine camera, and being a Wednesday afternoon (early closing day in the 1970s), I can't get film from a shop!

Up early the next morning, I set off for Fairford with a map as I haven't been there before. Get on the M4 and as the fog descends, so my speed decreases; I am not going to get there in time! The fog lifts slightly the further I get off the M4, and I arrive at RAF Fairford to find, to my relief, that the fog has delayed the take-off time.

My second sight of Concorde DG is as I round the hangar corner and look up at this sleek white machine towering above me on the pan; my first sight of her had been at Farnborough air show in September 1974, when she was in the static park but there was no chance of getting as close as this.

I meet my colleague, who had been on yesterday's flight with my boss (who had to return to Weybridge the previous day). We start moving the wedges into the aircraft and place them in the hat rack in the rear cabin. The purpose of the wedges is to simulate the acoustic effect of having luggage bins, which will be fitted on subsequent Concordes. So, a word on the layout of DG for flight 154. The rear cabin is fully furnished with 60 seats, while

Hat rack
The hat rack in the rear cabin, just above the passenger seats.
Photo: Robin Crossan

the front cabin contains a flight test station, which has a copy of the main cockpit instruments at a desk with two seats and weights placed along the floor to represent the missing 40 seats that would normally be there.

G-BBDG flight 154

I haven't seen the cockpit crew but have been introduced to the two flight test crew members and the aircraft fitter on board.

The aircraft door closes and we are asked to take a seat in the rear cabin; I choose a window seat on the starboard side. The engines start and at 11.18am we taxi out, the long overhang of the fuselage over the nose undercarriage leading to a noticeable nodding effect over the concrete sections. Line up on the runway, engine note increases, and then a push in the back as reheat kicks in. All too quickly we climb into the air and I see our sleek black shadow traversing the ground below (if only I had my cine camera!). The seat belt sign goes off and we congregate around the flight test station in the front cabin. I am impressed with the subsonic rate of climb. To demonstrate the smooth transition through Mach 1, the flight test engineer places a 50 pence piece on its edge on the desk. The coin stays completely still as we watch the analogue Mach meter go through Mach 1 and continue increasing.

Time to go to work. There is a ceiling panel off in the rear cabin and we take some noise measurements with it missing. Before the panel goes on, I touch the aircraft skin briefly: hot! The fitter puts the panel back up and disappears to occupy the jump seat in the cockpit. I sit at a window seat and touch the window, which is certainly warm. The curvature of the earth is clearly visible, and looking up the sky is very dark blue, verging towards black. We carry out the noise measurements, window and aisle seats and standing throughout the cabin, to the agreed schedule. While we were working, we have been travelling down the Bay of Biscay and down off the African coast, turning opposite Casablanca. As the aircraft slows down, and with us still standing up, DG starts doing 0.8g push-overs – at which point I find it disorientating and feel better sat down.

We buckle up as we descend and come back into the circuit at Fairford for a full stop landing, with the thrust reverser effect clearly heard and felt. After taxying back in, we grab our gear and are invited to go for lunch at the canteen by the co-pilot Peter Baker. A full English breakfast is most welcome, as it is almost 3pm and ages since I had my breakfast. This was a test flight so had no in-flight service of any kind!

We get the flight data back at Weybridge to allow us to plot the internal noise data against the aircraft data. The flight was G-BBDG flight 154 with, as I only find out years later, Brian Trubshaw as captain. I am the proud owner of a BAC Aerospatiale Production Concorde flight certificate signed by Brian Trubshaw with the flight details of Mach 2.04, 56,000ft, 2 hours supersonic out of a total flight time of 3 hours 15 minutes on 16th January 1975.

Footnote: These days at Brooklands in DG you can see the remnants of the hat rack in parts of the rear cabin, while the front cabin is kitted out with luggage bins and seats from Concorde 208, G-BOAB (still at Heathrow). I had to drive from the Acoustics Lab in Weybridge to RAF Fairford to get to Concorde DG for the flight tests, but today at Brooklands you can walk just tens of paces from one to the other!

