

MACH 2

Concorde magazine



Concorde in the Gulf

*From endurance to
excellence*

Concorde watch

Life under lockdown

Issue 29

February 2021

INTRODUCTION

Our issue this quarter focuses on Concorde's involvement with the countries of the Persian Gulf. Although the affluent Gulf states never bought Concorde, they did host the aircraft for important stages in her development, as well as for stand-out events such as the inaugural BA passenger flight with Concorde.

BAC engineer Richard Harris describes working with G-BBDG during the "high temperature" trials that would lead ultimately to certification of Concorde. Gulf Air also played a part in Concorde's development, by supplying cabin crew for the route-proving flights of G-BOAC. Gulf Air saw its 70th anniversary in 2020; we are proud to recognise this event by presenting Michael Stokes's account of this intriguing episode in Concorde's history.

As we move through a new year, the world – including the world of all those involved with Concorde – is still coping with the risks and constraints resulting from COVID-19. Concorde museums in the UK and elsewhere are under lockdown, but we bring updates on what they are still offering to visitors.

IN THIS ISSUE

- | | | | |
|---|--|----|---|
| 2 | Introduction | 10 | A pioneering passenger
<i>Michael Stokes</i> |
| 3 | Concorde in the Gulf | 13 | Timeline: Concorde's visits
to the Gulf |
| 4 | Reminiscences of Concorde
<i>Richard Harris</i> | 14 | Concorde Watch |
| 6 | The high temperature trials
programme | | |
| 8 | The Gulf Air connection
<i>Michael Stokes</i> | | |

Editor: Katie John

Cover: G-BBDG arrives in Bahrain for hot weather trials, August 1974. Photo: Richard Harris

CONCORDE IN THE GULF

When Concorde was launched, it was hoped that the states bordering the Persian Gulf would be a lucrative market. That dream never came to pass – but the Gulf states did host Concorde at some of the most significant points in the aircraft’s history. Here, we look back at that connection.

THE PERSIAN GULF was an area of great interest to the companies developing and planning to operate Concorde. Not only were the Gulf countries and Iran potential customers for the aeroplanes, but airports such as Bahrain, Abu Dhabi and Dubai were considered as staging points for long journeys to south-east Asia and Australia.

In the event, Concorde only served these eastern markets for a few years (see Mach 2, Dec 2017). Nevertheless, the Gulf countries still had important roles to play regarding Concorde. They hosted the prototype and development aircraft for test flights and sales promotion flights. Bahrain was one of the stops for the British and French Concorde during the route-proving phase, in advance

of certification. During this phase, Gulf Air gave invaluable help to the British Concorde team by assigning cabin crews to serve on the route-proving flights.

Bahrain welcomed the first commercial Concorde flight by British Airways. Later, the Gulf states and Saudi Arabia hosted HM Queen Elizabeth II as Concorde carried her on a three-week tour of the region in 1979.

In this feature, we look at the little-known story of Concorde’s time in the Gulf. We also hear from the engineers working with G-BBDG during the high-temperature test flights, and from a lucky passenger, Michael Stokes, who at just 17 years old had a flight on Delta Golf eighteen months before scheduled passenger flights began.

The Swan and the Falcon

1976: Concorde G-BOAC passes a Gulf Air VC10 at Bahrain following the start of scheduled Concorde services.

Photo: Mike West



Reminiscences of Concorde

The years 1974 and 1975 saw the British and French Concorde put through the last phases of their flight testing, as well as an extensive route-proving programme, before their final entry into service. Former BAC engineer Richard Harris looks back on his involvement in this work.

Having completed an Engineering Apprenticeship with British Aircraft Corporation (BAC), I joined Customer Support as an Overseas Engineer (OSE), working initially on the Britannia and BAC 1-11 but then involved with the Concorde development programme. I worked as a test engineer on build and at Fairford, on secondment, and in preparation for entry into service.

Little did I think, when I transited Bahrain a couple of times in the early seventies, just how much the country would become a part of my life a few years later.

A base for “hot trials”

Until 1971 RAF Muharraq, at Bahrain, had been an active RAF station, hosting a wide range of aircraft. Due to its position and facilities, it had become a busy en route station, both for RAF transport aircraft routing for Singapore, Hong Kong, and beyond and also for the major international airlines, and particularly British Airways and its predecessor companies back to the Empire Route flying boats.

