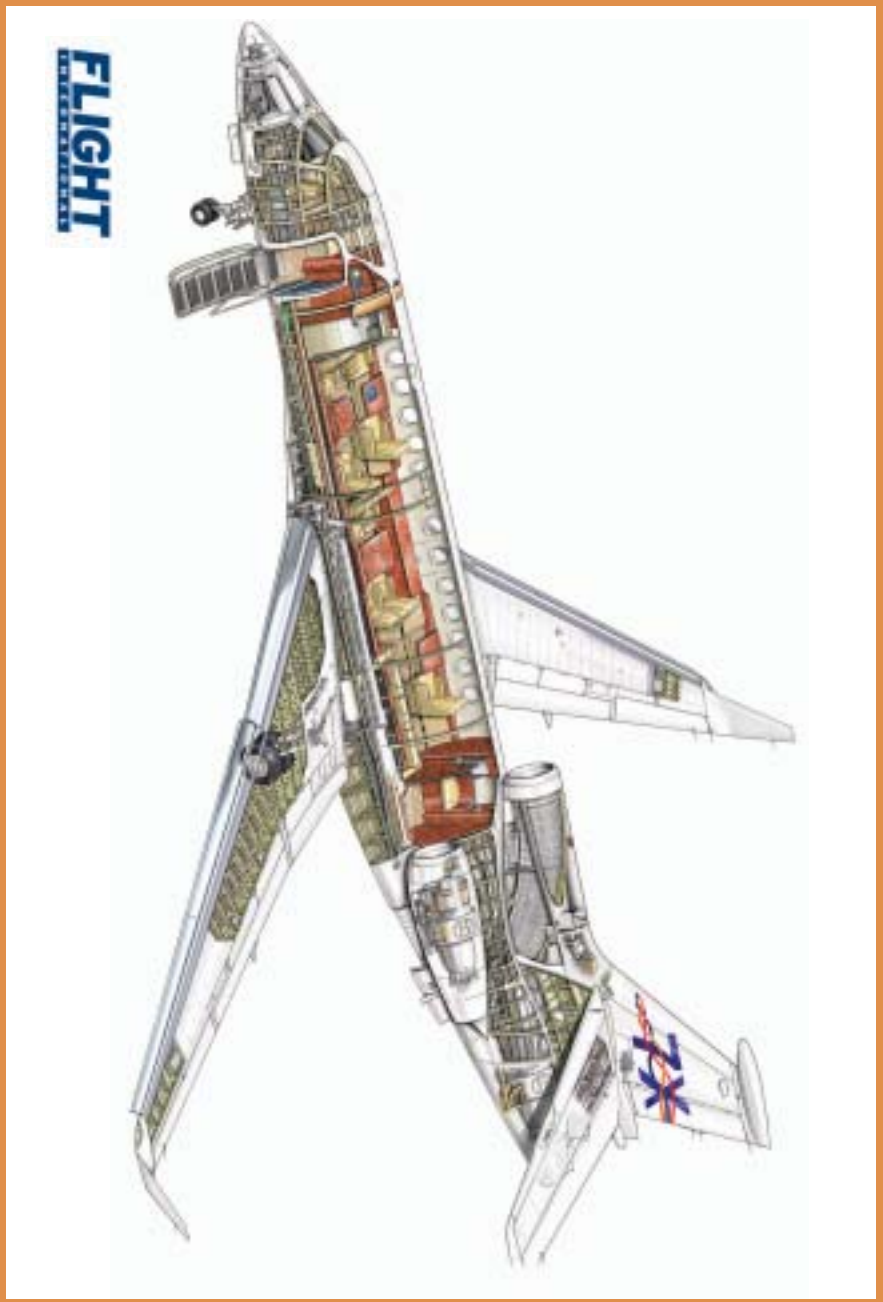

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Ultra Long Range Jets

Another of the categories being fuelled by new entrants and upgrades of established players. This is where the big boys of the business aircraft world battle it out. It is where miles count. Bombardier's flagship Global Express XRS, the two Gulfstreams the G500 and the G550 have been fighting over range and comfort supremacy and soon the Dassault 7X with all of its new features will be joining the fray.