Flight certificate
The author's memento of flight 154, signed by Commander Brian Trubshaw – a lasting souvenir of an exciting day at work!
Photo: Robin Crossan

The Acoustics Lab today
The lab is now part of Brooklands Museum, with G-BBDG parked just yards away.
Photo: Robin Crossan

G-BBDG: timeline of key events

In a flying career of just under eight years, Concorde 202 (G-BBDG) achieved some notable firsts – notably, being the first production Concorde to land at Heathrow, and the first to carry 100 people at Mach 2.

13 Feb 1974	Maiden flight, from Filton to Fairford, flown by test pilots Brian Trubshaw and Peter Baker. The flight lasts 1 hour 45 minutes, during which the aircraft reaches Mach 1.4 and 42,000 ft.
10 Apr 1974	During her 15th flight, G-BBDG reaches Mach 2 for the first time.
6 Jul 1974	G-BBDG makes her first landing at Heathrow.
Aug 1974	G-BBDG becomes the first Concorde to carry 100 people at Mach 2.
7 Aug 1974	Commanded by Brian Trubshaw, G-BBDG flies from London Heathrow to Bahrain, via Tehran, to begin hot weather trials.
27 Aug 1974	G-BBDG embarks on a demonstration tour of the Middle East, with stops at Abu Dhabi, Doha (Qatar), Muscat, Kuwait, and Dubai.
3 Sep 1974	G-BBDG flies from Bahrain to Singapore to begin runway response trials.
28 Oct 1974	G-BBDG flies to Casablanca, Morocco, for certification testing; this includes take-off and noise measurements, and cold air supersonic cruise checks.
28 Feb 1975	G-BBDG begins trials at Madrid on runway, take-off, climbing, and landing performance as part of certification testing.
24 Dec 1981	After a total flying time of 1,282 hours 9 minutes, including 514 hours 9 minutes at supersonic speed, G-BBDG makes her final landing – a flight back to Filton, with pilots Peter Baker and Roy Radford, and flight engineer John Lidiard.
1982	G-BBDG is retired from flight status.
Apr 1984	British Airways buys G-BBDG as a source of spare parts.
2002	G-BBDG is used to test-fit new, strengthened cockpit doors following the terrorist attacks on the USA on 11 September 2001.
30 Oct 2003	Following the end of scheduled Concorde passenger flights, British Airways offers G-BBDG to Brooklands Museum.
May–Jun 2004	G-BBDG is dismantled and moved from Filton to Brooklands by road.
26 Jul 2006	After being reassembled and restored by specialists, together with a team of 100 volunteers led by Gordon Roxburgh, G-BBDG is opened for display to the public.
May–Jun 2016	A team of volunteers led by James Cullingham restore G-BBDG's nose and visor to full operation.
13 Feb 2024	A day of celebration is held at Brooklands Museum to mark the 50th anniversary of Delta Golf's maiden flight.

Finding homes for the fleet

When the Concorde fleets were retired, British Airways and Air France worked with aviation museums to re-home the aeroplanes. British Airways production manager Paul Caswell *describes his involvement in relocating Delta Golf to Brooklands.*

When the decision was made that Concorde was going to retire, quite a few establishments were asking what we were going to do with the aircraft and was it possible that they could have them for display purposes. The discussions were originally discussed at very high level, and then it was left to the Engineering department to discuss where they would go to. I was in nearly all of the meetings where we discussed the museums who wanted a Concorde.

New York was an obvious place to have an aircraft due to JFK being Concorde's main destination. We then had requests from Filton, Manchester, Barbados and Seattle. I was quite happy to let one go to Boeing as this was an aircraft they struggled to produce after spending many years and a huge amount of money on, only for it to be cancelled, due to their over-ambitious design. Edinburgh was agreed but it was discussed on how we could get it there. I mentioned we could trim G-BOAA, move it to Isleworth and put it on a barge and sail it up the North Sea. G-BOAB was not in a fit state to fly, so I asked if we could put it on the departure level inside Terminal 5, which at that time was in the process of being built. This suggestion was turned down as the top people wanted Concorde on display outside T5; however, this option in turn was later cancelled due to the council having objections, added to the fact that it was too late by then to put Alpha Bravo inside.