As part of the Concorde Development and Certification Programme, the UK was allocated “hot trials”, for which the Gulf was ideally suited, together with the subsequent UK end of the endurance flying programme and preparation for entry into service in 1976.

The OSEs were qualified certifying engineers who frequently travelled with the aircraft for en-route support, refuelling, and other maintenance and operational tasks at line stations, as well as covering the turnaround at stations that had no experience with Concorde (or



Building on tradition

Top: Concorde G-BBDG comes in to land at Muharraq, Bahrain.

Right: Bahraini craftsmen work on a more traditional form of transport.

Photos: Richard Harris



other aircraft). As a BAC engineer, I was working with OSEs from British Airways.

We shipped out to Bahrain at the beginning of August 1974 to prepare for the arrival of G-BBDG the following day. We were able to utilise the old Hunter hangar and dispersal at Muharraq for our base through to our departure for Singapore for rough runway trials, after four weeks.

I'm not sure how many flights were undertaken during that period, but for me the most memorable recollection were the flights we did to Kuwait, for measured perfor-

mance take-offs. On three successive days we flew to Kuwait, refuelled, and then had to wait for the temperatures to stoke up to what was thought to be their maximum before flying back to Bahrain. I recall the temperatures on those days reaching 45°, 46° and then 48°C, and all we had for shelter whilst waiting was the shade of the wing!

Route proving

1975 saw us back in Bahrain for the UK end of the route proving/endurance flying. This time G-BOAC was the aircraft used. The programme comprised a very condensed period



A test of endurance

G-BBDG at the old Paya Lebar airport, Singapore.
Photo: Richard Harris

of flying, initially routing Bahrain-Bombay-Kuala Lumpur/Singapore return, leaving Bahrain early evening and returning the following morning.

Aircraft serviceability was good throughout this period, although we did have to accommodate a reverser bucket repair in Bombay (Mumbai) and an engine change in Singapore. The engineer who devised the repair for the reverser bucket was BAC’s Team Manager in Bahrain, a great guy who was a highly qualified and experienced structures engineer and a design signatory for Concorde. The repair enabled us to ferry Concorde sub-sonic from Bombay to Singapore. We also had a few problems with ground power units (GPUs), particularly in Bombay during refuelling, which caused gallery pressure lock-ups, but these were all managed successfully.

Inaugural services

The following year saw Concorde’s entry into service on 21 January 1976, by which time Bahrain and Concorde had become well used to each other. The support team flew out a few days ahead of the scheduled arrival – and as one could imagine, all the BA people particularly were in a state of high alert! However, their team included several really experienced OSEs and mechanics.

When the aircraft arrived in Bahrain from London, initially I was on the ramp to watch the park-up and connection of ground power etc, air conditioning connection, and then up onto the air bridge for positioning of the bridge and door opening. Then we had a quick debrief with the Flight Engineer (John Lidiard) as to what snags they had found, before putting the aircraft to bed for the night.

The following day we had the aircraft back on the stand ready for the departure back to London, which was despatched on time. Having supervised the docking of the air bridge, and the departure of the ‘great and good’, sanity prevailed and we settled into a routine Monday–Thursday schedule.

Rendezvous with Air France

G-BOAA is joined at Bahrain by an Air France Concorde, possibly en route to Singapore.
Photo: Richard Harris

At the beginning of March, I returned to the UK as my wife was expecting our third son, returning to Bahrain at the beginning of April. This phase continued until the middle of May, when, in preparation for the start of services to Washington, we wrapped up the BAC office. From that time on, I flew with the aircraft, as an on-board engineer, for the remainder of the summer.

After we finished in Bahrain in the September, we started preparation for the Far East sales tour, including Manila, Hong Kong, Korea etc., which we did in November with an Air France aircraft. I then moved out to Washington for most of 1977, but I am still in touch with BA’s Assistant Maintenance Manager (AMM) whom I worked with at that time.

I look back on our time in Bahrain with great fondness. The engineering and operational support was of a high standard, the local population were always friendly and helpful, and one could move freely around the island. I believe all these factors contributed significantly to the success of our programme.



Ground engineers for the inaugural flight

The crew included two engineers from Rolls/SNECMA (back row, left), Richard Harris and the Intake Specialist from BAC (back row, right), and BA London staff including two Overseas Engineers and three mechanics.

