

MACH 2

Concorde magazine

Celebration in Paris
*Honouring 50 years of
Anglo-French excellence*

Honouring Concorde
*An award for the British
Concorde fleet*

Focus on Alpha Charlie

*A major repair, and a look
back at an epic flight*

Concorde watch
News from Sinsheim

Issue 24
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INTRODUCTION

This issue of Mach 2 takes off in spectacular fashion. The British group Foxie's Filton Flyers visited Paris for an event organised by our French allies Olympus 593, featuring a reception at the British Embassy.

Concorde was further honoured in a ceremony at the Guildhall in the City of London, when the BA fleet was awarded the Brackley Memorial Trophy for excellence in aviation. Concorde Captains Mike Bannister and John Hutchinson, and engineer John Dunlevy, report on the events of that illustrious evening.

We also bring great news about Concorde G-BOAC, at Manchester. The Heritage Concorde team have replaced the broken right-hand windshield: a major repair that has been needed for some years. We look back at the role that G-BOAC played in the route-proving and endurance programme in 1975 – the last step towards certification of the aircraft.

We end with a reminiscence from a new contributor, former Concorde flight attendant Jayne van der Vorm. Jayne recalls how she first came to work on Concorde, and the heady days of her career. Finally, we have a report on Concorde F-BVFB, at Sinsheim in Germany.

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ANGLO-FRENCH EXCELLENCE

The connections between British and French Concorde enthusiasts were strengthened in a unique and powerful way on Saturday 12 October, when the British group Foxie's Filton Flyers (FFF) made a very special journey to Paris. Katie John describes the events of an extraordinary day.

OUR FRENCH FRIENDS at Olympus593, headed by Frédéric Pinlet and Jean Charles Dupré, worked with Paul Evans and Fred Finn of FFF to arrange a uniquely fitting commemoration of the Anglo-French excellence that brought us Concorde – a reception at the British Embassy.

Welcome at the Embassy

The British group, headed by Paul Evans, included former British Airways Concorde pilot John Hutchinson and Concorde engineer Peter Ugle, as well as Fred Finn, who had put in a great deal of work to organise the events.

Travelling by Eurostar, we arrived at Gare du Nord just after 11.15. Olympus had laid on taxis to take us to the Embassy. Our first view of the elegant building was impressive, with the courtyard adorned by vintage Rolls-Royces, Bentleys, a Triumph TR4, and other classic cars. The interior was just as stunning, with gilded walls, crystal chandeliers, and Aubusson carpets; amidst the splendour there were also items of Concorde memorabilia, including an attitude display indicator, on show.

Frédéric and Jean Charles met us there, together with former Air France Concorde captain Jacky Ramon, Air France Concorde stewardess Nicole Menneveux, British Airways Concorde stewardess Laurence Keniston and her husband Kevin, and members of the car club Triel Auto Retro, who had loaned their vehicles for this occasion. Olympus had also brought a photographer, and a cameraman from Resonance Films, to record the day.

We were welcomed by Matthew Lodge, Minister and Ambassador of Great Britain and Northern Ireland to UNESCO. Mr Lodge gave a short speech commemorating the British and French pioneers who created Concorde. He explained that the British Embassy works

Minister's speech

Minister Matthew Lodge (third from left) welcomes the group and pays tribute to the Anglo-French excellence that produced Concorde.

Photo: Jean Charles Dupre

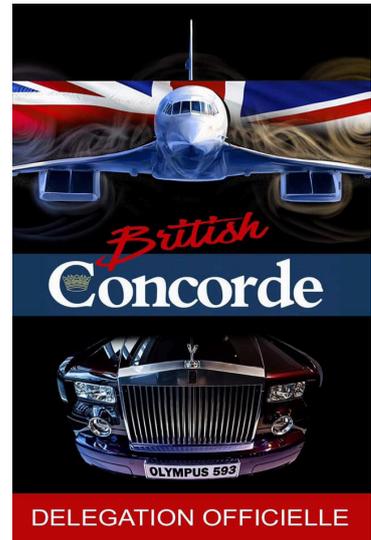
Official pass

One of the passes that were provided by Olympus593 for identification and as souvenirs of the occasion.

Photo: Jean Charles Dupre

with major companies in the aeronautical sector, including the Royal Air Force (currently conducting a joint operation with the French air force in North Africa) and Rolls-Royce. He said that events like this commemoration of the 50th anniversary of the first Concorde flight were very important for maintaining the relationship between our two countries.

Frédéric Pinlet gave a speech thanking the Embassy for receiving us and thanking the military personnel present: Air Commodore Tim Below, Defence Attaché; Group Captain Antony McCord, Air Attaché; and Group Captain Steve Kilvington, RAF Liaison Officer to the French Air Force. He also thanked Concorde, saying that the gathering today made it seem as if Concorde was still alive, and hoping that this event would spark new ideas and new links between Britain and France.



Display piece

Right: An illustration of the lasting role that Concorde has played in promoting Britain. The plaque on the case reads: "Concorde (ADI) Indicator. This unit is the property of British Airways and is on loan to the British Embassy Paris. April 2004."

Photo: Alan Ferrier



A meeting of minds

Far right: Concorde Captains Jacky Ramon (left) and John Hutchinson (right) share their thoughts.

Photo: Paul Evans



He paid tribute to all those who had built and operated the aircraft.

Frédéric's sentiments about Concorde were echoed by Fred Finn. Fred observed that this event had taken the two of them a year to plan, and thanked Frédéric for all his efforts.