I was then told that Brooklands wanted a Concorde, but all seven British Airways aircraft had been allocated. That's when I mentioned G-BBDG, as we owned it, and although it was at Filton we could still move it by dismantling and transporting it via road. At first I was told "No", but I stuck to my guns (as I was a Weybridge boy). I took my General and Senior Managers to Brooklands and showed them around, explaining what was built here, and reminded them that in its day it was Britain's Seattle and half of each Concorde was built here and transported to Filton for assembly. The managers didn't even know the history of my beloved Brooklands, and didn't know that any aircraft were assembled there and took off from there. In fact, I pleaded with them that we should have an aircraft at the home of British aviation (and the place I first worked at building the aircraft); this was eventually agreed, much to my delight.

I discussed with Alan Winn, Director of Brooklands Museum, how to get the aircraft there, and also paid a few visits to Filton to advise Air Salvage International (ASI), the company who would be dismantling it, on where to cut the aircraft for easy assembly afterwards.

I met DG on the day it arrived at Brooklands and was invited to attend the opening day after ASI had re-assembled the aircraft in a such a professional way. I'm glad it is there now, and the staff are very knowledgeable on the tours they do for the public.

Arrival at Brooklands
Delta Golf had to be disassembled at Filton before she could be relocated by road to Brooklands. Here, the central fuselage section arrives at the museum.
Photo: Brooklands Museum Archives

After re-assembly
It took two years for a team from ASI, plus former Concorde engineers, students from the University of Surrey, and volunteers, to rebuild Delta Golf. This photo, from March 2006, shows the work almost complete.
Photo: James Cullingham

Anniversary at Brooklands

Mary Hely, Special Events Officer, Brooklands Museum

I started work at Brooklands in November 2022 as they began to reintroduce their Concorde events back to the public after the pandemic. Since I arrived I have worked with the Brooklands Concorde community to tweak the already outstanding offer, in order to provide more value for money for the guests who book into these events.

These events are a real celebration of everything Concorde. I continue to look at and develop our offers, with the introduction of the Platinum Simulator Flight, A Supersonic Valentines, An Evening with John Tye on 2nd March – to mark the 55th anniversary of the first Concorde flight from Toulouse – and a refreshed Concorde afternoon tea.

Alongside this, 2023 saw the 20th anniversary of the final flights of Concorde. Working with our marketing team and chief Concorde pilot Mike Bannister, we put together video content to share with the public, telling and sharing these flights from Mike's experiences. He generously permitted us to share photos that he took of each flight. This all culminated in a very special day here at Brooklands Museum on 26 November, where 90 people joined us to mark the occasion.

Happy 50th birthday to Delta Golf

In February 2024 I had the honour of being involved with G-BBDG, putting together the celebrations to mark the 50th anniversary of her first flight.

To celebrate the anniversary, Brooklands Museum commissioned renowned aviation artist Simon W. Atack AGAvA to bring a new painting, *Speedbird Delta Golf Over Brooklands*, to life. The painting was unveiled on 13th February 2024, in the Museum's iconic clubhouse, with an intimate ceremony for invited guests at 11am.

Brooklands Museum is delighted to share that this will also be available as a limited-edition print, signed by the artist; buyers also had the opportunity to get further signatures from its Concorde pilot community on 13th February. This is the first time Brooklands Museum has commissioned a limited-edition print. Sales of this print will support the future of its collections, including Delta Golf.

Later, there was an opportunity to view a nose droop at 1.15pm, accompanied by the British Airways Brass Band. In addition, members of the public were invited to bring their personal models of Concorde and set them up under Delta Golf from 2pm.

We are fortunate to work with some incredible people who were involved with G-BBDG's journey to us here at Brooklands. The anniversary events included a panel talk from some of those participants, to give further insight into this journey: chief Concorde pilots Jock Lowe and Mike Bannister, engineer Terry Selman, former Brooklands museum director Allan Winn, and Gordon Roxburgh, who founded the concordeSST website and led the volunteer team involved in restoring Delta Golf.

