



EXPLANATORY NOTES

Flight International's annual World Airliners directory is published in two parts on consecutive weeks. This week's Part 2 comprises mainline narrowbodies and widebodies (ie with more than 100 seats). Part 1, published last week, covered civil airliners/utility aircraft aimed specifically at the regional sector – ie, sized between the 10 and 100 seat categories, or with equivalent cargo capacity (including members of families that seat slightly more than 100, ie the Avro RJ100/RJ115). The entries provide a brief update on recent developments for each programme, along with a potted history and – for in-production types – information on assembly and output. Order, delivery and in-service data is sourced from the manufacturers and Flight's ACAS database. All information is correct to October 2008. The latest specification data for aircraft in this directory can be found on our searchable database at flightglobal.com/worldairliners. Information includes

dimensions, operating weights, powerplants, performance and passenger accommodation. All data, particularly performance measures, is intended only as a guide. It should not be used for operational purposes. **Abbreviations** **APB** Aviation Partners Boeing **AVIC** I/II China Aviation Industry I/II **BA** British Airways **BAe** British Aerospace **CAA** UK Civil Aviation Authority **CFM** CFM International **EA** GE/P&W Engine Alliance **EADS** European Aeronautic Defence and Space **EASA** European Aviation Safety Agency **EFB** electronic flight bag **EFIS** electronic flight instrumentation system **ETOPS** extended-range twin engine operations **FAA** US Federal Aviation Administration **FAR** US Federal Aviation Regulation **FCS** flight control system **FMS** flight management system **GE** General Electric **GECAS** GE Commercial Aviation Services **GPS** global positioning system **IAE** International Aero Engines **IAI** Israel Aerospace Industries **ICAO** International Civil Aviation Organisation **ISA** inter-

national standard atmosphere **ILFC** International Lease Finance **JAA** European Joint Aviation Authorities **JAR** Euro-pean Joint Aviation Requirement **LCD** liquid crystal display or large cargo door **LOI** letter of intent **MoU** memorandum of understanding **MTOW** maximum take-off weight **NTSB** National Transportation Safety Board **OEM** original equipment manufacturer **P&W** Pratt & Whitney **P&WC** Pratt & Whitney Canada **PTF** passenger to freighter **R-R** Rolls-Royce **STC** supplemental type certificate **TCAS** traffic alert and collision avoidance system. **Conversions** 1,000ft = 305m; 1kt = 1.85km/h = 1.15mph; 1lb = 0.00445kN; 1hp (shp) = 0.745kW; 1m² = 10.76ft²; 1m³ = 35.3ft³; 1kg = 2.2lb; 1 litre = 0.264 US gal = 0.22 Imp gal; 1km = 0.54nm. Some figures are rounded.



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328 SUPPORT SERVICES

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328 Support Services was formed in January 2006 when UK company Corporate Jet Services bought AvCraft Aerospace, which had taken over the Dornier 328 and 328Jet programmes in 2003 after Fairchild Dornier's 2002 bankruptcy. The German subsidiary now holds the type certificates of the Dornier 328Jet and turboprop aircraft, plus the proposed Dornier 428 stretch. As well as offering new-build jet aircraft, the company has ongoing refurbishment and conversion programmes of used aircraft and provides worldwide support and MRO (base and line maintenance) work for a fleet in excess of 200.

DORNIER 328

The P&WC PW119B-engined, 33-seat Dornier 328-100 twin turboprop first flew on 6 December 1991 and entered service with Swiss regional Air Engiadina in October 1993. Production was halted in favour of the 328Jet. All have been upgraded to -110 standard. PW119C-powered 328-120s and -130s received further enhancements to improve field performance.

DELIVERED: 107
IN SERVICE: 104

DORNIER 328JET

Deliveries of this twin-turboprop P&WC PW306-powered Dornier 328 jet derivative, first flown on 20 January 1998, began to Skyway Airlines in June 1999. The final production 328Jet was delivered by AvCraft's successor to Icelandic carrier Nordic Wings in March 2006. The aircraft was fitted with a 14-seat Envoy interior and was extensively modified with steep approach and extended-range capability. In August 2008, the first all-new aircraft to be completed at the Oberpfaffenhofen facility in Germany in four years was handed over to Austrian carrier Welcome Air. The aircraft will return in November for the fitting of long-range tanks, six Quick Change VIP seats, plus a medevac option.

The 328Jet seats 32 passengers at 31in pitch in a two-plus-one layout; Envoy 3 corporate models comprise Convertible, Executive and Executive Shuttle variants; a Special Missions upgrade is also available. Three auxiliary fuel tanks totalling 1,760 litres capacity in the centre-fuselage wing/body fairing provide 1,110km extra range.

DELIVERED: 110
IN SERVICE: 110

AIRTECH - AIRCRAFT TECHNOLOGY INDUSTRIES

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This 50:50 joint venture between Casa of Spain (now part of EADS) and IPTN (now Dirgantara Indonesia/Indonesian Aerospace) was set up to develop the CN-235 twin-turboprop transport. The agreement applied only to the earlier Series 10 and Series 100/110 aircraft, with the later Series 300 developed independently by Casa. (See under individual companies.)

ANTONOV

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AN-32

Derived from the An-26, the An-32 is powered by two Progress Al-20D turboprops. It first flew on 9 July 1976. Variants have introduced a two-crew glass cockpit, improved high-lift devices, de-icing, and cabin air conditioning. Antonov has since proposed modification packages to improve performance and extend service life to 25 or more years.

The An-32 remains available to order, using a small stock of uncompleted airframes. The latest deliveries included three in 2008 to Ukraine's ministry of emergencies.

PRODUCTION

Final assembly is undertaken by Aviant in Kiev, Ukraine.

DELIVERED: 361
IN SERVICE: 268

AN-38

This An-26 derivative light multipurpose aircraft first flew in June 1994. It is powered by two Progress Al-20D turboprops, with Western avionics and engines. The 27-seat, twin-turboprop An-38-100 export variant with Honeywell TPE 331-14GR-801E engines was certificated in April 1997. The An-38-200 for the local market, flown on 11 December 2001, has improved avionics and Omsk TVD-20-03 engines, which are said to be less expensive to acquire and maintain

(but have a shorter life than the -100's Honeywell TPE 331s). Also on offer are an eight/10-seat VIP version, military airlift transport and various types of surveillance and patrol.

After a halt between 2000 and 2003, a contract was signed for limited production by the Novosibirsk Aircraft Production Organisation (NAPO) factory in Russia. Discussions have been held with Vulcanair of Italy, which offered to finance EASA certification in exchange for selection as the European completion centre for an estimated 60 aircraft, but no further progress has been reported.

PRODUCTION

Final assembly is by NAPO in Novosibirsk, which can build 50 aircraft a year.

DELIVERED: 8
IN SERVICE: 6

AN-72/AN-74

The An-72 STOL transport first flew on 31 August 1977. Powered by two Lotarev D-36 turboprops mounted on top of the wing, an arrangement which provides high lift through the "Coanda" effect, it was produced in several versions, but has now been superseded on the production line by the An-74. The basic model was the An-72A with seating for up to 68 passengers, followed by the An-72AT specialist cargo aircraft, the An-72S executive model with three separate cabins, and the An-72P for maritime patrol duties. Originally developed as an Arctic/Antarctic-operation An-72, the An-74 first flew in 1989, retaining the overwing-mounted engines.