John Hutchinson also gave a speech to thank the Embassy. He said that he was a former Master of the Honourable Company of Air Pilots, who hold an annual event in the London Guildhall, and this year the Company's Brackley Memorial Trophy, for excellence in aviation, would be awarded to the members of the Concorde fleet.

After coffee, champagne, and petits fours, Embassy staff member Ben Newick gave us a brief tour. He outlined the history of the building and showed us a few of the rooms, including the room with Napoleon's sister's bed, and the Throne Room – only ever used by the Duke of Windsor, after his abdication.

Joint success

The organisers of the event enjoy the fruits of their hard work:

(from left) Fred Finn, Paul Evans, Frédéric Pinlet, Laurence Keniston, Jean Charles Dupre.

Photo: Jean Charles Dupre



Travelling in grand style

Outside the Embassy, we admired the classic cars – which included a 1938 Packard and a 1938 Bugatti as well as the British vehicles – and met their drivers. To our astonishment, Frédéric then told us that these amazing cars would be taking us to the place where we were to have lunch. We proceeded in grand style through the boulevards of central Paris, while tourists and passers-by stopped to watch us and take photos of the cars, and swept along the motorway.

Memories of Concorde

Lunch had been arranged at the Hotel Golf de Gonesse. We were joined by Geraldine of Olympus593, and Pascal Touzeau, a former ground engineer on Concorde. During the long and enjoyable lunch, Fred Finn presented Frédéric with a copy of the Concorde painting that he had been given to mark his 600th Concorde flight. Geraldine and Pascal presented us all with commemorative keyrings.

John Hutchinson gave a brief talk about his history in aviation and some of the outstanding moments he had experienced with Concorde. He had started his flight training in 1955, never dreaming that 22 years later he would be in command of a supersonic airliner. He mentioned one remarkable Concorde passenger – an old lady whose first memory of an aircraft was seeing the Wright brothers' aeroplane, and whose first ever flight was with Louis Blériot in 1911. The lady had stayed on



Entrance to the Embassy

Staff member Ben Newick told us that this building had originally been built by Napoleon Bonaparte's sister, who sold it to the Duke of Wellington at the start of the 19th century.

Photo: Jean Charles Dupre

the flight deck for the landing in Washington, then declared that she would never fly again.

“one remarkable Concorde passenger – an old lady whose first memory of an aircraft was seeing the Wright brothers’ aeroplane...”

Laurence Keniston said that she had been working on a Concorde flight in 2000 on which one of the passengers was an 89-year-old lady, who had said that this was her first ever flight in an aeroplane.

Jacky Ramon recalled flying a Boeing 737 from the UK to Paris, and being joined on the flight deck by an elderly Canadian man. As they flew over the Normandy beaches, Captain Ramon made a remark about “no flak today” – at which point the passenger said he had flown over those same beaches in a Spitfire on D-day!

After lunch the day took a more sombre turn, as the cars conveyed us to the site of the Concorde crash in July 2000. The crash site where F-BTSC met his end has remained fenced off and untouched since the tragedy. We stood and paid tribute at the memorial to the 113 people who lost their lives on that day. Our French companions shared a quiet, emotional moment as they remembered their colleagues who died on the flight. John Hutchinson and Peter Ugle of British Airways bowed their heads in respect.



Life on the flight deck

Captain Jacky Ramon recalls highlights from his career as a Captain on Concorde and other aircraft for Air France.

Photo: Jean Charles Dupre

Unfortunately, we were too late to visit the Musée de l’Air et de l’Espace (MAE) at Le Bourget, so we were unable to see Air France Concorde F-BTSD and prototype 001 (F-WTSS). We did, however, end the day with a visit to Concorde F-BVFF, mounted on stilts at the edge of Charles de Gaulle airport. We



A time for reflection

The memorial to those who perished in the crash at Gonesse. The British and French Concorde groups shared a silent tribute to the victims.

Photo: Jean Charles Dupre

parked in a lay-by behind the aircraft, and took photographs from there and from the verge opposite, as the setting sun caught the airframe and the display lights came on in the engine bays. The 1988 Bentley from TAR kindly took some of us back to our hotel. The night-time drive through the City of Light brought this day of wonders to a glorious end.

Thanks to the organisers
 Mach 2 would like to thank Foxie's Filton Flyers, Olympus593, and TAR, whose combined work made this day possible. For details on the work of Olympus593, see their website: <http://www.olympus593.com>

A cavalcade of classic cars

The wonderful cars that carried us through Paris were very kindly supplied by the classic car club Triel Auto Retro, of Triel-sur-Seine. Mach 2 would like to thank the club and the drivers, listed here:

Vehicle	Max. speed	Driver
1938 Bugatti Coach Ventoux	160 km/h	Guy van Hecke
2003 Bentley Arnage T	320 km/h	Eric Leclerc
1988 Bentley Turbo 360 CV V8	235 km/h	Thierry Tassin
1991 Rolls-Royce Silver Spur II	202 km/h	Regis Bordas
1938 Packard Eight Coupé Frenay	138 km/h	Jean Pierre Antoine
1965 Triumph TR4A	190 km/h	Josep Gomez
1936 Rolls-Royce Coupé 25/30	120 km/h	Fernando Maggiani

Further details about TAR can be found on the club's website: <https://www.trielautoretro.com>

Enthusiasts' gathering

Members of the Concorde groups meet the drivers of the classic cars. The 1936 Rolls-Royce Coupé, Triumph TR4A, and Bentley Arnage are just visible behind the guests.

Photo: Alan Ferrier



A dazzling line-up

TAR member Jean Pierre Antoine photographs a selection of the cars on display. From left to right: Bentley Turbo, Packard Eight Coupé, Bugatti Coach Ventoux, and two Rolls-Royce Silver Spurs.