■ The all-new fly-by-wire Dassault 7X is at the latter stages of the certification process and with its tri-jet power, its French flair and US marketing skills will soon be bringing an aircraft that was wholly designed on a virtual platform into the reality of a market place
Artist Tim Hall.

BOMBARDIER GLOBAL EXPRESS XRS

SPECIFICATION

Length	99' 5"	30.3m
Wingspan	94'	28.6m
Height	25' 6"	7.7m
Cabin Length	48' 4"	14.70m
Cabin Width	8' 2"	2.49m
Cabin Height	6' 3"	1.91m
Cabin Volume	2,140 cu.ft	60.6m3
Max Range (8)	6,150nm	11,390km
Max Seating	4 + 19	
Typical Seating	4 + 8	
Powerplant	2x RR BR710A2-20	14,750lbs / 65.6 kN
Avionics	Honeywell Primus 2000XP	
Max Cruise Speed	513ktas	950 km/h
Max Ceiling	51,000ft	15,545m
Rate of Climb	1,433fpm	436mpm
Take off Distance	6,190ft	1,887m
Landing Distance	2,670ft	814m
MTOW	98,000lbs	44,452kg
Max Landing Weight	78,600lbs	35,652kg
Useful load	46,800lbs	21,228kg
Payload with full fuel	1,825lbs	827kg
Price	$47.7m	€37.21m

THIS is the flagship of the Bombardier fleet with ultra long range capabilities and high performance.

It entered service in November 2005 and showed significant improvements over its legacy predecessor the Global Express with increased range to 6,150nm (11,400km) at M0.85– the original target for the Global Express.

The aircraft features an additional 1,486lb (674kg)-capacity forward fuel tank in the wing/body fairing. Pressurisation is increased to reduce cabin altitude to 4,500ft (1,372m) up to 45,000ft (13,716m).

Other cabin improvements include a relocated crew rest area, two additional windows, LED lighting and a larger baggage area. The Global XRS will have Bombardier's EVS as standard, comprising the CMC Electronics infrared sensor and Thales Avionics HUD.

Developments in the cabin are also making an impact. Mid-2006 Bombardier began offering as standard the Rockwell Collins Airshow 21 cabin electronic system.

With a dual-redundant Ethernet backbone, the Airshow 21 suite controls the cabin environment; provides communications and entertainment; manages lighting; waste and water systems; and enables centralised maintenance.

Two Inmarsat Aero H+ channels and an Iridium based channel means high-speed data satellite communications is standard for both the cockpit and the passengers.

Plug and play servers with a built-in aircraft firewall allows the Rockwell Collins eXchange system – purpose built for business jets – provide internet and email coverage as well as live TV images through the Tailwind 500 system.

Other improvements include a faster refueling system and improved zero-flaps take off capability for hot and high airports.

HERITAGE

A derivative of the Global Express which itself was the first clean-sheet designed ultra-long range business jet launched in 1993 with first flight in 1996 certification by Canada in July 1998, FAA in November 1988 and JAA in May 1999. First customer delivery was July 23 1999 and the final delivery in September 2005 after 148 aircraft had been delivered.

SPOTTER'S GUIDE

With 15 windows – Two more than the original Global Express – on each side of the cabin it clearly differentiates the XRS from the Global 5000 (with 10) and the Global Express (13). The outline of the Global Express is familiar with effectively a CRJ fuselage mated to a low swept supercritical wing with winglets. It also features a swept T-tail with swept anhedral tailplane.

IN DEVELOPMENT

DASSAULT FALCON 7X

HERITAGE

The 7X was announced at the Paris Air Show in June 2001 under the designation of FNX and made its public debut in June 2005, again at the Paris Air Show. It flew for the first time on 5 May 2005. The 7X features full FBW (Fly-By-Wire) control and was completely designed in a virtual environment, the result is that a proof of concept prototype was never needed. The first 7X to roll off the production line will be identical to the tenth, thirtieth or fiftieth. The design system allowed every person involved to 'walkround' the 7X in a virtual environment before the first metal was even cut. Certification is expected in early 2007 and the first deliveries are set to begin in April 2007.