The initial An-74-100 and -200 versions were replaced by the An-74T-200A short take-off and landing cargo transport, which made its maiden flight on 24 December 2004. This introduced modern avionics, including ground-proximity warning, traffic-alert and collision-avoidance, global-positioning systems, and a digital two-crew cockpit. The convertible An-74TK-200A followed into the air on 28 April 2005. Powered by ZKMB Progress 14,430lb-thrust D-36 Series 4A engines in the traditional podded underslung arrangement, the baseline An-74TK-300 made its maiden flight on 20 April 2001 and was certificated in September 2002. This 52-seat variant has a two-crew cockpit, 19%-lower fuel consumption, and 27kt-higher cruise speed than earlier versions, whose overwing engines enhanced lift to provide short-field performance.

In cargo configuration, the aircraft can carry a 10t payload. An executive variant for 30 passengers is designated An-74TK-300D, and a maritime patrol aircraft is known as the An-74MP-300. Also available

are the An-74TK-100C ambulance aircraft with two stretchers, four medical attendants and a six-passenger VIP cabin. The An-74D-200 Executive aircraft is intended to carry 12 passengers, while the An-74VIP is a concept promoting a 10-16 passenger cabin, with an additional compartment for a team of attendants or outside freight.

Egypt has taken delivery of nine An-74s, and Sudan ordered five An-74s of unspecified variants on 25 December 2005. Libya and Laos are customers for VIP versions of the An-74TK-300. No new orders have been announced since.

PRODUCTION

Produced by Kharkov State Aircraft Manufacturing (KSAMC) in Kharkov, Ukraine.

DELIVERED: 160+
IN SERVICE: 137 (74 AN-72s AND 63 AN-74s)

AN-140 AND IRAN-140

The 52-seat, high-wing An-140, which flew originally in September 1997, is powered by two Klimov TV3-117VMA-SBM1s and was designed as a replacement for the venerable An-24. The original design has been superseded by the -100 variant incorporating a larger wing, improved engines, higher weight, and longer 2,770km range with 52 passengers, which received its type certificate on 25 April 2006. The An-140T is a proposed 6t freighter and the An-140TK a convertible passenger/cargo variant. A proposed executive version, the An-140VIP, would have a range of 4,000km. Also available are variants for ice patrol and fishing exploration, aerial photography and surveillance and patrol.

Following orders from the Aviakor production line for three aircraft from Yakutia, placed in March 2006, and for 25 from the Samara local government via the Ilyushin Finance Company in July that year, Russia's largest aviation fuel supplier TOAP placed an order for five An-140-100s in June 2008, together with an option for 50 more. Russian carrier Kuban Airlines plans to lease an unspecified number of An-140s. Syria is considering An-140 acquisition and interest is also reported from Azerbaijan, Kazakhstan, Siberia and Tajikistan.

Iran Aircraft Manufacturing (HESA) signed a licence agreement in December 1995, predicting a

domestic requirement for 80 units, with an annual production rate of 12 aircraft. It has built only five aircraft to date, with the fifth aircraft making its first flight on 18 March 2008. Three more are being assembled, but production will have to be ramped up to fulfil outstanding orders from Safiran Airlines, Saha Airlines and Iran Aseman Airlines, the latter having placed an initial order for 20 aircraft.

PRODUCTION

Produced by Aviakor in Samara, KSAMC in Kharkov and HESA in Esfahan. Aviakor intends to produce 44 aircraft over the next three years.

DELIVERED: 15

AN-148

This twin-engined 70-seat regional jet flew in December 2004 and, although Antonov received Russian AP-25 airworthiness approval on 28 February 2007, has yet to enter commercial service. The first production aircraft is now ready and delivery to the first customer, Leasingtechtrans of Ukraine, is imminent. Ilyushin Finance Company (IFC) placed a firm contract for 34 aircraft for delivery between 2008 and 2011, and has expressed interest for 30 more in 2011-12. Five An-148Es will be leased to Moscovia Airlines, which has five more on option. According to Antonov, this latest contract brings the firm order book to 79 aircraft. Other customers are AirUnion (KrasAir), GTK Rossiya, Polet, the Kazakhstan airlines Berkut and SCAT, and Cubana. Other reported customers are Odessa Airlines and Vladivostok Avia. Antonov hopes to sell up to 500 An-148s by 2020, including 30 in Ukraine and 200 in other CIS countries.

The baseline An-148-100B, powered by the 14,740lb-thrust ZMKB Progress D-436-148 has a five-abreast cabin for 70-80 passengers and will have a range of 3,600km and a 2.8dB margin against ICAO Chapter 4 noise standards. The aircraft is also available in short-haul and long-haul versions designated An-148-100A and An-148-100E. The -100A will extend the range by 2,000km, while the -100E will fly 5,000km, all with 75 passengers. The An-148-100E1 and E2 VIP versions for up to 40 passengers will have additional fuel tanks to provide a range of 6,000-8,700km, depending on the

configuration. The An-148C is a small parcels variant with a side cargo door, the An-148T civil freighter with a side cargo door and increased cabin cross-section, and the An-148VT, a much larger rear-loading ramp airlifter.

Antonov has launched a stretched passenger version for 99 passengers in single-class configuration, for first flight in 2009 and service entry in 2010. This will involve a 1.7m stretch of the fuselage and is proposed as the An-148-200A with a range of 3,000km and the longer-leg An-148-200B with a range of 4,500km. Antonov has identified a market for more than 200 aircraft to 2015 and claims letters of intent from Russian and Ukrainian airlines for 80 An-148-200s.

PRODUCTION

Production is by Aviant in Kiev and VASO in Voronezh, Russia. The latter assembles An-148s under a production licence agreement signed with Antonov on 25 November 2005. VASO plans to build 100 An-148s between now and 2012.

ORDERED: 79
DELIVERED: 0

ATR

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The Alenia Aeronautica (Finmeccanica Group) and EADS joint venture achieved orders for 113 aircraft in 2007, representing record sales for a single year since the beginning of the programme.

ATR 42/72

The -600 series ATR 42/72 was launched in 2007 and will be progressively introduced from the second half of 2010 – although the airframer is yet to announce a launch customer.

The new variants will be equipped with the new Pratt & Whitney Canada PW127M as the standard powerplant, and will also incorporate a new five-screen Thales Avionics glass cockpit replacing the current EFIS, and a multipurpose computer for enhanced flight safety. MTOW will be increased by 300kg, with an optional additional 200kg also to be made available. ATR is also looking at a 90-seater, but this is likely to be a new aircraft rather than a stretch of the existing ATR 72.

During 2007 the first ATR equipped with in-flight entertainment and LEDs in the passenger cabin was delivered.

The 48-seat ATR 42 first flew in August 1984 and entered service as the ATR 42-300 with Air Littoral in December 1985, powered by the P&W PW120 engines with four-blade Hamilton Standard propellers. PW121s with higher thrust were fitted to the ATR 42-320, providing better performance in hot-and-high conditions, including shorter runway operation.

The 66-seat ATR 72, with a fuselage stretch of 4.5m, flew on 27 October 1988 and was first delivered to Karair of Finland in October 1989. The basic version was the ATR 72-200 with PW124B turboprop engines, while the ATR 72-210 is equipped with more powerful PW127s providing better hot-and-high performance.