Photo: Alan Ferrier



Concorde F-BVFF

Below: Fox-Fox on display at the edge of Charles de Gaulle airport, facing the direction in which he would have taken off for the flights to New York.

Photo: Katie John

Bottom: The Packard and the Bugatti form a modernist tableau with Concorde as the engine bay lights come on.

Photo: Peter Ugle

A farewell gathering

Members of Foxie's Filton Flyers, Olympus593, and TAR pose for one last photograph before leaving Fox-Fox.

Photo: Jean Charles Dupre



AN HONOUR FOR CONCORDE

On Thursday 24 October the Honourable Company of Air Pilots (HCAP) held a dinner at the London Guildhall. One highlight of the evening was the award of the Brackley Memorial Trophy to the British Airways Concorde Fleet. We are delighted to provide eyewitness reports of this illustrious occasion from three members of the fleet.

Captain John Hutchinson played a major role in putting the Concorde fleet forward for the award; on the next page he describes his involvement with the background to the event.

On the night, the trophy was received on behalf of the whole Fleet by representatives from current Flight Crew, Cabin Crew, and Engineering who were part of the Concorde

Fleet and yet are still serving with British Airways, in recognition of the fact that many of those involved with BA's award-winning Concorde Fleet are still contributing to the airline's success. We are delighted to present accounts from Captain Mike Bannister and avionics engineer John Dunlevy of the evening and the presentation.

Official presentation

John Tye (second left), Suzanne Gordon-Watson (centre), and John Dunlevy (second right) receive the award from Malcolm White, the Master of HCAP (right), and Air Chief Marshal Michael Wigston, Chief of the Air Staff (left).

Photo © Gerald Sharp Photography



Members of the fleet

The attendees from British Airways' Concorde fleet assemble for group photographs.

Photo: Mike Bannister



The background to the award

Captain John Hutchinson, British Airways Concorde pilot 1977–1992

IT OCCURRED TO ME at the beginning of the year that the 100-year celebration of British Airways and 50th anniversary of Concorde’s first flight was the perfect opportunity to recognise BA’s achievement in operating this unique aeroplane safely for 27 years.

I discussed this idea with various people including Jock Lowe, Mike Bannister and Peter Benn. They all agreed that this was an excellent idea so I asked Peter Benn to submit a nomination to HCAP’s Trophies and Awards Committee. The committee met in the summer to review all nominations for awards and when it came to the Brackley there was unanimous support for recognising the BA Concorde fleet. Needless to say I was absolutely delighted.

A consummate honour

Captains John Hutchinson (left) and John Tye (right) with the trophy. *Photo: John Hutchinson*



The presentation ceremony

Captain Mike Bannister, British Airways Chief Concorde Pilot 1995–2003

ON THURSDAY OCTOBER 24TH, the 16th anniversary of the last scheduled Concorde flight, the British Airways Concorde Fleet received the Brackley Memorial Trophy from the Honourable Company of Air Pilots (HCAP) at their Trophies and Awards Banquet in London’s historic Guildhall.

The Trophy is awarded to “an individual, a complete aircraft crew, or an organisation, for an outstanding contribution to air transport or transport aircraft operations”. The Trophy is retained by HCAP, but the Fleet received a Certificate as a permanent record. The certificate and the text of the citation for the award are shown on the following page.

The recipients, on behalf on the Fleet, were Captain John Tye, Cabin Service Director Suzanne Gordon-Wilson and Chief Avionics Engineer John Dunlevy. All served on Concorde, are still with BA or have very recently retired.

Displaying the certificate

Captains John Tye (left) and Mike Bannister (right) with the certificate. *Photo: Mike Bannister*



The citation for the award

British Airways Concorde scheduled supersonic Flight Operations began on 21st January 1976 and lasted until October 24th, 2003. In that time the airline operated just under 50,000 supersonic flights and carried over two and a half million passengers. This was an extraordinary achievement by Flight and Cabin Crew, British Airways Concorde Engineering and BA Marketing and Sales staff. It was a product of continuing dedication and teamwork between these groups throughout the aircraft's airline career. The Concorde fleet also worked closely with the British Aircraft Corporation and with the Bristol aero engine division of Rolls Royce both of whom made an integral contribution by closely monitoring the operation of the aircraft and by providing solutions to any technical problems as they arose. This cooperation was so close that in 1984 British Airways bought the Concorde support business from the manufacturers!

The record of the aircraft throughout its airline history was one of consistent operational excellence delivered across periods of extreme economic uncertainty which also encompassed the enormous challenge of the return to service program.

Scheduled flights included operations to New York, Washington DC, Barbados, Bahrain and Singapore with numerous charters and Round the World Flights. Regular 'Round the Bay' operations were a feature of the British Airways Concorde Fleet, enabling many more to experience flight at twice the speed of sound and at altitudes of sixty thousand feet on a return flight from and to London's Heathrow Airport.

In the Fiftieth Anniversary Year of Concorde's First Flight it is right to mark the enduring commitment of The British Airways Concorde Fleet who made

this possible. Routine civilian flight operations at Mach Two were a hitherto unheard-of concept and the prior sole preserve of military aviators operating fighter aircraft.

Course length and the achievement and subsequent maintenance of the necessary operational standard were significant challenges of themselves before adding to that the many further demands faced by training and management pilots and flight engineers. Engineers were working with added systems that had few if any parallels in subsonic aircraft and which required unfailing reliability. Cabin Staff were dealing with some of the world's most demanding and driven customers. Everyone who came to the Concorde operation had a passionate desire to be there and to deliver the routine excellence that was the hallmark of the Concorde Fleet.