SPECIFICATION

Length	76' 1"	23.19m
Wingspan	86'	26.21m
Height	25' 8"	7.863m
Cabin Length	39' 1"	11.91m
Cabin Width	7' 8"	2.34m
Cabin Height	6' 2"	1.88m
Cabin Volume	1,552 cu.ft	44m³
Max Range (8)	5,950nm	11,019km
Max Seating	3 + 19	
Typical Seating	3 + 12	
Powerplant	3x P&WC PW307A	6,400lb / 28.46kN each
Avionics	Falcon EASy	
Max Cruise Speed	TBC	
Max Ceiling	51,000ft	15,545m
Rate of Climb	TBC	
Take off Distance*	5,505ft	1,585m
Landing Distance**	2,262ft	716m
MTOW	69,000lbs	31,299kg
Max Landing Weight	62,400lbs	28,304kg
Useful load	34,928lbs	15,843kg
Payload with full fuel	1,900lbs	1,355kg
Price	$39.2m	€30.58m

* 63,600lbs take off weight
**37,100lbs landing weight

THE 7X is the newest tri-jet member to join the Dassault Falcon family. It features Fly-By-Wire controls and was designed in a completely virtual environment. Originally the specifications called for a 5,700nm (10,556km) range. However, following customer feedback Dassault installed a new fuel tank forward of the wing centre section, increasing fuel capacity by 1,760lbs (800kg) and fitted drag reducing winglets.

These improvements combined to extend the range to 5,950nm (11,000km) with eight passengers and three crew.

The 7X incorporates the Falcon EASy avionics suite, which was developed in collaboration with Honeywell and is based on Honeywell's Primus Epic integrated system. The system is made up of four 14.1 inch flat-panels in a T configuration, designed with the flight crew in mind.

Three 6,400lb (28.46kN) Pratt & Whitney PW307A engines power this aircraft and in testing it has so far achieved speeds of M0.92 (526ktas/975km/h).

It can cruise at 51,000ft (15,545m) above the congestion and lift a useful load of 34,928lbs (15,843kg).

SPOTTER'S GUIDE

The 7X has three engines; two are pod mounted at the rear and then third is at the back of the fuselage with its air intake in front of the tail and on top of the fuselage. The wings are swept with winglets, the horizontal stabilisers are swept and mid-mounted.

GULFSTREAM G500

SPECIFICATION

Length	96' 5"	29.39m
Wingspan	93' 6"	28.50m
Height	25' 10"	7.87m
Cabin Length	50' 1"	15.27m
Cabin Width	7' 4"	2.24m
Cabin Height	6' 2"	1.88m
Cabin Volume	1,670 cu.ft	47.3m3
Max Range (8)	5,800nm	10,742km
Max Seating	4 + 19	
Typical Seating	4 + 14-18	
Avionics	Honeywell Primus Epic	
Powerplant	2x Rolls-Royce BR710 C4-11	15,385lb/68.4kN each
Max Cruise Speed	487ktas	901km/h
Max Ceiling	51,000ft	15,545m
Rate of Climb	3,950fpm	1,204mpm
Take off Distance	5,150ft	1,570m
Landing Distance	2,770ft	844m
MTOW	85,100lbs	38,601kg
Max Landing Weight	75,300lbs	34,156kg
Useful load	37,100lbs	16,828kg
Payload with full fuel	2,300lbs	1,043kg
Price	$38.76m	€30.24m

BUILT for those who want to go far ... but not that far. The Gulfstream G500 is a derivative of the Gulfstream G550 model with a range of options to allow buyers fit the aircraft to suit their needs

It entered service in 2004 and has been certified for worldwide operations, the aircraft features a normal cruising speed of Mach .80 and a range of 5,800nm (10,742km) with a typical load of eight passengers. It flies high above commercial air traffic and adverse weather, permitting more direct routing by air traffic control and shorter en route times. The G500 operates efficiently on short-range, high-speed routes as well, flying up to 5,100nm (9,445km) at Mach .85.