The improved ATR 42-500 with higher-powered PW127E engines and six-blade propellers took to the air in September 1994. Apart from a higher cruise speed and enhanced performance, the ATR 42-500 features a new look interior, more windows than seat rows, composite tail, new landing gear, wings and brakes and enhanced air conditioning. A 5,800kg-capacity ATR 42 freighter with a large cargo door entered service in October 2003. A bulk freighter conversion with a gross usable volume of 56m³ is also available. ATR is offering a quick-change concept



The ATR -600 family will feature an all-new Thales-supplied cockpit



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with a 30min conversion time from passenger to cargo. Cargo conversions provide a Class E cabin, floor reinforcement, window plugs, structural linings and 9g vertical nets. The ATR 42 MP Surveyor is a maritime patrol version.

The present production ATR 72 model is the -500, which flew in January 1996. It has the same features as the ATR 42-500, with which it also shares a high degree of commonality. All-cargo (LCD) and bulk freighter conversions are available with a payload of 8,500kg and a volume of 75.5m³ respectively. A Quick-change concept is also available, being offered with a passenger to cargo conversion time of 45min. Texas-based M7 Aerospace has an FAA STC for ATR 72 freight conversions. The ATR 72 ASW is a medium-sized anti-submarine warfare aircraft.

PRODUCTION

Fuselage and wing manufacture by Alenia at Pomigliano, near Naples, Italy and EADS Sogerma Services at Bordeaux, France, respectively, are supported by final assembly, engineering and procurement activities at ATR in Toulouse.

In 2007 ATR delivered 42 aircraft, and is aiming to deliver more than 60 this year. Output is expected to rise to a minimum of 75 in 2009 and will stabilise at 80 in 2010-11, increasing to around 85 in 2012.

ORDERED: 958 (419 ATR 42s AND 539 ATR 72s)
DELIVERED: 795 (403 ATR 42s AND 392 ATR 72s)

AVIC I/AVIC II

See China Aviation Industry I/II

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AVRO RJ

Developed from the BAe 146, the Avro RJ's major changes included uprated Honeywell LF-507 engines and digital avionics. The new family comprised three models: the 85- to 100-seat RJ85, which flew in March 1992; the RJ70 with seating for 70-82 passengers; and the 100- to 115-passenger RJ100. The last four aircraft – two RJ85s and two RJ100s – were delivered in November 2003, 10 years after the initial RJ85.

In 2000-1 there was a short-lived programme with upgraded RJX-70, -85, and -100 models powered by new Honeywell AS977 turbofans. The first RJX was flown on 28 April 2001, but the programme was abandoned the following November. A secondhand market has developed for early versions of the four-engined jet, and BAE Systems is now strongly targeting the VIP corporate and executive charter market with conversions into the Avro Business Jet (ABJ).

It has teamed with Inflight Engineering Services of the UK to carry out customised conversions, and with UK consultancy Design Q to provide a stylish new interior with mood-lighting. Some 23 RJ/146 aircraft are in service or being converted for a variety of corporate roles, with at least six more due to enter service before the end of the year.

DELIVERED: 170 (71 RJ100s/87 RJ85s/12 RJ70s)
IN SERVICE: 164

BAE 146

BAE Systems continues to work on ensuring sustained demand for used aircraft through a number of upgrades and modifications and is offering a life-extension programme to increase design life from 55,000 to 80,000 cycles, aimed at enabling airframes to remain in service for at least 20 more years. Flat-panel displays have been fitted to some aircraft, providing full EFIS functionality.



The first aircraft converted under the relaunched BAe 146QT programme took to the air in June

The first relaunched 146QT freighter conversion has been completed at Aerostar's Bacau site in Romania and flew on 25 June 2008. Although Amerer Air of Austria had contracted to take delivery of it, the deal fell through due to late completion of the conversion, says BAE. It is remarketing it, and a second conversion (of a -300) is under way.

Available across the Series 200 and 300 models, the QT features an E-Class interior and large, upward-opening freight door at the rear, and can carry up to 12,600kg on strengthened floors.

The conversion programme is based on a perceived requirement for 50-100 aircraft. The VIP and executive jet market is being targeted under the name of Avro Business Jet.

Announced more than 30 years ago, the four-engined, high-winged BAe 146 made its maiden flight in September 1981 and entered revenue service with Dan-Air in May 1983. In all 221 aircraft were built in -100, -200 and -300 passenger and cargo variants, before being replaced by the derivative Avro RJ. The 146 ARA is an atmospheric research aircraft owned by BAE Systems.

DELIVERED: 220 (71 -300s/115 -200s/34 -100s)
IN SERVICE: 190

JETSTREAM 31

Derived from the Handley-Page Jetstream of 1960s vintage, the 19-seat J31 flew in March 1980 and entered service with Contact Air in Germany in December 1982. The more-powerful Super 31/J32 began operations in 1988. An enhanced-performance J32EP was later developed, able to carry an extra 360kg from hot-and-high airfields.

DELIVERED: 383 (PLUS 64 HANDLEY-PAGE JETSTREAMS)
IN SERVICE: 309

JETSTREAM 41

The 29-passenger, Honeywell (Garrett) TPE331-14-powered Jetstream 41, a stretched and updated development of the J31, flew in September 1991 and entered service with Loganair and Manx Airlines in November 1992. In addition to the standard passenger model, an executive version for eight to 14 passengers was also marketed, as were quick-change and special role variants. However, production was short-lived and ceased in 1997. BAE offers a 3.5t Jetstream 41F freighter conversion that uses the existing large rear baggage door, but requires an E-Class cargo compartment including smoke detection, cabin liner and spider net. However,

with a strong passenger market, no aircraft is currently available for a trial installation.

DELIVERED: 100
IN SERVICE: 97

ATP/JETSTREAM 61

First flown in August 1986, the Advanced Turboprop (ATP) – a stretched, re-engined BAe 748 development – entered service with British Midland in August 1988. An improved version, designated Jetstream 61, was certificated in June 1995, but was never put into production.

There is strong interest in ATP 8t capacity freight conversions. BAE holds design authority for a 1.85 x 2.64m large freight door (LFD) conversion developed with West Air Sweden, which can convert four a year. BAE has licensed Romania's Romaero to make LFD kits, is involved in an E-Class ATP Freighter design, and competes against West Air to provide ATP cargo interiors. A total of 40 aircraft have been or are in the process of conversion. The newest customer is start-up carrier Airgo Airlines of Greece, which put one ATPF into service at the end of August 2008. This aircraft is leased from West Air of Sweden, which is also providing three passenger aircraft to NextJet.

DELIVERED: 62
IN SERVICE: 56

BEECHCRAFT

See Hawker Beechcraft

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BE-112

This twin-turboprop, twin-fin amphibian was revealed in 2006, but no development timetable has been disclosed. The 27-seat design has a barrelled hull with large sponsons for water stability and wingtip floats. Engine choice is between the 1,400shp RKBM TVD-1500 and the 1,425shp P&WC PT6A-67R, although the company now promotes the latter. The engines are fitted high on each fin, which are linked by a high-mounted horizontal stabiliser. Combi interior for cargo is planned, to include vehicles loaded via a rear ramp. No further progress reported.

BE-200 ALTAIR/BE-210/BE-220/BE-250

The swept-wing, T-tail Be-200 twinjet amphibian is

designed as a water bomber, with a utility version dubbed Be-210. An airliner variant is the Be-310. The Be-200ChS has been on firefighting duties in Russia.