For the extraordinary achievement of operating the world's only supersonic airliner with safety and precision for over two and half decades of airline service, an outstanding contribution to air transport, the British Airways Concorde Fleet is awarded the Brackley Memorial Trophy.

The award certificate

Photo: Mike Bannister



The Honourable Company of Air Pilots

Before the Company was established (as the Guild of Air Pilots and Air Navigators) in 1929, the future status of air pilots and air navigators was very much in doubt. The small group of commercial pilots who formed the Guild were virtually responsible for ensuring that their successors enjoyed a professional status, and one of the Company's objectives has been to foster and improve that standing.

From the beginning the Company was modelled on the lines of the old City Guilds and Livery Companies and its constitution and by-laws reflect that foundation, although its activities and work are very much contemporary.

The Company became a Livery Company of the City of London in 1956: a rarely bestowed mark of distinction. This was a great factor in increasing not only the influence of the Company, the 81st Livery Company to be formed in 800 years, but of the entire profession of pilot and navigator in the United Kingdom and overseas. In 2014, it received a further mark of distinction in being granted a Royal Charter in the name of the Honourable Company of Air Pilots.

The Brackley Memorial Trophy is awarded to an individual, a complete aircraft crew, or an organisation, for an outstanding contribution to air transport or transport aircraft operations.

Captain John Hutchinson

Receiving the trophy

John Dunlevy, Concorde Avionics Engineer

AT THE HONOURABLE COMPANY OF AIR PILOTS Trophies and Awards Banquet, held on 24 October at the Guildhall, City of London, the Brackley Memorial Trophy this year was awarded to the British Airways Fleet for the extraordinary achievement of operating 50,000 supersonic flights and carrying over two and a half million passengers.

The record of the aircraft throughout the airline's history was one of consistent operational excellence delivered across periods of extreme economic uncertainty, which also encompassed the enormous challenge of the return to service programme in 2001.

This was an extraordinary achievement by Concorde Flight Crew, Cabin Crew and Ground Engineers as well as BA Marketing and sales staff. On the fiftieth anniversary of Concorde's first flight it was only right to mark the enduring commitment of the British Airways Concorde Fleet who made this possible.

The trophy was accepted on behalf of British Airways by Captain John Tye, Stewardess Suzanne Gordon-Wilson and myself. Also in attendance were many more members of the Concorde Fleet and it was a truly special event and an absolute honour and privilege for the three of us to accept the award. The Medieval Great Hall was the venue for an unforgettable evening, with over 550 seated guests and 120 catering staff serving the most delicious fare.



Representing the Concorde fleet

John Dunlevy (left), Suzanne Gordon-Wilson (centre), and John Tye (right) with the trophy, received on behalf of the fleet.

Photo: Mike Bannister

List of attendees from the BA Concorde fleet

Bannister	Captain Mike	Chief Pilot & GM
Benn	Captain Peter	Co-Pilot
Benson	Captain Phil	Co-Pilot
Blundell-Pound	Sq Ldr George	Commercial Manager
Bohill-Smith	Captain Steve	Co-Pilot
Britton	Captain Norman	Captain
Brown	Captain Bill	Flight Engineer
Dunlevy	Mr John	Engineer
Gordon-Wilson	Ms Suzanne	Cabin Crew
Gunton	Captain Viv	Captain
Hutchinson	Captain John	Captain
Jones	Mr Alex	Flight Engineer
Rendall	Captain Jerry	Captain
Rowland	Captain Dave	Captain & GM
Runnalls	Dr Lesley	Cabin Crew
Tye	Captain John	Co-Pilot
Weidner	Captain Ron	Captain
Wroe	Ms Aulie	Cabin Crew



The Brackley Memorial Trophy

Photo: Mike Bannister

Restoring the Flagship

The preservation of our Concorde is one of the principal aims for the engineers and volunteers who care for these aircraft. Concorde G-BOAC, BA's Flagship, has had some significant repairs over the years. This work started in 2011 with a repair to a visor panel; it has now been concluded with the fitting of a new windshield to replace a broken one. Graham Cahill of Heritage Concorde provides the details.

The right-hand windscreen on G-BOAC shattered some years ago and has long needed attention. This was one of my prime objectives when I took over Heritage Concorde in 2012. I am happy to say the work has now been done; on 24 September myself and John Dunlevy from Heritage Concorde visited Manchester and carried out the repair.

Preparing for the work

The job can only be done by lowering the nose to 12.5 degrees. The options were to lower the nose either using a mechanical method, with the use of cranes and by removal of the nose actuators, or by the far more elegant and proven way of lowering the nose using the same method used at Duxford, Brooklands and now Filton. The Runway Visitors Park (RVP) did agree that the job needed doing and wanted to know more about the methods used at other museums. Once this was explained, the RVP managers were keen to progress with the hydraulic method; this would give the added bonus of ongoing nose moves at this location (as has already been reported by Mach 2 Magazine in a previous issue). Paperwork for the completion of the job had already been drafted some time ago by Graham Cahill and Gordon Roxburgh (of Brooklands Museum).