Photo: Richard Harris



The high temperature trials programme

This series of trials followed the cold-weather trials that had been carried out with French aircraft 02 (F-WTSA) in Fairbanks, Alaska during February 1974. The high temperature programme was centred on Bahrain. It would involve British Concorde 202 (G-BBDG) and take place during August 1974.

The programme would include testing of the air conditioning and fuel systems, the flight controls, engine

bay temperatures, and undercarriage performance. Some of the trials would involve carrying passengers.

The test flights would be followed by a series of demonstration flights at airports around the Gulf.

Itinerary and activities

6 Aug	Flight Fairford–London
7 Aug	Flight London–Tehran Flight Tehran–Bahrain
8 Aug	Preparation for engineering trials
10 Aug	Hot soak and flight with passengers
11 Aug	Flight; hot fuel tests; flight
12 Aug	Engineering flight
13 Aug	Hot soak only with passengers
14 Aug	Airfield performance or contingency day
15 Aug	Hot soak only with passengers
16 Aug	Hot soak and flight with passengers
17–18 Aug	Ground runs
19 Aug	Airfield performance or contingency day
20 Aug	Preparation for demonstrations; removal of trials equipment
21 Aug	Demonstration at Bahrain Preparation for flight to Singapore
22 Aug	Flight Bahrain–Singapore
22–23 Aug	Local flights
23 Aug	Demonstration at Singapore



Arrival at Bahrain

7 August: G-BBDG flies in to begin the series of hot-weather trials.

Photo: Richard Harris

24 Aug	Further runway tests
25 Aug	Flight Singapore–Doha
26 Aug	Preparation of aircraft
27 Aug	Demonstration at Doha Flight Doha–Kuwait
28 Aug	Demonstration at Kuwait Flight Kuwait–Abu Dhabi
29 Aug	Demonstration at Abu Dhabi Flight Abu Dhabi–Dubai
30 Aug	Preparation of aircraft
31 Aug	Demonstration at Dubai Flight Dubai–Muscat Demonstration at Muscat Flight Muscat–Bahrain
1 Sept	Loading
2 Sept	Flight Bahrain–Fairford

Hot weather engineering trials

Air conditioning ground and flight tests	<ul style="list-style-type: none"> - Ground tests: aircraft left in the open to reach steady high temperature ("hot soak"). Cabin pre-cooled to 27°C. Passengers brought on board; doors closed; engines started and air conditioning run for 30 mins–1 hour. Simulated failures to test system performance. - In-flight tests: simulated failures to test cooling of avionics and electrical equipment in extreme conditions.
Fuel system tests	<ul style="list-style-type: none"> - Effects of hot ambient conditions on fuel and fuel pumps. - Checks on engine systems cooled by the fuel system.
Engine bay ventilation and electrics – flight tests	Simulation of "the worst possible environment" in the engine bays, to demonstrate that temperatures in engine bays, and on auxiliaries (particularly generators), remain within limits during all operations in tropical and sub-tropical climates.
High ambient temperature ground run	<ul style="list-style-type: none"> - Testing of engine bays' ventilation and cooling under high-temperature conditions. - Starting of the engines with wind in various directions, to check that tailwinds and cross-winds have no adverse effects at high ambient temperatures.
Rolls-Royce ground tests	<ul style="list-style-type: none"> - Tests on air starter operation and starter carrying temperatures. - Starts at high and low air pressure limits. - Checks on correct functioning of fuel heater system, engine anti-ice system, engine overheat warning system.
Performance trials	<ul style="list-style-type: none"> - Measurement of performance during cruise in ISA -10 (or below) conditions; en-route climbs; normal descents; high-speed descents; terminal air manoeuvres; diversion climbs. - Measurements of take-off performance at various weights.
Systems tests	<ul style="list-style-type: none"> - Monitoring of temperature in hydraulic fluid and reservoirs throughout tour. - Checks on wheel brake temperatures, brake cooling times, tyre pressures, etc, especially after landings at high temperature or altitude with brake fans in use. - Checks of undercarriage retraction time in normal operation and with simulated hydraulics failures. - Checks on flying controls and cables with aircraft pre-conditioned to 27°C.
Special runway trials	Singapore – 2 high-weight take-offs and lightweight accelerate/stops to assess undercarriage performance, particularly damping characteristics.