The Concorde Experience at Brooklands
Two of the Concorde-themed experiences on offer at Brooklands: (above left) Carol Cornwell, a former member of Concorde's cabin crew, serves champagne in Delta Golf's cabin; (left) a chance to take Concorde's controls in the simulator.
Photos: Brooklands Museum

The day's events formed part of the half-term celebrations of Delta Golf at Brooklands. During the week, different Concorde-themed family activities have been taking place across the museum.

For further information on coming events featuring Concorde, or to purchase a print of the new painting, please see the website www.brooklandsmuseum.com or email flyconcorde@brooklandsmuseum.com.

***Speedbird Delta Golf Over Brooklands* is unveiled**
The painting is unveiled by Simon W. Atack (just to the left of the painting) and HRH Prince Michael of Kent (just to the right of the painting). They are accompanied by former Concorde pilots and engineers: (from left) Captain Neil Rendall, Chief Concorde Flight Engineer Warren Hazelby, Captain Paul Griffin, Captain Mike Bannister, Captain Jock Lowe, Captain John Tye, Captain Richard Owen, Captain Tony Heald, and Captain Ian Smith.
Photo: Brooklands Museum

More about the artist: Simon W. Atack AGAvA

Simon W. Atack is an acclaimed British historical aviation and maritime artist of international renown. Born in October 1957, he held no other childhood ambition in life than to become an artist, and as soon as he recognised an aircraft in flight as such, he knew that aircraft were to be his No.1 painting subject.

Today his work is hanging in public and private collections around the world. His works include paintings for museums, air forces and navies. They have also graced book covers, film and TV productions, and documentaries, as well as being featured in limited-edition prints and on giftware.

Delta Golf's 50th birthday party

Justin Robson, Heritage Concorde

The day started off in typical British fashion, pouring down with rain! But it didn't dampen the spirits of the visitors one bit today as we all joined in celebrating G-BBDG's 50th anniversary since her first flight.

As the crowds built up around the aircraft, we were joined by His Royal Highness Prince Michael of Kent, who was on board to do the first nose droop of the afternoon. With the BA Brass Band playing under the delta wing, we were all treated to the Concorde salute by HRH, followed by one lucky raffle ticket winner shortly afterwards treating the public to a second nose droop.

Continuing the celebrations, Brooklands wanted to attempt to set a World Record of the most Concorde models under a Concorde. In the end we had over 80 models join in with the celebration; I think the biggest surprise of the afternoon was the fact there was only 3 Lego Concordes! Considering that the previous record was 1 model, it's safe to say that the record has definitely been broken.

The event was wrapped up with a panel talk sharing DG's story, which consisted of Captain Mike Bannister, Captain Jock Lowe, Terry Selman, Allan Winn, and Gordon Roxburgh, each person playing a huge part in the story of the Brooklands Concorde.

The talk began with Terry Selman, who was involved in DG's testing days at RAF Fairford and Brize Norton, sharing a fascinating insight into working on the aircraft. This was followed by Concorde pilot Jock Lowe, who flew on the very aircraft and was a part of turning Concorde into the success that she was with British Airways. Mike Bannister was his usual captivating self, sharing details of Concorde's retirement along with how the fleet was tendered out to museums and how locations were selected, which led perfectly to Allan Winn, who was Brooklands' CEO. Allan was just a few weeks into the role when he was tasked with securing the acquisition of DG for Brooklands Museum; safe to say it proved to be a huge success. Finally we had Gordon Roxburgh, who ran the restoration project – not only responsible for DG, but for organising the mammoth task of restoring the Concorde simulator too! It was a fascinating insight into all the hard work that has gone into DG, with many fond memories shared by all.

The event ended with a quick Q&A, with the sort of questions we see frequently asked on the Heritage Concorde Facebook group and Mike giving his very honest answers about it all, but the highlight was a very young child asking about what it felt like to fly at Mach 2, much to the aww's of the large audience; it's great to see that Concorde still fascinates people of all ages.

And with that we wrapped up a wonderful celebration of DG's birthday. It was a reminder of what an incredible achievement the aircraft was when she was in the skies, and her continued success since she arrived at Brooklands Museum – and, more importantly, a tribute to the people that have been involved.