G500 also provides an exceptional, advanced safety feature, the Automatic Emergency Descent Mode, built into the Flight Management System. In the unlikely event of a rapid cabin depressurization at 40,000 feet or above, coupled with crew incapacitation, the G500 will automatically turn and descend to a safe altitude of 15,000 feet and a speed of 250 knots. This allows the flight crew to regain consciousness and resume control of the aircraft with plenty of altitude to spare.

The G500's required take off distance is only 5,150ft. The G500 has the same PlaneView advanced flightdeck as the G550 and the long-range, $34 million G450. Depending on the configuration, the G500 can accommodate 14 to 18 passengers.

SPOTTER'S GUIDE

The G500 is a shorter range version of the G550, and has the same exterior appearance, (see Gulfstream G550).

HERITAGE

Both the Gulfstream G500 and G550 aircraft are products from the G-V – the first ultra long range aircraft to fly. Since announcing the concept at NBAA in 1992 there was a battle between Gulfstream with the GV and Bombardier with the Global Express to be first to market. Based on a lengthened and re-engineered G-IV fuselage but with a more efficient wing, Gulfstream won the race and flew on 28 November 1995.The G500 is a reduced range version of the G550.

GULFSTREAM G550

HERITAGE

The first production Gulfstream G550 was originally known as the SP (Special Performance) version of the Gulfstream GV offering enhanced performance and greater cabin space than the GV-SP. It rolled out in June, 2002 and received FAA certification on August 14 2003.

SPECIFICATION

Length	96' 5"	29.39m
Wingspan	93' 6"	28.50m
Height	25' 10"	7.87m
Cabin Length	50' 1"	15.27m
Cabin Width	7' 4"	2.24m
Cabin Height	6' 2"	1.88m
Max Range (8)	6,750nm (M0.80)	12,501km
Max Seating	4 + 19	
Typical Seating	4 + 14-18	
Powerplant	2x Rolls-Royce BR710 C4-11	15,385lb/68.4kN each
Avionics	Honeywell Primus Epic	
Max Cruise Speed	M 0.87	498KTAS/922km/h
Max Ceiling	51,000ft	15,545m
Rate of Climb	3,650fpm	1,113mpm
Take off Distance	5,910ft	1,801m
Landing Distance	2,770ft	844m
MTOW	91,000lbs	41,277kg
Max Landing Weight	75,300lbs	34,156kg
Useful load	42,700lbs	19,369kg
Payload with full fuel	1,800lbs	816kg
Price	$46.665m	€36.41m

JUST one week after entering service in September 2003, the G550 completed a 20,000-mile flight around the world – setting four city-pair speed records in the process. And that tradition has continued with the aircraft clocking up records between cities and continents across the globe.

The aircraft was the 2004 winner of the famous Collier trophy and recognized for its ability to outreach any other business-jet aircraft in its class.

The G550 can accommodate up to 19 passengers, fly at a maximum speed of Mach 0.885 and cruise at a maximum altitude of 51,000ft (15,545m).

With a 100 percent fresh air system, maximum cabin altitude of 6,000ft and 14 signature oval windows that allow for ample natural lighting, the G550 cabin maximizes passenger comfort while decreasing the effects of travel fatigue and jet lag.

The Gulfstream G550 also features the PlaneView cockpit and the Gulfstream Enhanced Vision System (EVS) as standard. (This system enables flight crews to see runway markings, taxiways, adjacent roads and surrounding areas in conditions of limited visibility. The system also helps crews avoid runway incursion and hazards that would otherwise not be easily visible.)

Powered by two Rolls-Royce BR710 engines, each producing more than 15,000lbs (66kN) of thrust, the G550 can fly eight passengers and four crewmembers 6,750nm (12,501km) – it will fly non-stop from New York to Tokyo in 14 and one-half hours at altitudes up to 51,000ft (15,545m), high above commercial air traffic, weather and adverse winds and permitting even more direct air traffic routing.

SPOTTER'S GUIDE

This aircraft differs externally from the legacy Gulfstream V by a seventh passenger window on the left side of the aircraft (as opposed to six on the left and either six or seven on the right). It features a low swept wing with winglets, twin Rolls-Royce Deutschland BR710 turbofan engines mounted on the fuselage ahead of a swept T-tail and swept tailplane.