The day of the repair

The RVP and Manchester Airports Group (MAG) arranged for some substantial scaffolding, at significant cost, which was erected from 07:00 on the day of the work. I have to say all parties involved with these arrangements did a fantastic job and

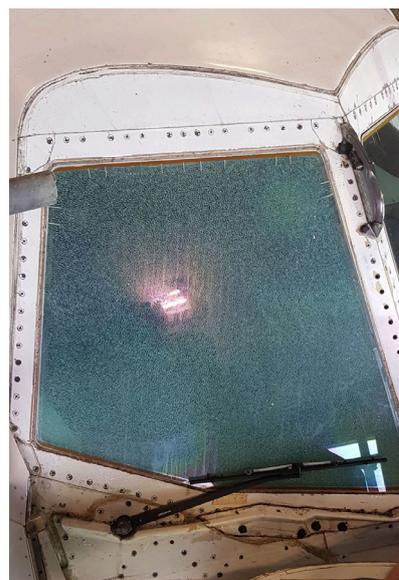


Starting the job

Above: Heritage Concorde appreciated the provision of proper scaffolding, courtesy of Craven Scaffolding. Right: The damaged windscreen, seen from the scaffolding. Photos: Graham Cahill

would like to thank Craven Scaffolding for their help on this one. We needed access to a point above the lowered nose on Concorde and a safe working platform so the 100 or so screws could be removed from the windscreen without stripping or damaging them. Myself and John Dunlevy arrived at 10:00am and the scaffold was almost up and ready.

The process outlined in the manual was used for completion of the job and it went very well with absolutely no problems. The first step was to remove the windscreen screws, windscreen wiper, rain deflector and four cover plates from the windscreen outer frame. Next, the visor location fitting was removed and the frame was removed. The broken windscreen was pushed outwards from inside the aircraft and removed by simply lifting it out; the defrost heater plug was unplugged, and the old windscreen was lowered.



The new windscreen was originally supplied by Brooklands Museum in 2011; the windscreen was cracked when supplied, but GKN, who manufactured the glass panels, repaired it in 2011, and since then it has been in safe storage at Manchester. This windscreen was lifted up to the working platform height. It was fitted to the aircraft, cleaned, and set correctly so the frame fitted. It was then a simple task of replacing all parts; frame screws were not

tightened to full torque but were all nipped up tight.

The job was completed in about 4 hours and scaffolding was down in about an hour – job done! We raised the nose and admired the new view from the flagship of the fleet. The difference is truly amazing.

This was a really big goal for me personally and I am immensely proud to say we have finally com-

pleted this job on my local Concorde. I cannot thank the RVP and MAG enough for their support and help in getting this job done; they have been fantastic. Special thanks go out to Rob Pattison, Paul Emblow, John Hepple, John Dunlevy, Ian Mosdell and Gordon Roxburgh.

We hope to bring more news soon, in the meantime, go and visit G-BOAC and admire the new view.

Further information

For more details on the work of Heritage Concorde, please visit their website:

<https://www.heritageconcorde.com>

For news of Concorde G-BOAC and information on visiting the aircraft, see the RVP website:

<https://www.runwayvisitorpark.co.uk/visit-us/explore-our-aircraft/>

The repair procedure



Initial stage

Above: Heritage Concorde engineer John Dunlevy unscrews more than 50 screws to free the windscreen frame.
Photo: Graham Cahill



Removing the frame

Left: John Dunlevy removes the frame holding the windshield. It will be cleaned on the ground.
Photo: Graham Cahill

Cleaning

Right: John cleans the seals where the new glass will be installed.
Photo: Graham Cahill



Fitting the new glass

Far right: John fits the new windscreen and polishes it.
Photo: Graham Cahill



The finished work

Below: The frame is re-fitted around the new windscreen and screwed back into place. The old, damaged windshield can be seen on the ground beside the aircraft.
Photo: Graham Cahill



Restored view

The view through the new windscreen, as seen from inside the aircraft. *Photo: Graham Cahill*



Feats of endurance

During the summer of 1975, Air France Concorde F-BTSC and British Airways Concorde G-BOAC carried out the last major phase of flight testing: the endurance and route-proving flights. We look back at the events of that summer, and hear from members of the British Airways crews involved with the flights by G-BOAC.

The endurance and route-proving programme was the last stage that Concorde had to undergo in order to gain its Certificate of Airworthiness. The programme comprised 750 hours of flying, with flights involving various different physical and climatic operating conditions that the aircraft might encounter, and following typical sample routes.

The programme involved both the aircraft manufacturers and the airlines that would be operating Concorde: Aérospatiale and Air France for the French, and the British Aircraft Corporation (BAC) and British Airways for the British. As well as testing the aeroplanes, the programme also provided an opportunity for the first airline crews to gain their route qualifications and for the ground crew to establish their intended maintenance procedures. Each side would fly one of their aircraft: F-BTSC (production aircraft 203) for the French, and G-

BOAC (production aircraft 204) for the British. The flights would also carry invited guests as passengers, with cabin crew offering the service that would eventually be given on board scheduled flights.

The first flights: F-BTSC

Sierra Charlie began the programme on 28–29 May 1975 with a round trip to Dakar, Senegal, carrying members of the press who were attending the Paris Air Show. He then carried out a series of flights to South America and Lebanon. The aircraft also made four round trips between Paris and Gander in Newfoundland, and six further flights over the North Atlantic and the Mediterranean.

The French flights carried a total of 4,680 passengers, including executives from 22 airlines and representatives of the civil aviation authorities in the associated countries. During the programme, the



Route-proving

F-BTSC in flight during the route proving phase. The aircraft had first been registered to Aérospatiale as F-WTSC; he was re-registered to Air France, as F-BTSC, just before beginning the route-proving and endurance work. *Photo: BAC/Aérospatiale*

Air France crews achieved their route qualifications; their training sessions included having to make two unexpected diversions to alternate airports, as requested by the DGAC (French aviation authority) representative on board. The Lisbon to Caracas flights were, notably, the first non-stop supersonic flights between Europe and South America (a distance of 4,085 statute miles).