Source: "Concorde High Temperature Trials, Summer 1974", British Aircraft Corporation Limited, August 1974.

Thanks go to Michael Stokes for supplying this information.

The Gulf Air connection

Concorde was the flagship of two airlines above all: British Airways and Air France. Yet few people are aware that others were also involved with the aircraft. Michael Stokes looks at the role played by Gulf Air – which, with Air India and Singapore Airlines, provided cabin crew during the route-proving flights by G-BOAC.

THE SITUATION THAT LED TO Gulf Air's involvement initially arose from the need of British Aircraft Corporation (BAC) Ltd, the British half of the Concorde manufacturing organization, to prove the aircraft on key routes and areas around the globe, as well as promote the aircraft to major airlines in the mid-late 1970s.

Challenges for Concorde

While Air France and British Airways were always going to be the launch airlines, BAC were anxious to gain more traction with airlines such as QANTAS, Air India, and the Middle Eastern airlines (Saudia, Kuwait Airways, Iran Air and Gulf Air). These potential customers were wealthy beyond the realms of most global airlines and were sitting on fuel reserves to power their aspirations – but Concorde was proving a difficult sell to the Arab and Persian airlines. Any sort of campaign, therefore, would assist efforts to secure a Concorde sale in the region.

At the same time, in 1974, it seems the recently created British Airways (BA) was experiencing several challenges in its new skin, which incorporated two distinct aviation cultures: the long-haul British Overseas Airways Corporation (BOAC) and the short-haul British European Airways (BEA). In addition, BA was still adapting to new airliners in its fleet, such as the Boeing 747, and was also looking at Lockheed 1011 TriStars, to replace the stalwart but ageing jet fleets of

Assembling the crew

Members of the Gulf Air cabin crew for Concorde gather in Bahrain before departing for their training in the UK.
Photo: Silvio de Piante Vicin

British-engineered VC10s, BAC 1-11s, and Tridents, as well as the US Boeing 707s.

These changes and challenges had an impact on industrial relations between management and the unions. Work practices being proposed by BA management were scrutinised by shop stewards at every step to see what their members might gain from the introduction of new technology and procedures in the airline. This in turn created friction leading to disputes within the airline.

Reaching out to Gulf Air

Where Concorde was concerned, Sir Geoffrey Tuttle, the Vice-Chairman of BAC, was concerned about the possible disruption to the work of Concorde cabin crews in advance of the aircraft's launch, planned for January 1976. In order to keep Concorde on schedule, he wrote to Alan Bodger, General Manager of Gulf Air, asking for cabin crew to train on the aircraft as a contingency

in case BA were unable to resolve their issues ahead of the proposed commercial launch.

As a result, a programme was formulated to train Gulf Air crews on Concorde, rostering them to fly Concorde on both route-proving and promotional flights. Gulf Air supplied two cabin crews, who worked with Concorde G-BOAC in 1975 (see also Mach 2, Nov 2019).

The crew members underwent training first in Bahrain and then in the UK. They then accompanied G-BOAC on her flights from Bahrain to south-east Asia and Australia, as well as across the Atlantic to Gander in Newfoundland.

The cabin crew's work was a success and was very much valued. Sir Geoffrey Tuttle wrote a letter of thanks to Alan Bodger, telling him "how very much we appreciated the fact that you made the crews available and also to tell you what a tremendous success they were with all our passengers, with the Ground



Crew, the Flying Crew and, indeed, with everyone who met or worked with them". Sir Geoffrey went on to say, "I hope that British Airways will be able to meet their standards on the Concorde when they get into service".

Author's note:

I have been fortunate to compile a few photos and documents relating

to this unique period in Gulf aviation. Gulf Air itself was only 2 years old in 1975, having been formed from Gulf Aviation (in which BOAC had a shareholding) in 1973, and it had been only 3 years since the last DC3 had been retired! This article is a small acknowledgement of the contribution that these crews made to the successful launch of the BA Concorde service. Things could

have easily been very different if BA had not secured this agreement with Gulf Air.

I originally wanted to do some research for my own interest, as my mother, Joy Stokes, designed the first Gulf Air uniform (1973 to 1986), which can be seen in some of the photographs here. I am immensely proud that my family is associated with Concorde in this way.



Crew member's pass

Above left: Security pass for Gulf Air cabin crew.