The Be-200, which first flew in September 1998 and received its full type certificate in December 2003, can scoop 12t of water through four retractable scoops while alighting briefly on a lake or the sea. A 43-seat passenger version of the Be-200ChS is understood to have received a Russian supplemental type certificate in January 2007. The first multipurpose Be-200ES was handed over to the Azerbaijan ministry of emergencies on 25 April 2008.

Irkut also aims to be developing cargo, search and rescue (Be-200PS), anti-submarine (Be-200P), ambulance, maritime patrol (Be-220) and airborne early warning (Be-250) variants. The cargo variant would have a capacity of 7,500kg, while the ambulance version can accommodate seven seated casualties/medical attendants, intensive care equipment and 30 stretchers.

Seating two pilots and 72 passengers, the Be-210 utility model is similar, but with a strengthened airframe for additional fuel in the centre tank section. It is planned to achieve European and US certification, initially with 16,500lb-thrust ZMKB Progress D-436TP turbofans, but later with Rolls-Royce BR715s. Irkut is co-operating with EADS, which would assist in marketing, manage certification and develop product support.

PRODUCTION

NPO Irkut's IAPO plant undertakes final assembly in Irkutsk, Siberia, but the line will be moved to the Taganrog Avia factory. IAPO plans to build four Be-200s a year against an annual capacity for 22.

IN SERVICE: 7

BE-310

This land-based 100-seater derivative of the Be-200 utility amphibian was revealed in 2004. The Be-310 would have a conventional fuselage rather than a flying-boat hull, but would inherit the amphibian's wing, ZMKB Progress D-436-series engines and major on-board systems, while retaining cabin length and height. The modified fuselage enables floor width to be increased from 2.5m to 3.1m, permitting three-abreast seating. No further progress and no plans to produce a prototype have been reported.

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717

This 106-seat R-R BR715-powered twinjet was developed from the ubiquitous McDonnell Douglas

DC-9. When launched in 1995, it was dubbed the McDonnell Douglas MD-95, but was renamed after that company's acquisition by Boeing in August 1997. It flew in September 1998, and deliveries began to AirTran Airways in September 1999.

Production ended with the delivery of the remaining two aircraft to AirTran Airways and Midwest Airlines on 30 May 2006 – the last of 155 717s.

DELIVERED: 155
IN SERVICE: 155

BOMBARDIER

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In its fiscal year ending on 31 January 2008, Bombardier delivered 128 regional aircraft, a 14% increase over the year before.

Deliveries and orders reflect the continuing shift in demand towards larger regional jets and turboprops, with 56 CRJ900 and CRJ900NextGen and 47 Q400s delivered, while orders for 238 aircraft represented a dramatic rise over the 87 aircraft contracted in the previous year.

CRJ100/200/440/800

Production of its smallest regional jet was discontinued in January 2006, although Bombardier has extended the CRJ200 line with the Challenger 850 27-seat Corporate Shuttle and 16-seat executive jet based on the CRJ200LR. Franco-Russian engine maker PowerJet has targeted the CRJ family as a candidate for re-engineing with its 14,000-18,000lb-thrust SaM146 developed for the Sukhoi Superjet 100.

Bombardier has also explored used-aircraft opportunities, particularly a 7t capacity E-Class package freighter modification, launched with an order for two aircraft from West Air Europe in August 2006.

British Columbia-based Cascade Aerospace has designed and certificated a cargo conversion kit for the CRJ200PF programme, which involves minor structural modifications, addition of a cargo door, stripping the cabin of all passenger elements, installation of protective flooring, fuselage liners, ceiling panels and fire and smoke suppressants.

Developed from Bombardier's Challenger corporate jet, the GE CF34-powered CRJ100 flew in May 1991 and entered service with Lufthansa CityLine in November 1992. Longer-range -ER/LR models followed and were available for the later CRJ200, which has the same airframe but improved CF34-3B1 engines.

The 44-seat CRJ440 is dimensionally identical to the CRJ200, with reduced capacity to comply with US

pilot scope clause restrictions. It entered service with Northwest in January 2002.

DELIVERED: 1,021 (226 CRJ100s/709 CRJ200s/
86 CRJ440s)
IN SERVICE: 995 (EXCLUDING SE AND CHALLENGER 850)

CRJ700

The 70-seat CRJ700, which incorporates a 4.72m stretch of the CRJ100/200, flew in May 1999 and entered service two years later as the baseline Series 701. Wing-root inserts increase span by 1.82m. More-powerful GE CF34-8C1 engines, stronger undercarriage and leading-edge slats were also incorporated. As well as the baseline CRJ700 Series 701, Bombardier also offers a more spacious version of the CRJ900 equipped with 75 seats, dubbed the CRJ700 Series 705 (CRJ705), which has a 10-seat first-class section. Air Canada Jazz introduced the first CRJ705 in May 2005. Since 2003, Bombardier has standardised by using the stronger (but 30kg heavier) CRJ900 wing, providing commonality and reducing customer lead time for selection between the variant, as well as allowing increased weights. Other approved upgrades cover a derated variant of the CRJ900's CF34-8C5B1 engine, which reduces maintenance costs and gives CRJ700/900 operators a common engine.

In March 2005 Bombardier announced a long-range CRJ700LR variant adding 444km to the 3,600km offered by the earlier CRJ700ER. The CRJ700 NextGen introduces larger passenger windows, enhanced interior with LED lighting, 27% more overhead baggage space, and minor airframe changes including composite flaps and vanes. The Challenger 870 is the designation given to the corporate version of the CRJ700LR.

PRODUCTION

See CRJ900

ORDERED: 322 (306 CRJ701s/16 CRJ705s)
DELIVERED: 272 (256 CRJ701s/16 CRJ705s)

CRJ900

The 86-seat CRJ900 – a minimum-change, 3.8m stretch of the CRJ700 – flew on 21 February 2001, was certificated in July 2002 and entered service in January 2003. It has a stronger wing, aft fuselage and main landing gear, and more-powerful GE CF34-8C5 engines. Bombardier has developed an "enhanced performance package" (EPP) for the CRJ900, which provides reduced fuel consumption, improved field performance and en-route climb.

The upgrade comprises a new winglet providing a better lift/drag ratio for improved field performance and lower drag, reprogrammed slats and new flap setting for approach and landing to reduce V_{REF}. A



Bombardier's CRJ NextGen family includes the stretched 100-seat CRJ1000 model, which had its maiden flight on 3 September 2008



CRJ900LR version has also been developed, which incorporates the EPP, providing an increased payload and range compared with the CRJ900ER, enabling it to carry a full passenger load more than 1,660km from a 1,767m runway.

The CRJ900 NextGen, which entered revenue service with Mesaba Airlines in June 2007, is beginning to replace current models on the production line. It has an enhanced cabin interior with LED lighting, 21% more overhead baggage capacity, and enlarged windows to give 24% greater viewing area. Other improvements include composite flaps and vanes, and increased C check intervals of 6,000h (from 4,000h) for reduced maintenance costs. The Challenger 890 is the designation given to the corporate version of the CRJ900LR.

PRODUCTION

The CRJ700 and CRJ900 are built at Mirabel in Montreal. Bombardier delivered 57 CRJ700/900s in 2007 and shipments this year have averaged 4.5 a month.

ORDERED: 250
DELIVERED: 172

CRJ1000

This stretched CRJ development seating 100 passengers made its first flight on 3 September 2008. Certification and service entry for this latest aircraft is scheduled for the fourth quarter of 2009.