The British flights: G-BOAC

The series of flights by Alpha Charlie took place from 7 July to 13 September 1975. The British part of the programme covered routes to the Middle East, the Indian Subcontinent, South-east Asia, and Australia. The programme also included flights over the North Atlantic and flights to Gander, to simulate the intended London to New York route.

F-BTSC flight schedule

Date	Route flown	No. flights
28–29 May	Paris–Dakar	1 return flight
30 May–10 June	Paris to Rio de Janeiro	7 return flights
13 June–6 July	Paris to Caracas via Lisbon	12 return flights
9–15 July	Paris to Beirut	7 return flights
16 July–2 August	Paris to Rio de Janeiro via Dakar	9 return flights

Total number of flights 125
 Total flying time (block) 375 hours 22 minutes
 Total flying time (supersonic) 258 hours 20 minutes

G-BOAC flight schedule

Routes flown	No. of flights
London–Bahrain	1 initial flight plus 5 loops from Bahrain
Bahrain–Bombay	8 return flights
Bombay–Kuala Lumpur	2 return flights
Kuala Lumpur–Singapore	2 return flights plus 4 loops from Singapore
Singapore–Melbourne	7 return flights
Singapore–Bombay	5 return flights
Kuala Lumpur–Bahrain	3 return flights
London–Beirut	6 return flights
London–Gander	15 return flights plus 15 loops over North Atlantic

Total number of flights 130
 Total flying time (block) 380 hours 43 minutes
 Total flying time (supersonic) 208 hours 33 minutes

The flights were operated by crews from British Airways, BAC, and the Civil Aviation Authority (CAA); during this time, the airline crews obtained their route qualifications, and the aircraft carried around 6,500 passengers in total.

The guest passengers included the Australian Prime Minister and the Premier of Victoria, the Chairman and Managing Director of Singapore Airlines, and senior executives from Qantas and Philippine Airlines. The final test flight was notable for carrying the Lord Mayor of London and the Archbishop of Canterbury. The cabin crews included staff from Gulf Air, Air India, and Singapore Airlines.

The maintenance crews were also tested, with four engine changes being necessary during the programme (two at Bahrain, and one each at Singapore and London).

Mission accomplished

David Macdonald, Concorde flight engineer for British Airways

ENDURANCE FLYING was to be the final 1,000 hours of the flight test programme (begun in March 1969 by André Turcat and his team). It was to be flown with the participation of British Airways and Air France crews; it doubled up as our flight training period. The 1,000 hours was later reduced to 750 hours, divided equally between the two airlines.

Our share of these flights began on 7 July 1975, London to Bahrain. The first segment for us was eastern, operating between Bahrain, Bombay, Singapore and Melbourne. During this period we were under training; I myself was checked-out during a MEL–SIN flight on 12 August.

The North Atlantic phase began on 22 August; it was a mix of London–Gander–London (with a refuelling stop at Gander) and flights of about 2 hours out across

the Atlantic and return to London, simulating approximately 4-hour oceanic flights. Our flights ended on 13 September 1975 with a LHR to LHR Atlantic circuit: block time 3 hours 37 minutes, supersonic 2 hours 20 minutes.

And so, on 13th September 1975 it was “mission accomplished”. Within a matter of weeks analyses were completed, certificates signed and Concorde became an airliner.

Coping with challenges

The Eastern segment of endurance flying did throw up a couple of problems. It was known that certain runway profiles in certain conditions could set the fuselage vibrating at its natural frequency during take-off – this means vibrations that will continue and intensify until the aircraft lifts off. The Singapore runway’s undulations created such a profile. At high take-off weights and

their associated high speeds it was a most uncomfortable experience; it was difficult for us to maintain focus on the instruments until we were finally into the air. To resolve the problem, the main landing gear was extensively modified internally to provide better damping.

In the second case it was the atmosphere that was to blame. At every significant step in air transport it has been said – hoped – that now we will fly above the weather. No chance. Between Singapore and Bombay there were huge towering cumulus clouds rising way above our supercruise heights; and with these came rapid changes in air temperature, and here I’m talking about the minus 50 to minus 60 Celsius range. Soaring through them at our speeds gave rapid changes in Mach number. Speed of sound varies with temperature; at cold temperatures the speed of sound is lower. Thus,

while the aircraft is racing across the seas at a particular speed (mph), when the atmospheric temperature drops, that particular speed equates to a higher Mach number – often above the maximum approved value. High rates of climb together with Mach number exceedences required “something to be done”. Modifications to autopilot and autothrottle devised by Aérospatiale provided an answer. It must have been right; in 27 years Concorde has visited over 300 destinations worldwide!

Pioneering passenger
Mach 2 reader David Anderson has provided this image of the certificate given to his great-grandfather, who was on board G-BOAC's flight on 31 August 1975 – a loop from Heathrow.
Photo: David Anderson



An engineering experience

These last route-proving flights still generated a few technical issues. When the teams were thousands of miles away from their home base, they had to fix these problems “on the fly”. Ground engineer Philip Cairns recalls one such instance.

THE GREY-HAIRED OLD MAN walked over to the main undercarriage of the museum-based Concorde, and with moist eyes he leaned against one of the tyres and stroked it tenderly. He bent down a little further and, with the tip of a pencil, he spun the brake cooling fan, through sheer habit, to watch for its freedom of movement. The aircraft was G-BOAC, and the venue was the aircraft museum at Manchester's Runway Visitors Park.

His mind flashed back to a time in 1975 when he was in Singapore at the airport...