Photo: Jeanette Hamilton

Visit to Gander

Left: Gulf Air crew with G-BOAC on her flight to Newfoundland.

Photo: Jeanette Hamilton

Training in UK

The Gulf Air cabin crew members underwent part of their training at Fairford before they joined G-BOAC.

Photo: Jeanette Hamilton

Gulf Air cabin crew members for Concorde

- Silvio de Piante Vicin (Gulf Air Customer Services Director)
- Norma Down (Cabin Services Director)
- Jeanette Hamilton (in-flight Cabin Services Director)
- Alison Bain
- Patricia Edwards

- Faisal Jowder
- Abdul Majeed
- Roz McGrath
- Hassan Mira
- Cathy Murphy
- Abdul Nabi
- Cheryl Rosario
- Hadji Sharif
- Wilma Tryzno



G-BOAC at Muharraq Photo: Source unknown

A pioneering passenger

For some of her hot-temperature trial flights, Concorde G-BBDG carried passengers. One of them was the 17-year-old Michael Stokes. Here, he recalls the extraordinary experience of being one of Concorde's first ever passengers – over a year before the aircraft's official entry into commercial service.

10 AUGUST 1974: Muharraq International Airport

LEAVING THE air-conditioning of HM Ambassador's official Jaguar, my 'cool' sunglasses immediately misted up with the humid, hot summer air. I had arrived with Jean and Simon Tesh, the wife and son of Robert Tesh, the UK's Ambassador to Bahrain. Our passports had been checked by Bahrain Security and the British Airways (BA)/British Aircraft Corporation (BAC) security liaison group, then we were ushered through the VIP lounge, where all the volunteers were gathered.

Excited, expectant voices hummed through the room. Commercial directors, bank managers, oil technicians, and shipping specialists intermingled slightly awkwardly with vacationing students and housewives. Mingling in the crowd was Sir Geoffrey Tuttle, exuding knowledge and charm with all those he met.

A call for volunteers

A few days earlier, the expatriate community of the island had heard a 'bush whisper', from the Commercial Section of the Embassy, that the recently arrived Concorde with its project team were seeking 'volunteers' to take part in a series of trials on the aircraft. It was made known that the volunteers would at least get to see the Concorde, and might even be able to board the aircraft. Yet there was no promise of a departure, for various operational reasons.

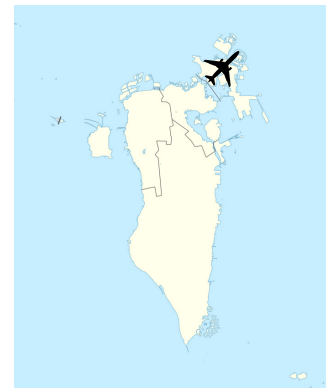
The call had gone out discreetly as the Embassy did not wish to be swamped by requests for flights. As it was the summer school holidays, though, many families were off the island, and so the anticipated 'orderly riot' did not materialise outside the Embassy compound.

Back in the lounge, the PR reps for BAC handed out information packs and answered questions on the day's schedule before we were ushered to the boarding gate and a short, very sticky bus ride to the remote stand where 'Delta Golf' shimmered in the 40°C+ heat.

We were familiar with the shape of Concorde from photos and news reports, as well as previous visits to Bahrain by G-BSST in 1972. The angular dart-like fuselage was so very different to other visiting commercial aircraft, although having been a pupil of the RAF Muharraq School in the 60s I was familiar with the Vulcan and Valiant bombers that used to pass through. The BA livery was evident; however, there was a black and white check board marked half-way down the fuselage. I had

Aviation in Bahrain

Located on the main air corridor to the East and Australia, with Europe and London in the opposite direction, Bahrain had enjoyed a regular frequency of services since 1932. In that year, Britain's Imperial Airways decided to bring its air service to India via the southern shore of the Gulf, as Britain's relations were rapidly deteriorating with Persia. Since Britain had a RAF field on the island already, Bahrain was chosen as one of the fuelling stops down the Gulf, on the run down to Gwadar and Karachi.



Bahrain International Airport

Artwork: Katie John / NordNordWest / Wikimedia Commons (CC BY-SA 2.0)

never seen those on the Jumbos and VC10s that used to transit Bahrain, so we realised that this was special.