It was a fantastic day catching up with friends, pilots and test engineers, along with the staff and volunteers at Brooklands, who all clearly hold such a strong passion for her. Long may it continue!

Birthday celebrations
Above: Captain Mike Bannister, on the steps, talks the attendees through a nose droop. Right: The models brought by the visitors are laid around DG's nose wheel. *Photos: Justin Robson*

Delta Golf's French cousin

Concorde G-BBDG's role as a development aircraft was paralleled in France by that of her older cousin, F-WTSB (construction number 201).

Making his maiden flight on 6 December 1973, this aeroplane, like Delta Golf, carried out the final phase of test flights before certification in late 1975.

F-WTSB and G-BBDG carried out most of the test flights that led to certification; however, although these two are referred to as "production" aircraft they never went into airline service as they differed in certain structural and other respects from the final aircraft supplied to Air France and British Airways.

F-WTSB was notable for being the aircraft flown to New York in October 1977 for noise testing, to secure permission for scheduled Concorde flights to operate to JFK. Commanded by Jean Franchi, Chief Test Pilot for Aérospatiale, with Air France pilot Pierre Dudal as co-pilot, F-WTSB also carried BA Captains Brian Walpole and Tony Meadows, plus CAA representative Gordon Corps and a team of technicians. The aircraft was greeted by anti-noise protesters, but its landing was recorded as being within the Port Authority of New York's noise limits of 112 dB.

F-WTSB flew regularly until 1982, then was stored in near-readiness for flight at Chateauroux, before being flown back to Toulouse for the last time on 19 April 1985. For many years he stood on the airfield outside the Aérospatiale hangar; the only notable event during this time was his participation in the 20th anniversary of Concorde 001's first flight, when F-WTSB was sprayed red, white and blue by students from Toulouse.

On 14 March 2014, after being re-painted and having his interior refurbished, F-WTSB was moved into the Aéroscopia museum, where he is still on display today. The aeroplane is one of two Concordes on display, the other being production Concorde F-BVFC – the last French Concorde to fly.

F-WTSB in flight
Sierra Bravo performs a display at the Paris Air Show, 6 June 1975. The aircraft is seen here in 1970s Air France livery, but for the noise level tests at JFK in October 1977 he carried French livery on one side and British on the other.
Photo: Stuart Bourne qualityaviationimages.com

Concorde watch

Concorde G-BOAE

British production aircraft

Location: Grantley Adams International Airport, Barbados
Reporter: John Hutchinson **Date:** 21 December 2023

My wife and I visited Barbados over Christmas, staying from 20–28 December. Friends of ours organised a trip for me to visit G-BOAE.

I also met Hadley Bourne, Chief Executive Officer at Grantley Adams International Airport (GAIA). During a long career in aviation, Mr Bourne worked for a time as a ground engineer for British Airways at Treforest in Wales; this included working on Concorde's Olympus engines. He has been the driving force behind ensuring that she is very well looked after.

When I entered the hangar, Alpha Echo looked immaculate – she looked as though she was almost ready to go out on service. Mr Bourne let me on board the aircraft. I went into the cabin and on to the flight deck, where I felt really quite nostalgic!

Plans for the new display

Barbados has a huge number of visitors from cruise ships, and the airport terminal has become quite congested as a result. GAIA has found that they need a dedicated terminal just to serve passengers transferring between cruise ships and aircraft. The hangar housing Alpha Echo will become a new "Concorde terminal", through which passengers will be transferred from cruise ships to connecting flights and vice versa.

When Alpha Echo was on display previously, the aircraft was open to visitors all the time, but it was proving too costly to run, so had to be closed. During the years since closure, however, Alpha Echo has been well looked after and she is still in extremely good condition.

For this new plan, people will initially just be able to view the exterior of the aircraft as they pass through the terminal, but the ultimate plan is for Alpha Echo to be re-opened on a limited basis for special groups, who will be allowed on board the aircraft. The new terminal is due to be opened in 2024.

I appreciate the fact that Mr Bourne gave so much of his time to show me around the aircraft. He is a passionate lover of Concorde and also wishes to see Alpha Echo act as an inspiration to younger generations.