Originally designated the CRJ900X, the CRJ1000 was launched in early 2007. The additional capacity is achieved by the insertion of a 1.58m fuselage plug forward and 1.37m aft, which provides three more seat rows. It also incorporates larger passenger windows, bigger overhead baggage capacity, a new dual-zone ECS system, and enhanced Pro Line 4 avionics suite. Structural changes include an enlarged and strengthened wing with optimised winglets, reinforced landing gear and carbon brakes. Power is provided by the same CF34-8C5 engines used on the CRJ900, but with 2% more power, and an optional 5% increase in thrust is available in the CF34-8C5A2.

The basic model has a maximum range of 2,755km with 100 passengers, extended to 3,125km in the CRJ1000ER. A lighter version for European customers, dubbed CRJ1000EL (EuroLite), is being offered to minimise weight-related charges for European operators. It will have a reduced range of 1,900km. Commonality with other CRJ models is stated to be in excess of 84%.

ORDERED: 39
DELIVERED: 0

DHC-6 TWIN OTTER (DE HAVILLAND)

First flown in May 1965, the Twin Otter short take-off and landing commuter and utility aircraft was produced in Series 100 basic configuration; in Series 200 with lengthened nose fairing; while the Series 300 has uprated engines and improved payload/range performance. British Columbia-based Viking Air (see separate entry) has acquired the type certificates for seven de Havilland heritage aircraft, including the DHC-6, which it is building as the DHC-6 Twin Otter 400.

DELIVERED: 842
IN SERVICE: 565

DASH 7 (DE HAVILLAND)

The high-wing, four-engined, 50-seat Dash 7 (DHC-7) short take-off and landing transport made its first flight in March 1975 and entered service with US regional Rocky Mountain Airways in February 1978. It was produced in the Series 100 basic model, the all-cargo or mixed Series 110, extended-range Series 150 and the cargo or combi Series 151 derivative, and the IR Ranger, an ice reconnaissance variant for the Canadian government. Field Aviation provides gross-weight increase, cargo door and increased fuel retrofits.

DELIVERED: 113
IN SERVICE: 80

DASH 8/Q SERIES

The first 36-seat, P&WC PW120-powered Dash 8 100 flew on 20 June 1983, entering service with NorOntair in December 1984, but is no longer built. The family also includes the more-powerful Dash 8 200, like the -100 built in improved A and B variants; the stretched 50- to 60-passenger -300; and the longer 74-seat -400. The -300 flew in May 1987 with a larger wing, stronger undercarriage and more-powerful PW123 engines. The faster and longer PW150A-engined 400 first flew in January 1998 and entered service with SAS Commuter in January 2000. Bombardier adopted the brand "Q Series" in 1998 to promote its active anti-noise and vibration suppression (ANVS) system.

The Q400NextGen provides a more pleasant cabin environment with LED lighting, new ceiling panels and dished window sidewalls and larger overhead bins. Operating costs are reduced with an increase in scheduled maintenance intervals. Bombardier continues to give serious consideration to stretch the airframe to accommodate 80-90 passengers in what is dubbed the Q400X, but no firm decision to go ahead has been announced.

In response to several cases involving the failure

of Q400 landing gear to retract after take-off – mainly involving SAS Group aircraft – the US FAA proposed an airworthiness directive in October 2008 that mandate incorporation of new weight-on-wheels (WOW) and steering harnesses that have a new conduit construction. The proposed action had previously been addressed in a mandatory continuing airworthiness information document issued by Transport Canada. Investigations into the problem had revealed fatigue failure of the nose landing gear electrical harness.

In early 2008 Canada's Cascade Aerospace launched a cargo conversion programme for the Q400, dubbed the Q400PF. Two ex-Scandinavian Airlines Q400s have been the first aircraft to undergo the conversion for Swedish cargo operator Nord-Flyg, which is the Q400PF launch customer.

The conversion involves the installation of an E-Class cabin compartment with a 9g vertical net. The Q400PF can carry up to 9.5t of palletised cargo.

Cascade had previously developed the Q402-MR a multi-role air tanker/firebomber variant for France's Sécurité Civile.

Bombardier has modified Dash 8s for special-missions, such as search and rescue, maritime patrol, airborne surveillance and others. Field Aviation has 29 orders and options for conversion for maritime surveillance and patrol roles.

PRODUCTION

Final assembly is at Downsview, Canada. Bombardier delivered 66 Q Series in 2007 and shipments have averaged four a month in 2008.

ORDERED: 981 (299 Q100s, 105 Q200s, 267 Q300s AND 310 Q400s)
DELIVERED: 809 (299 Q100s, 101 Q200s, 258 Q300s AND 210 Q400s)

BRITTEN-NORMAN

B-N Group, Bembridge Airport, Bembridge, Isle of Wight, Hampshire PO35 5PR, UK Tel +44 (0) 870 881 5060 Fax +44 (0) 870 881 5061 enquiries@britten-norman.com www.britten-norman.com

BN-2A MK III TRISLANDER

The 18-seat stretched Trislander is essentially an Islander with a third, fin-mounted engine. First flown in September 1970, it was first delivered to Aurigny Air Services in June 1971. The initial Mk III was replaced by the higher gross weight Mk III-1, and the Mk III-2 with a longer nose and additional baggage space. The Mk III-3 has an auto-feather system. Twelve aircraft were produced from kits supplied by Florida-based International Aviation as the Tri-Commutair. Production ceased in 1984. In 2003 BNA began remanufacturing one aircraft as a demonstrator to elicit firm orders and was in the process of building the first of the next production batch, but this has been suspended. The Trislander was seen as part of a possible Chinese joint venture including the Islander and Defender 4000, but this is no longer being pursued.

DELIVERED: 85

CHINA AVIATION INDUSTRY I

AVIC I Commercial Aircraft Company (ACAC), 22-23/F Business Building, Zhaofeng Plaza, 1027 Changning Road, Changning District, Shanghai 200050, China Tel +86 21 5241 3737 Fax +86 21 5241 3771 business@acac.com.cn www.acac.com.cn

China's aerospace industry comprises two major state-owned groups – Aviation Industry Corporation (AVIC) I and AVIC II. The former is responsible for the ARJ21 and its participating companies comprise Chengdu Aircraft Industry Group, Shanghai Aircraft Research Institute, Shanghai Aircraft Industry Company (SAIC), Shenyang Aircraft Corporation, Xian

Aircraft Design and Research Institute and Xian Aircraft Company.

However the two AVICs are to be merged and then structured in about five businesses based on product lines. These businesses will include an air transport, helicopter, aerospace engines and systems company.

ARJ21 XIANGFENG (FLYING PHOENIX)

Developed from the AVIC I NRJ58/76 (new regional jet) project, the ARJ21 (Advanced Regional Jet, 21st century) is a key programme in China's 11th five-year plan. It was launched on 7 November 2000 and approved by the Chinese government in June 2002, with the official go-ahead announced in October that year with the formation of ACAC. Final assembly of the first test aircraft began on 30 March 2007 and was completed with the formal roll-out on 21 December 2007. The first flight was scheduled for March 2008, but was delayed until late in the year to enable key systems suppliers to complete testing.

Cascade had previously developed the Q402-MR a multi-role air tanker/firebomber variant for France's Sécurité Civile. Bombardier has modified Dash 8s for special-missions, such as search and rescue, maritime patrol, airborne surveillance and others. Field Aviation has 29 orders and options for conversion for maritime surveillance and patrol roles.