A novel beauty

I had expected that we would board immediately – but instead there seemed to be no restrictions on allowing us to walk around the perimeter of the Concorde (but not under the wing or fuselage) to check out the lines and take photos of this novel beauty.

Upon climbing the steps to the forward door, I looked aft over the immense expanse of the white delta wing shimmering in the afternoon heat. Compared to any other aircraft that I had flown on, I could not identify any slats, spoilers, flaps or other surfaces that might spoil that amazing streamlined surface.

As we were sitting in the forward cabin (if memory serves me correctly), we boarded almost last. Simon and I, being slightly taller than most passengers, had to duck under the forward door lintel as it seemed slightly lower than those of other current commercial jets.

Preparing to board

The intrepid volunteer passengers board Delta Golf. Right: Mrs Jean Tesh. Far right: Simon Tesh (bottom right of image).

Photos: Michael Stokes

I recall (although my memory is also somewhat vague on this point) that, as we walked from the forward door down the aisle, either side of the gangway was lined with compartments which, I understood from the briefing, were fitted with data collection computers. These extended a significant way into what would be the forward cabin on the commercial version of Concorde. Thus, the forward cabin on Delta Golf had fewer rows of seats, to accommodate the computers. I was seated some rows forward, by the mid-cabin toilets that divided the fore and aft cabins on the port side of the aircraft.

I sat next to the window. I noticed that the windows were considerably smaller (passport size) than those that I was used to on other aircraft. The other obvious impression was that of 'side by side seats', whereas travellers of the time were getting used to wide-body aircraft such as the Boeing 747 and DC-10.

Reaching into the seat pocket in front of me, I pulled out the safety instructions card to read (as you always should do on a flight), together with a Concorde special presentation pack. Enclosed were two letters from BAC's insurers, for passenger



legal liability insurance and personal accident insurance with respect to G-BBDG, as the aircraft had still to be cleared for commercial operation.

The magic begins

The 'Concorde Magic' began as the BA cabin crew served us drinks. After the heat and humidity of the tarmac, a chilled glass of bubbly or amber liquid was really appreciated as the APU blew a breeze down the cabin. However, we were aware of the warmth inside the cabin emanating from the computer cabinets just forward of us.

Captain Brian Trubshaw, from the flight deck, briefly interrupted the socialising to welcome us on board and outline the projected flight plan. He mentioned that, as Bahrain did not enforce any 'noise abatement' procedures for departure, Concorde would be leaving with the maximum thrust possible. Of course, this was not to demonstrate the powerful Rolls-Royce Olympus engines but to compensate for the

loss of power in the sultry moisture-rich air of the Gulf summer.

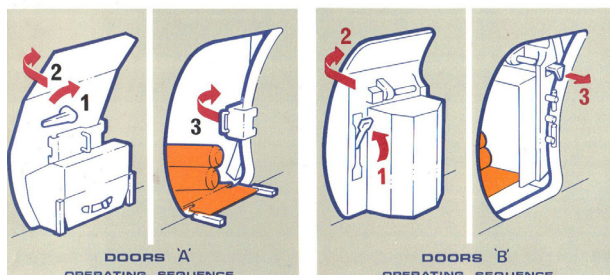
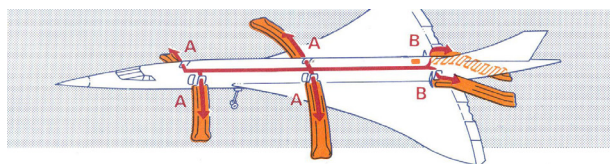
The Olympus engines were ignited and sped up to idling speed; there was a roar way behind me, but just a gentle rumble in the cabin. After our return, I was told by a witness on the ground that DG's thundering roar could be heard across the causeway on the main island. Some Gulf Air staff in the HQ left their offices going sick with stomach pains from the resonance!

Although the pace along the taxi-way appeared leisurely as the checks continued, the fuselage flexed with every bump and hollow as we headed to the end of 30R for a standard north-westerly departure. The Bahraini government had had the runway specially extended a few years earlier, with the Concorde operations in mind, on the advice of British aviation advisors.

With the engines running up, the flight deck announced the imminent roll, telling us that Concorde would roar very loudly. The fuselage began to tremble, agitating at the restraint, the pulse steadily rising, until the roar seemed to burst the windows open.

"3...2...1" ... The R/T momentarily stuttered the numbers, as the noise reached its crescendo.