Alpha Charlie was within an hour of departing to Melbourne on a route-proving flight. The Dunlop technical rep was concerned that the brakes on the left-hand undercarriage were not working correctly; he said he would like to swap the brake tachometer generator from no. 2 front brake with the no. 1 rear brake tachometer generator, to diagnose which brake control valve was not working correctly. This meant removing the associated wheels to gain access to the said generators. Could we do it in time?

Myself and colleagues Bill Burrage and Bert Rouse said we could. We only had one jack; nevertheless, we jacked the front wheels, then removed the wheel and fan motor, then removed the brake tacho generator. We put the wheel back on temporarily, lowered the jack, then repeated the operation on no. 1 rear wheel – except that this time we fitted the no. 2 front tacho to the no. 1 rear position.

Having refitted the tacho generator, fan motor and wheel assembly, and inspected the brake, we locked the wheel nut and split-pinned the locking bolt. We moved back to no.

2 front wheel. We jacked the front wheels up once again and removed the no. 2 front wheel once more, and repeated the operation that we had done on the rear assembly.

When we finished, airstarts were in position and the crew chief was on the headset, and all the passengers were on board and ready to go. Our boss and the Dunlop rep were very pleased with the result.

I am pleased to say that when the aircraft returned that night the no. 1 rear brake was cold, indicating that the defect had moved – and the tacho generator on no. 1 rear was changed.

Problem solved

The ground engineers, including Philip Cairns (second from left) and Bert Rouse (centre), take a break after a double wheel change due to damage by debris on the runway.

Photo: John Dunlevy



A transatlantic record

One of the most remarkable events in the endurance phase was a multiple crossing of the North Atlantic carried out by G-BOAC: the aircraft achieved an unequalled four flights in one day. David Macdonald and Peter Duffey, members of the crew for this epic endurance test, recalls the flights and his experience.

The flight engineer: David Macdonald

On 1 September I made the first of four transatlantic flights between London and Gander, with BAC's Roy Radford in command. We had chocks away at 06.36 and chocks under at 09.18 at Gander. The return times were: 10.17 and 12.54 – note that we made a 59-minute turnaround! So that was a block time of 2 hours 42 minutes with 1 hour 45 minutes supersonic outbound, and block time 2 hours 37 minutes with 1 hour 39 minutes supersonic homebound.

I was not present on the second round trip, but the times were: outbound 2:41 (1:44 supersonic) and inbound 2:35 (1:38 supersonic).

The pilot: Peter Duffey

Working with Concorde in 1975–6 was a fascinating experience. I was one of the very first pilots to undergo the Concorde training course at Bristol Filton. I was part of the initial group of Concorde pilots, together with Micky Miles, Flight Manager; Norman Todd, Flight Training Manager; Pat Allen, Deputy FTM; John Eames; Chris Morley; Tony Meadows; and Brian Calvert. (Micky did not complete the course.)

Of our group, one was ex-747, four were ex-707, and three ex-VC10. I was also the only Concorde pilot who had flown the Comet 1 (1952 to 54). “Long ago and far away”, as Frank Sinatra sang. I spent a total of 5 years with Concorde; it was a great privilege.

I participated in the first return flight from London to Gander. As I remember we had a full load of 100 passengers. My log book contains the following record:



Rapid turn-around

G-BOAC makes a brief stop at Gander during the hectic day of 1 September 1975. *Photo: Source unknown*

First flight	
In command	Roy Radford (BAC) (supervising from 4th seat)
Captain	Peter Duffey (BA)
Co-pilot	Chris Morley (BA)
Flight engineer	David Macdonald (BA)
Chief Flight Test Engineer	John Allan (BAC)
Second flight	
In command	Eddie McNamara (BAC)
Captain	Micky Miles (BA)
Flight engineer	Terry Quarry (BAC)
Flight test engineer	Peter Holding (BAC)

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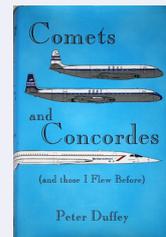
Capt C. Morley as co-pilot, me as Captain
Capt Radford (BAC) observing
Michael Aspel BBC recording

OF 270

Gander London 1017 to 1255

Peter Duffey: biography

Peter Duffey learned to fly during the Second World War and went on to work with the first jet airliners: the Comet 1, Comet 4, and the Boeing 707. His career culminated with becoming one of British Airways' first pilots on Concorde. He was also a training instructor for BOAC and British Airways on the Comet 4, Boeing 707, and Concorde. He has written an account of his flying experiences: *Comets and Concorde (and those I Flew Before)*. The book is available on Amazon.





A career in Concorde's cabin

Jayne van der Vorm, cabin crew member on Concorde, British Airways

I JOINED BRITISH AIRWAYS after graduating with a BA Hons degree in French Language and Literature in 1984. This was initially a 6-month contract, and I thought it would be a fun way to use my language skills on the European circuit. For that reason, I chose BA Short-haul when offered the role, from a red phone box on the Chiswick High Street!

After my initial stint on Tridents, TriStars and the Boeing 737, I found myself placed within the airline at the right time for my career to take off – literally. It was 1988, just four years after I joined the airline. I had been making good use of my 24-hour lay-overs in Geneva, Brussels, Nice and Paris, using my French, as well as my various 3-day trips to Larnaca and Athens, when I received a letter from BA. The airline had just been privatised. Lord King let it be known that the passengers on Concorde wanted to see some fresh faces (times never change). Hence, a handful of graduates with a solid track performance were selected; being a French speaker and having a successful record of customer service, I was offered a place.