Five ARJ21s have been built to date. Three aircraft will be used for initial flight testing. ACAC had aimed to complete flight testing and obtain local certification and delivery to launch customer Shandong Airlines in September 2009, but the delay to the first flight has pushed this back to 2010. ACAC claims 181 commitments from domestic customers, but has firm orders for only 35 aircraft, from launch customer Shandong Airlines (10), Shanghai Airlines (five) and Shenzhen Financial Leasing (20). Xiamen Airlines has signed an MoU for six, and SE Leasing of Shanghai has options for 30 aircraft. Further commitments are known from Xingfu Airlines (10), Happy Airlines (10) and GECAS (5). Lao Airlines became the first foreign customer in August 2007 when it signed an MoU for two ARJ21-700 aircraft for delivery in 2010. ACAC estimates a total market for 500, of which 350 are expected to be need within China and 150 for export. FAA and EASA certification is also being sought to extend the aircraft's appeal to Europe and North America.

The new aircraft features two rear-mounted General Electric CF34-10A turbofans with FADEC, T-tail configuration, and a five-abreast cabin layout for 78 to 90 passengers in the baseline ARJ21-700.

The ARJ21-700F freighter would have a payload of 10,150kg and carry five LD7 containers or four to five standard cargo pallets a distance of 3,340km. An auxiliary fuel tank would give the 20-seat ARJ21-700B business jet a range of 6,100km, enough to reach any point in China. While the ARJ21-700 will be the initial production model, ACAC also has plans for a stretched 98- to 105-seat ARJ21-900, which it intends to build in partnership with Bombardier, under which the Canadian manufacturer will invest \$100 million and provide technical assistance in developing the larger aircraft. Bombardier will also assist AVIC I with marketing the ARJ21-900 outside China. The -900 standard version will have the same 2,230km range as the -700, but the extended -900ER's 3,340km range is some 350km shorter than that of the -700ER.

PRODUCTION

Shanghai Aviation Industrial Group is responsible for the tailplane and final assembly, while Xian Aircraft is building the wing and centre fuselage; Shenyang Aircraft the fin, engine pylons, and electrical subassembly; and Chengdu Aircraft the nose. Jinan Special Structure Research Institute is assisting with composite materials. Shenyang Liming Aero Engine may provide engine assembly and final testing. ACAC has discussed a European production line with Italy's Alenia; Boeing is a project consultant.

ORDERED: 35 FIRM PLUS 148 COMMITMENTS
DELIVERED: 0

AVIC I STUDIES

AVIC I subsidiary First Aircraft Design Institute (FADI)

is studying two new indigenous products. The more immediate need is for a 19-seat turboprop to enable local carriers to expand services to remote areas of the country under the newly established China Civil Aviation Regulation (CCAR) Part 135, based on US FAA Part 135 standards. The new standards allow general aviation companies to operate scheduled services with aircraft carrying up to 19 passengers, and charter flights with aircraft of up to 30 seats. Essentially a replacement for the locally produced Y-12, the new modern aircraft will need to demonstrate excellent hot-and-high performance. In the longer term, for service entry around 2015, FADI is also studying a 150-seater passenger aircraft and a civil/military utility freighter as part of Beijing's five-year plan, which envisages China re-entering the large commercial airliner field.

Discussions are likely to be initiated with foreign companies with a view to possible joint development of all three proposed types. No further progress has been reported.

CHINA AVIATION INDUSTRY II

AVIC II, 67 Jiaonan Street, Beijing, 100712, China Tel +86 10 6401 3645 Fax +86 10 6403 2109 international@avic2.com www.avic2.com

See description of China's aerospace industry structure under China Aviation Industry I entry.

AVIC II manufactures Embraer ERJ-145s under licence (see Harbin Embraer Aircraft Industry entry).

Subsidiary AviChina is evaluating the feasibility of building a new regional or business jet, alongside a new turboprop. No details have been revealed.

CSIR

Council of Scientific and Industrial Research, Centre for Civil Aircraft Design and Development, CMMACS Campus, Belur, Bangalore 560 037, India Tel +91 (80) 526 3219 Fax +91 (80) 526 7781 dg@csir.res.in www.csir.res.in

SARAS (CRANE)

Initially a joint development between Myasishchev and India's National Aerospace Laboratories (NAL), it later became an indigenous Indian project and is now under the leadership of the Centre for Civil Aircraft Design and Development (CCADD), like NAL, a unit of Council of Scientific and Industrial Research. The venture is supported by many public and private sector industries.

The first prototype (PT-1) of the rear-engined twin-turboprop aircraft made its maiden flight in May 2004 and has carried out more than 100 flights. Following modifications to improve the design following test flights, a second prototype (PT-2) was built by NAL and flew on 18 April 2007 at Bangalore. Improvements over the original prototype include a strengthened structure for the more powerful 1,200hp P&WC PT6A-67A turboprop, replacing the 850hp PT6A-66s in PT-1, larger diameter propellers, and electrical and avionics systems modifications. NAL will build one more prototype (PT-3), which may make increased use of composites to reduce the heavier than expected aircraft by 500kg. This aircraft will be to full production standard. FAR Part 25 certification is planned for late 2009. NAL projects demand for 250 over 15 years. The Indian air force has signed a letter of intent for six aircraft to replace its Dornier 228s, and the Indian coastguard is also considering Saras as a 228 replacement.

As now in flight test, Saras provides room for up to 18 passengers in commuter-type configuration and was designed for a maximum cruise speed of 280kt, a range of 400km with 14 passengers, and endurance of 5h. In eight-seat executive configuration, the range would be up to 2,000km. A 22- to 25-seat stretched variant dubbed Sara-S is expected to become the standard production model. Provisional data includes a maximum take-off weight of 7,900kg (compared with 6,900kg) and a

maximum payload range of 1,000km. Saras is offered for executive, commuter, ambulance, cargo- and border-control operations.

PRODUCTION

Final assembly is planned to be undertaken by National Aerospace Laboratories in Bangalore, India. However with NAL lacking the expertise to build and integrate such an aircraft, Hindustan Aeronautics is seen as the likely builder for series production.

DORNIER

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See HAL/Ruag entries.

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See 328 Support Services entry.

328JET

See 328 Support Services entry.

EADS CASA

EADS CASA, Avenida de Aragón 404, PO Box 193, 28022 Madrid, Spain Tel +34 (91) 585 7000 Fax +34 (91) 585 7666 www.casa.eads.net

C-212

The high-wing, STOL C-212 first flew in March 1971 and led to the -100 and more powerful -200 series, then known as Aviocar, until it was replaced in 1984 by the C-212-300 with uprated engines, redesigned wingtips and more baggage space in nose. The only production model now is the -400, which entered service in 1998, powered by Honeywell TPE331-12JRs. The C-212 is available in airliner configuration with 26 passenger seats, or 24 plus toilet facilities, as a utility passenger/cargo transport, and for the military as a troop carrier and for other missions, including maritime patrol as the C-212 Patrullero.

PRODUCTION

C-212-400s are produced at Bahía de Cádiz, Spain, but manufacture will be transferred to Indonesian Aerospace at Bandung during next year.