The brakes released, Delta Golf blasted along the runway, the centre-line lights bumping the forward landing gear with increasing rapidity for a few seconds, then the thumping ceased as the nose wheel lifted from the scorched concrete. The rumbling from the main gear



Safety information

The unique shape of Concorde is shown for the first time on a passenger safety card – a sign that the aircraft was starting to be seen more and more like any other commercial aeroplane.

Photo: Michael Stokes

continued for a second longer, then the lusty lady lifted her lithe legs, longing for the sky.

They'll never believe me ...

Trying to encapsulate every sensation of the moment, I had a sudden reality check – here I was, a 17-year-old on a supersonic airliner that had yet to be approved for commercial service ... the aircraft of the future!

I had been monitoring Concorde for five years since my brother had gone to Filton to watch Concorde 002 make her maiden flight in 1969. The world was anticipating Concorde's entry into commercial aviation. School was beckoning in less than a month – if I told them about today, would I be dismissed by the teachers as a fantasist? Or accused by mates of blatant boasting?

However, climbing out of Bahrain at 5,000 feet per minute all concerns were dismissed.

Through the sound barrier

A slight sink ... a sudden moment of anxiety as the afterburners were throttled back. Still climbing rapidly, we began looping around the north of Bahrain ready to create the 'supersonic slingshot' down the Gulf. A passing glance through the tiny window aperture showed me the Bahraini and Saudi coasts rapidly receding in the distance.

The climb into the azure was ticked off by the digital display on the bulkhead, alternating height and Mach speed. The blue sky darkened, with curvature of the horizon and a minimally thin atmosphere. The ride was now very smooth; the roar, although subdued, remained.

Sir Geoffrey Tuttle now purposefully engaged with the great and the good on the progress of the flight. As the Mach meter edged to Mach 0.9, he was interrupted by an

Mach 2 memento

The certificate that Michael Stokes was given following his ground-breaking supersonic flight on Delta Golf.

Photo: Michael Stokes

announcement from the flight deck that the aircraft was ready to enter the supersonic phase of flight.

The throttles were pushed forward to slide us smoothly through Mach 1 – with anticipation in the cabin rising in tandem with the indicator. Whilst the thrust increase was felt, though, there was no sensation or noise as the Mach number popped over 1 and kept rising. There may have been a loud boom down the Iranian coast and desert – but

"clapping, a chink of glass and a subdued 'hurrah' ..."

we were only conscious of clapping, a chink of glass and a subdued 'hurrah' from the seated passengers. All very serenely surreal!

Peering out of the cabin window, I was aware of the heat emanating from the Perspex. The increasing speed immersed us in the advancing night, dusk disappearing in moments rather than minutes. Over the Indian Ocean, 300 miles west of Bombay, at 59,000 feet, completely unnoticed by the passengers, we turned for home. Streaking back over the Arabian Sea, the dusk that we had left behind 20 minutes previously was now clearly visible

on my side of the aircraft, growing lighter as we chased the sun back across the globe. Sadly, on this sector we were not going to emerge into full sunlight, as we were likely to overshoot Bahrain if Concorde did not decelerate fairly soon. The extended dusk, tantalisingly on the western horizon, remained glowing through the layered clouds.

As DG continued to slow over the Hajar Mountains of the United Arab Emirates, and across the lower Gulf, the cabin was readied for the straight-in approach to Bahrain. Concorde flashed over the Sitra Tanker anchorage, and the fish-traps in the shallows – rushing over approach lights that extended into the water, threshold lights, then the serene touch as the main gear contacted the asphalt in the warm, humid evening at Muharraq.

Concorde was allowed to run the full length of the runway to slow down. We taxied back to the remote stand – slightly deflating after cruising the upper atmosphere. Reality kicked in again as I realised that I had just completed the most spectacular flight. And, although I had not thought about it at the time, I had flown the world's most exclusive aircraft at least 15 months before all those celebrities who would fly Concorde after 21 January 1976.



Timeline: Concorde's visits to the Gulf

1972

- **2 June** British prototype Concorde 002 makes a 40,000-mile, 10-nation sales and demonstration tour of the Middle and Far East, visiting Athens, Bahrain, Tehran, south-east Asia, and Australia. The aircraft carries British Minister for Aerospace Michael Heseltine, and is accompanied by a 60-man crew of engineers and salesmen.