Perfectly preserved
G-BOAE, still in immaculate condition despite being closed to the public for over five years. *Photo: John Hutchinson*

A burst of nostalgia
Above: John Hutchinson back in the captain's seat that he occupied for so many years.
Right: John with airport CEO Hadley Bourne (right) and John's friend John Mackenzie (behind).
Photos: John Hutchinson

Concorde G-AXDN

British pre-production aircraft

Location: Imperial War Museum, Duxford, UK
Reporter: Graham Cahill **Date:** 30 January 2024

We had not visited Duxford for a while due to various commitments and disruptions. This year the intention is to re-start monthly visits.

Team for the day was John Dunlevy, Peter Ugle, James Cullingham and myself. The tasks were as follows.

1. Inspect the nose

We inspected the nose fully. We still have small seeps of oil coming from various places. These are tiny leaks; however, they have accumulated over the months of our absence. The leaks will be fully addressed when we revamp a spare set of nose actuators. Oil lost was approximately half a can (500ml) so we aren't too concerned; however, it's annoying to have to spend time mopping little leaks.

The nose worked well. We noticed a slight mechanical issue with the nose switch gate in the cockpit when going from 17.5 degrees to 5 degrees, but probably nothing a bit of lubrication and a service won't solve. We have serviced the nose switch at Manchester, which had a similar issue, so we will probably do this on our next visit to Duxford in the workshop.

2. Work on the spill door

We continued work on the spill door demonstration but failed to make the door close properly. My fault on this one – I had made a part for the spill door but it wasn't up to the job. Peter Ugle will remake the part during the next month and we should be in a position to fit it next time. It doesn't affect the spill door demonstration, but just means the spill door won't close fully.

3. Replace the screens on the ice desk

We converted the two remaining ice desk monitors to flat LCD screens, having converted one as a proof of concept before Christmas. The old CRT screens were starting to fail and it was only a matter of time before they all failed. We have had to make acrylic screens to retain the look of the units; we did this by creating a mould to form the acrylic. We left the mould at Duxford for future use. We fitted the remaining two LCD screens behind the acrylic. The conversion went well and they are up and running.

4. Safely store the M2V oil

We had been aware for some time that Brooklands wanted us to remove our stock of M2V oil, which they had kindly stored for us since it was donated by Exxon-Mobil some years ago. They wanted the space for other uses, which is understandable. We are most grateful to Brooklands for storing it free of charge for all this time.

On 29 January James Cullingham hired a van (funded by Heritage Concorde) to move the oil to Duxford. The Duxford Aviation Society (DAS) were keen to help as the oil is the only remaining stock for Concorde hydraulic restoration. This stock will ensure that any Concorde in the world that requires the oil can use it. We only moved 90% because of loading weight restrictions; the remaining oil can be moved during the year.

5. Regular maintenance

We did all the regular maintenance of the displays on board G-AXDN. The lighting filaments held up well, with only a few which were blown, but it was nice to see John Dunlevy doing all his usual tests.

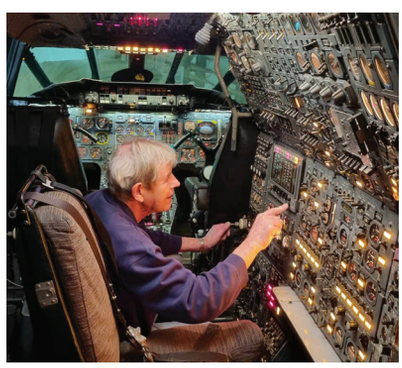
6. Load the T jack

We borrowed a T jack from Duxford for use at Manchester – it's a big heavy lump. Grateful again to DAS for the loan. This would enable us to put G-BOAC on axle stands and rotate the wheels.

James then drove the van from Duxford to Manchester. This is a long and pretty awful drive.

I say this all the time but DAS (British Airliner Collection) at Duxford are some of the most passionate and accommodating people you could ever wish to meet and we are proud to be part of the team down there. We thank them for their help, especially with the storage of the M2V and the loan of the jack to Manchester.