DELIVERED: 490
IN SERVICE: 338

CN-235

The CN-235 45-seat regional airliner and military utility transport first flew in November 1983. The first CN-235-10 airliner version, powered by the GE CT7A, was delivered by IPTN in December 1986 to Merpati Nusantara. This was replaced by the -100 with CT7-9C engines in 1988, added to by the -200 with structural reinforcements. GE CT7-9C3 engines on the CN-235-300 provide a 5% improvement in hot-and-high take-off performance. The last civil delivery was made in 1999, but production of military versions continues by EADS Casa in Seville, Spain and by Indonesian Aerospace in Bandung.

IN SERVICE: 224

EMBRAER

Embraer - Empresa Brasileira de Aeronáutica, Av. Brigadeiro Faria Lima 2170, Caixa Postal 343, 12227-901 São José dos Campos, São Paulo, Brazil Tel +55 (12) 3927 1000 Fax +55 (12) 3927 6600 www.embraer.com

The E-Jet family accounted for more than half of the 130 regional jetliners delivered in 2007, ensuring that Embraer retained its market leadership. While Embraer's deliveries were up by one-third over the previous year and represented the highest total in the company's history, net orders declined to 146, from 199 in 2006.

The company has reaffirmed its plan to deliver between 195 and 200 aircraft this year.



Bombardier continues to evaluate a larger variant of the Q400 turboprop, seating 80-90 people



Output of Embraer's E-Jet family has averaged 12 aircraft a month during 2008

EMB-110 BANDEIRANTE
Developed for the Brazilian air force and the local commuter market, the Bandeirante first flew in August 1972 and entered revenue service with Transbrasil in April 1973 as the EMB-110C for 15 passengers. The EMB-110E/J was a seven-seat corporate transport, while the EMB-110P was optimised for export and accommodation for 18 passengers. Mixed passenger/cargo configuration produced the EMB-100P1 and the EMB-110P2 alternative for up to 21 passengers. The -100P1/41 and -100P2/41 had higher take-off weight to meet US requirements.

DELIVERED: 494
IN SERVICE: 311

EMB-120 BRASILIA
The 30-passenger, twin P&WC PW118A-powered EMB-120 Brasilia flew in July 1983 and entered service in October 1985. The EMB-120ER Advanced, featuring aerodynamic improvements, redesigned cockpit and higher cabin comfort, entered service in 1993 and became the standard production version from 1994. The EMB-120RT had more powerful PW118 engines for reduced take-off run and better hot-and-high performance. All models were offered in all-cargo, combi and QC (quick-change) alternatives. Two military derivatives were produced for AEW and remote sensing. Embraer also sold 10 EMB-120FC freighter-conversion packages.

DELIVERED: 352
IN SERVICE: 297

ERJ-135/140/145
Although production of the airliner ERJ variants has effectively ceased in Brazil, the ERJ-145 family continues to be built at low volume in China. Essentially an EMB-120 Brasilia with new tail and wing and two R-R AE3007A turbofans, the 50-seat EMB-145 was rebranded ERJ-145 when it entered service with launch-customer Continental Express in 1997, having made its first flight in August 1995. Longer-range versions include the AE3007-A1-powered -145ER, the -A3-engined -145LR, the -145EU customised for European operators, and the -145XR with -A1E powerplants. The strengthened 24,120kg MTOW -145XR, first delivered in 2002, has winglets and an auxiliary ventral fuel tank in the aft wingbox fairing. The shorter-bodied, 37-seat ERJ-135 flew on 4 July 1998, entering service in 1999, three years ahead of the 44-seat ERJ-140, which made its maiden flight in June 2000. The ERJ-135BJ Legacy is a business jet version that typically seats 13 passengers. Embraer also secured approval for the ERJ-135 to fly the steep 5.5° London City airport

approach, and Russian/CIS certification for the ERJ-145 family. Studies are being undertaken into the viability of a freighter conversion programme.

PRODUCTION
Assembly of the ERJ-145 is undertaken only at Harbin in China, with seven aircraft delivered in 2007. Low-volume assembly of military and Legacy versions continues at Gavião Peixoto in Brazil.

ORDERED: 915 (108 ERJ-135s, 74 ERJ-140s AND 733 ERJ-145s)
DELIVERED: 875 (108 ERJ-135s, 74 ERJ-140s AND 693 ERJ-145s)

E-170/E-175
The 70-seat E-170-100 baseline version with a four-abreast cabin and two underwing GE CF34-8 engines first flew in February 2002, but certification slipped more than a year to February 2004 after integrated-avionics software problems and flight-test incidents. A long-range version is designated E-170-100LR, and derivatives are the -100SU with 76 seats and the -100SE with 70 seats. The E-170AR (Advanced Range), announced in May 2007, incorporates structural reinforcement for increased take-off weight and will add an extra 555km to the 3,700km range. The Model 175, stretched by 1.77m to provide accommodation for 78 passengers, first flew in June 2003 and was certificated in late 2004, with first delivery to Air Canada in May 2005. It is being offered in baseline configuration and as a long-range model as the E-170-200 and E-170-200LR respectively, while the -200SU is a -200LR with reduced seating for 76 passengers. The 175AR has the same enhancements as the E-170AR.

ORDERED: 321 (187 E-170s AND 134 E-175s)
DELIVERED: 243 (143 E-170s AND 100 E-175s)

E-190/E-195
The E-190 represents a further stretch by 6.34m to accommodate up to 114 passengers, increased wingspan, GE CF34-8E-10E engines and strengthened landing gear. It made its first flight in March 2004 and this was followed by certification in August 2005. The aircraft is available in basic 190-100, long-range -100LR and higher gross weight -100IGW variants. Launch customer JetBlue took delivery of the first 190-100IGW in September 2005. The E-190 was further stretched by 2.41m in the E-195 to accommodate up to 118 passengers. The first flight took place in December 2004, with deliveries to UK carrier Flybe in September 2006 following EASA certification the previous month. The basic production model is known as the E-190-200, and is also available in long-range configuration as the -200LR and with higher gross weight as the -

200IGW. The Lineage 1000 is an executive version of the E-190-100LR, fitted out with seating for up to 19 passengers.

PRODUCTION
The E-170/190 family is assembled at in São José dos Campos, Brazil. Embraer delivered 123 E-Jets in 2007 (45 E-170/175s and 78 E-190/195s) and output this year is averaging 12 a month.

ORDERED: 544 (434 E-190s AND 110 E-195s)
DELIVERED: 203 (181 E-190s AND 22 E-195s)

TURBOPROP STUDIES
Embraer revealed in May 2008 that it was evaluating a move to re-enter turboprops and is likely to develop a family of three or four different-sized models.

FAIRCHILD
M7 Aerospace LP, 10823 NE Entrance Road, San Antonio, Texas 78216, USA Tel +1 (210) 824 9421 Fax +1 (210) 820 8609 www.m7aerospace.com

After the insolvency of Fairchild Dornier in 2002, M7 Aerospace acquired the US-based operation and with it the type certificate of the SA226 and SA227. It provides full support for these aircraft.

METRO/EXPEDITER
German charter operator Regional Air Express completed testing in October of a new five-blade propeller for the Metro designed by MT-Propeller. The design, which reduces noise, vibration and maintenance costs, is due to receive EASA certification in February 2009.

Evolved from the twin-turboprop Merlin business aircraft developed by Ed Swearingen, the Honeywell TPE331-powered 19-seat Metro flew in August 1969. The SA-226TC Metro II with squared-off windows and improved performance, and the SA-227AC III with uprated engines, four-blade propellers and small winglets, followed in 1975 and 1981 respectively. The increased-MTOW Metro 23 was the final production model. Cargo Expeditors with a large rear door and reinforced floor can carry over 2,170kg. Transport models were delivered to the US National Guard as the C-26A and C-26B.