It wasn't difficult to keep smiling on board back then. We, the crew, were treated like royalty. The airline gave us such an incredible "door opening" experience. Lots of wonderful trips abroad, which were not tiresome as today; no back-to-back trips. We would culturally and educationally be able to try new experiences, as we were paid to relax in the most stunning 7-star hotels, and we picked up large brown envelopes of cash for each day we were at these luxurious hotels, as our expenses abroad. Staff travel was simple back then, too; you could easily arrive back early in Terminal 1 from a

working trip, hop onto another aircraft and enjoy your days off back in sunnier climes.

A role like no other

My Concorde training started in 1988. Before I knew it, I was enjoying the most incredible experience of mixing with the super-wealthy, VIP celebrities and politicians, chairmen of companies, and high net worth individuals (HNWIs) on the regular services and also on the Goodwood Charters around the world. It was a role like no other before or after. I was only 28 years old! Suddenly, I was taking the jacket of Dennis Thatcher or Christopher Reeve to hang in the wardrobe. I helped to serve John Cleese, the McCartney family, David Crosby and Neil Young, Joan Collins, Shirley MacLaine, Andrew Lloyd Webber and many more. David Frost used to shuttle back and forth with us and quite often if the flight was full, he would sit on a jump seat!

My trips were mostly to JFK. We would leave London at 09.00 and arrive in JFK at about the same time. The flight would take off at around 248mph. If you sat down the back, the strong odour of kerosene would surface, and the noise was quite incredible at the point of take-off. The aircraft would fly subsonic to the part of Wales where I grew up. In those days, my late father would walk the dog along the beach, hear me

Class of 1984

BA cabin crew graduates, including Jayne. Photo courtesy of Jayne van der Vorm

pass ahead and suddenly, boom – we were off, faster than a bullet in the sky. Concorde would go supersonic along the Swansea coast. I had spent 4 years there as a student. I could not believe my luck!

A taste of luxury

We had one scare in JFK. Preparing to come home one evening, on the point of take-off, the pilots suddenly aborted take-off. I popped my head around the corner, to see the faces of those in the aisle seats. No one expected this to happen. It was unheard of on Concorde. I took the passengers into the First Class lounge and looked after them. The aircraft had to stay for 4 further days in JFK, and our engineers in London had to be flown out to fix the mechanical problem. This left us with an empty Concorde in JFK, so the airline flew us, the six flight attendants, back on the empty aircraft. I will never forget it. We called each other "Lord and Lady so and so" and we each served a course to each other; the full three courses with wines were served. The pilots had agreed to us being able to have a glass on board as there were no passengers. Enjoying a glass of champagne in those days was the norm on all flights at the end of the service. We had such a blast!





CONCORDE WATCH

Concorde F-BVFB

French production aircraft

Location: Auto und Technik Museum, Sinsheim, Germany

Reporter: Ingo Bauernfeind

Date: 20 October 2019

The Sinsheim Technik Museum has been Concorde Fox Bravo's home since June 2003. In March 2004 she was positioned in "take-off position" on a steel frame above one of the museum halls, right behind her former rival, the Tupolev Tu-144. Both aircraft are visible from the nearby autobahn, making them landmarks in the region.

Over the last 16 years, Fox Bravo has been attracting millions of visitors, thus serving as a very prestigious artefact for the museum. She can be accessed by walking up spiral stairs leading to the aircraft's rear section. While walking up, you come close to the engine nozzles, only to realise that they are empty; the museum's technical staff decided to display the engines inside the museum, in order to save weight.

Inside the cabin

On entering Fox Bravo's rear cabin, you see that some of the seating has been removed in order to allow visitors to walk back and forth, as there is no other entry or exit

Recreating the scene

The museum has posed mannequins as "passengers" in some of the seats. *Photo: Lars Drachenberg / Ingo Bauernfeind*

except the one you just have come through. Most of the interior's surfaces, hatches and all seats have been covered by Plexiglas in order to protect them. The cockpit is not accessible but can be viewed through a Plexiglas wall. Walking up to the cockpit really means walking "up", as Fox Bravo was positioned in a 20-degree angle simulating her take-off position. The galleys are virtually empty as all of the ovens and trolleys have been removed.

Overall, the cabin is clean and in good shape. The museum staff have placed a few dolls on the cabin seats to show how it looked when these seats were occupied. However, with some of the seating removed, the interior does not look like an aircraft ready for take-off.

The condition of the aircraft

After leaving Fox Bravo one can walk underneath her fuselage



towards the Tu-144 while passing an outdoor exhibit with photos and texts telling Fox Bravo's story.

While looking at her exterior, one can see that the museum's staff has been taking care of her. It seems that she was cleaned inside and outside within the last two years. The ventilation has been improved inside the cabin, and the windows have been treated to remove water that had entered between the panes. The Plexiglas surfaces have also been



Protecting the interior

Far left: Some of the seats have been removed to give extra space in the cabin.

Left: The seats, flight deck, and other areas have been protected with Plexiglas.

Photos: Lars Drachenberg / Ingo Bauernfeind

cleaned. I also heard that – with support from Air France technicians – the museum was able to work on Fox Bravo’s droop nose, thus making it movable again.

Other attractions

Inside the museum there is a neat Concorde exhibit including the four engines, four of the wheels from the main landing gear, some parts and two seats in which the visitors can sit down. The museum also has a new restaurant called the “Concorde Restaurant”.

A regional landmark

Right: F-BVFB, mounted on the roof of the museum behind the Tupolev Tu-144, has become a notable landmark. Below: The aircraft is mounted as if flying; climbing the stairs and feeling the slope of the cabin adds to the Concorde experience.

Photos: Lars Drachenberg / Ingo Bauernfeind

Further information

For more details on the Auto & Technik museum and Concorde F-BVFB, visit the museum’s website:

<https://sinsheim.technik-museum.de/en/concorde>