If anyone wants to volunteer at Duxford they are recruiting volunteers; see this web page for details: www.britairliners.org/support-britliners



Lighting tests
John Dunlevy tests some of the lights on the flight engineer's station. Any lights found not to be working had their filaments replaced.
Photo: Heritage Concorde

Concorde G-BOAC

British production aircraft

Location: Runway Visitor Park, Manchester, UK
Reporter: Graham Cahill **Date:** 31 January 2024

Team was James Cullingham and myself with Gareth as representative for the Runway Visitor Park (RVP). This was day 3 of the Concorde work for James, and day 2 for me.

The plan for the day was to inflate and rotate the tyres in preparation for fitting axle stands.

Having left Duxford the previous day with the heavy lump of a T jack loaned by Duxford Aviation Society for the work at Manchester, we arrived at about 10am.

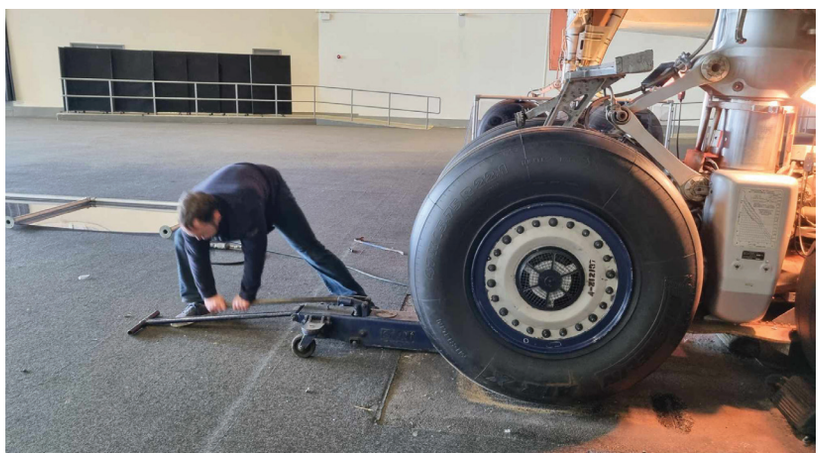
The tyres have been a concern for a while now and we are finding a permanent solution for the issue by fitting axle stands (more on this in a future issue). The beading was starting to disappear into the rim of the wheel. This became most evident when lockdown was on as we usually inflate the tyres every 6 months or so, but with lockdown we missed more than one tyre visit.

Rotating the tyres

Today was all about lifting the axles so the wheels were off the ground, inflating the tyres, and rotation. The wheels had not been rotated since the move into the hangar some years ago, due to no jack being available at this Concorde. In 2003, each Concorde retiring to museums was provided with a suitable jack on delivery to complete this task, but Manchester's had gone missing.

Each of the eight main tyres were inflated and rotated, and we are pleased to say the tyres are acceptable for display. The rotation of the tyres has definitely sorted the disappearing bead issue, and with axle stands to be fitted at a future date the issue will be permanently solved.

We also inflated the nose leg gear (NLG) tyres and will be fitting an axle stand to the NLG. It always takes pretty much all day to inflate and rotate tyres.



Left main landing gear
Above: James Cullingham jacks up the gear.
Right: A clear gap can be seen under the rear tyres, in preparation for the tyres to be rotated.
Photos: Heritage Concorde

We also had to ensure that the visitor stairs were flush against the aircraft before leaving; with the inflation of the tyres the stairs were about 4 inches away from the aircraft, leaving an unacceptable gap for visitors to step over when boarding.

Nose operation

We then checked operation of the nose and I ran James through the improvements we had made since his last visit a few years ago.

In all a successful visit. Thanks to DAS (British Airliner Collection) for the loan of the jack (which will remain at Manchester until the axle stands are fitted).

Thanks also to James who did about 4 days' work in 3 days. Hard work much appreciated.

Thanks to the RVP for accommodating us; we had to close 90% of the hangar and pause tours to complete this task.

For further details about G-BOAC, or to book a tour, please see the RVP website: www.runwayvisitorpark.co.uk/visit-us/explore-our-aircraft/