1974

- **7 August–3 September** British development Concorde G-BBDG visits the Gulf states for “hot and high” testing. In Bahrain, the aircraft carries the Bahraini prime minister and other government ministers, as well as the British ambassador and prominent citizens, as well as carrying out her test programme.

1975

- **7 July** British Airways Concorde G-BOAC and Air France Concorde F-BTSC carry out route-proving flights (see Mach 2, Nov 2019). G-BOAC flies via Bahrain to Bombay, Kuala Lumpur, Singapore and Australia. Due to industrial action at British Airways, cabin crew members from Gulf Air, Air India, and Singapore Airlines serve on these flights.

1976

- **21 January** G-BOAA makes the inaugural scheduled Concorde flight for British Airways, from London Heathrow to Bahrain. Air France F-BVFA makes a simultaneous flight to Dakar and Rio de Janeiro. (See Mach 2, Jan 2016.)
- **2 November** Air France Concorde F-BTSC makes a 30,000-mile tour of the Middle and Far East, stopping at Bahrain before flying to Singapore and south-east Asia.

1977

- **9 December** BA and Singapore Airlines begin their joint London to Singapore service via Bahrain. It would run until 1980. (See Mach 2, Dec 2017.)

1979

- **February** BA Concorde G-BOAB carries HM the Queen and the Duke of Edinburgh on a three-week tour of Saudi Arabia and the Gulf States.

Royal visit

13 February 1979: HM the Queen, the Duke of Edinburgh, and British Foreign Secretary Dr David Owen arrive in Kuwait.
Photo: PA Images / Alamy



1984

- **Date unknown** Air France Concorde F-BTSD touches down at Dubai Airport on a flight carrying French president François Mitterrand to India.



F-BTSD at Dubai Airport, 1984

Photo: Len Chapman (www.dubaiasitusedtobe.net)

1992

- **12–13 October** Air France Concorde F-BTSD touches down in Bahrain as part of his record-breaking westbound circumnavigation of the Earth. (See Mach 2, Aug 2020.)

1995

- **15–16 August** Air France Concorde F-BTSD visits Dubai, flying supersonically over Saudi Arabia, on his eastbound circumnavigation of the Earth. This flight sets another world air speed record.

1996

- **7 April** Air France Concorde F-BTSD, painted blue for a Pepsi Cola promotion, arrives in Dubai during a month-long world tour to promote the brand. The aircraft takes 100 VIPs on a brief supersonic flight.



CONCORDE WATCH

The UK is still in lockdown, so all of the British Concorde museums are closed. Most of the Concorde museums outside the UK are also closed, but they are still offering activities for visitors on line.

France

- The **Musée de l'Air et de l'Espace**, which houses the French prototype Concorde 001 as well as Air France Concorde F-BTSD, remains closed until further notice. The French version of the website, however, has quizzes and other activities on their page "Le Musée Vient à Vous": <https://www.museeairespace.fr/actualites/le-musee-vient-a-vous/>

For updates and other details, see: <https://www.museeairespace.fr>

- **Aeroscopia** in Toulouse, site of development Concorde F-BTSB and Air France's F-BVFC, was to reopen on 19 December 2020, but has had to remain closed. For updates, see: <http://www.musee-aeroscopia.fr/en/actualites>

Germany

- The **Technik Museum Sinsheim**, home of Concorde F-BVFB, is closed until Monday 15 February: <https://sinsheim.technik-museum.de/en/>

United States

- The **Intrepid Sea, Air, and Space** museum in New York, home of Concorde G-BOAD, is closed until further notice. The museum is offering virtual tours, videos, and recorded interviews with people involved with the exhibits, including former crew members on Concorde.

For further information and updates, see: <https://www.intrepidmuseum.org>

- The **Museum of Flight** in Seattle, which houses Concorde G-BOAG, is closed until further notice. For information and updates, see: <https://www.museumofflight.org>

- The **Udvar-Hazy Center** in Chantilly, VA, home of Air France Concorde F-BVFA, is closed, but the museum has provided online tours, videos and other activities: see their page <https://airandspace.si.edu/anywhere>.



Technik Museum Sinsheim

Concorde F-BVFB and Tu-144D CCCP-77112, mounted on the museum's roof.
Photo: Valder137 / Wikimedia Commons (CC BY 2.0)