DELIVERED: 619
IN SERVICE: 534

FOKKER
Fokker Services, Lucas Bolsstraat 7, 2152 CZ Nieuw-Vennep The Netherlands Tel +31 252 627 000 www.fokkerservices.com
Fokker aircraft production ceased in 1997 after bankruptcy the year before. Type certificates for all Fokker-built aircraft are now owned by Fokker

Services, a subsidiary of Stork Aerospace. Fokker Services provides full support for the aircraft, and offers upgrades to existing and new customers.

FOKKER 50/60
Developed from the F27 Mk500 and flown in December 1985, the improved PW127-powered Fokker 50 entered service in 1987. The utility Fokker 60 variant, with a 1.62m fuselage stretch, was launched in February 1994. Production ceased in 1997. The Future 50 programme was launched in May 2003 to revitalise used sales, transferring around 120 Fokker 50s (and Fokker 100 jets) to new owners and assisting renovation of many examples. Amsterdam-based Aircraft Conversions offers a Fokker 50 E-class freighter modification, the first of which was delivered in December 2007 to MiniLiner. A long-endurance surveillance variant with modern sensor technology, dubbed Fokker 50 Maritime "Eyes Over The Sea", has also been developed.

DELIVERED: 212
IN SERVICE: 196

FOKKER 70/100
Developed from the F28, the 107-seat, R-R Tay-powered Fokker 100 twinjet first flew in November 1986, entering service with Swissair in February 1988. The 4.6m-shorter, 79-seat Fokker 70 flew on 2 April 1993. After fleet retirements diluted residual values, Fokker Services and R-R launched the Future 100 programme in February 2003 to remarket used aircraft, most of which have flown less than one-third of their design life of 90,000h or landings. In addition to the normal aircraft with airline seating, Fokker Services is also offering the Fokker 100EJ executive jet with a choice of cabin layouts, and the Fokker 100CS corporate shuttle, which can also be customised. Typical layouts can range from 60 four-abreast seats to 21 three-abreast full recline sleeper seats. Auxiliary fuel tanks boost range to 5,900km. An auxiliary fuel tank system has been supplied to VIP aircraft. The Future Horizons programme provides for technical, support and financial solutions aimed at improving the aircraft's economic life.

DELIVERED: 324 (47 FOKKER 70s/277 FOKKER 100s)
IN SERVICE: 304

FREIGHT FEEDER AIRCRAFT
Freight Feeder Aircraft, 7339 Paseo del Volcan, Albuquerque, New Mexico, 87121, USA Tel +1 (866) 654 3721 Fax +1 (505) 212 0755 www.freightfeeder.com

Freight Feeder Aircraft acquired the aircraft technology and related assets on 17 December



A new five-blade propeller for the Metro is due to receive EASA approval in February 2009

2007 from Utilicraft Aerospace Industries, which retains a 25% shareholding in the new company. On 2 February 2008, FFAC announced new funding of \$250 million towards completion of the FF-1080 prototype, development and certification, having previously said that the aircraft would be redesigned to accommodate larger containers and redesignated the FF5000. The company expects to complete the prototype in the first quarter of 2009, with customer deliveries to start by the fourth quarter of 2011.

FF5000 FREIGHT FEEDER
The FF5000 is a high-wing, fixed-gear, single-pilot freighter designed to carry standard LD3 containers up to 1,000km. Powered by two P&WC PW127G turboprops, the FF5000 has been designed to operate from runways shorter than 1,000m. In June 2008, Singapore-based Boulder Group entered into a Letter of Intent for five aircraft, plus five options, followed in July by UK freight operator MK Airlines with a Lol for 10 aircraft, with options for five more.

HAIG
Harbin Aircraft Industries Group (HAIG), 15 Youxie Street, Pingfang District, PO Box 201-29, Harbin, Heilongjiang 150066, China Tel +86 (451) 650 1122 Fax +86 (451) 650 2273

Y-12
The initial Y-12 (I), first flown on 14 July 1982, was quickly followed by the improved Y-12 (II) with uprated P&WC PT6A-27s and Western avionics, flown on 16 August 1984. The latter became the main production version until supplemented by the FAA-certificated Y-12 (IV), first flown 30 August 1993, which has sweptback wingtips, stronger undercarriage, redesigned seating for 18/19 passengers, rear baggage door and increased take-off weight. The high-altitude Y-12E with more-powerful engines, four-bladed propellers and new avionics was certificated on 26 February 2002. The faster, pressurised Y-12F is under development and was due to make its first flight in August 2008, with Chinese certification planned for 2009 and US FAA certification targeted for 2010. This latest variant has a larger pressurised fuselage, retractable landing gear, and higher-thrust 820kW P&WC PT6A-65B engines with five-bladed propellers. Accommodation is for up to 19 passengers or 26 soldiers.

The Y-12G freighter with side cargo door and capacity for three LD3 containers has been studied. According to CATIC in a report in June 2008, Harbin has exported more than 150 aircraft, in addition to some 20 being operated locally. The last orders to be announced were in 2006 from Flying Dragon Aviation for five Y-12Fs and an undisclosed local authority. The Ugandan air force took delivery of

two aircraft in June. Harbin projects a requirement of 360 aircraft of Y-12 size by 2020.

DELIVERED: 150-PLUS

HAWKER BEECHCRAFT
Hawker Beechcraft, PO Box 85, Wichita, Kansas 67201-0085, USA Tel +1 (316) 676 5034 Fax +1 (316) 676 6614 www.hawkerbeechcraft.com

BEECHCRAFT 1900
Developed from the B200 King Air, the 19-seat P&WC PT6A-powered 1900C with a lengthened fuselage for 19 passengers was created for the commuter market and made its maiden flight in September 1982, entering service with Bar Harbor Airlines in February 1984. The aircraft was superseded in 1991 by the 1900D (first flown 1 March 1990), with 28% more internal volume via a 0.36m-taller "stand-up" cabin, more powerful PT6A-67D engines, EFIS cockpit and ventral strakes for improved stability. All-cargo versions have 2,500kg payload capacity. The 1900D Executive offered a variety of executive interiors. The last order was in June 2002 and final delivery a year later. Subsequent production had been on-demand for cash customers, but none were produced.

DELIVERED: 248 (1900C) 690 (1900D)
IN SERVICE: 643

HINDUSTAN AERONAUTICS
Hindustan Aeronautics, Transport Aircraft Division, PO Chakeri, Kanpur 208 008, India Tel +91 (512) 245 0361 Fax +91 (512) 245 0505 halknp@vsnl.net www.hal-india.com

The Kanpur division of Hindustan Aeronautics has assembled Dornier 228s since 1983. Initial production was from kits supplied from Germany. The aircraft has regional airliner, executive transport, maritime surveillance, anti-ship and utility variants. Production continues for the Indian armed forces. Ruag Aerospace Services, which acquired Dornier 228 support and modification work in December 2002, plans to use airframes from HAL to reinstate production in Germany (see entry).

REGIONAL JET STUDIES
In 2008 it emerged that the Indian government had asked Hindustan Aeronautics to formulate a plan for the design and construction of an Indian regional jet in the 70- to 100-seat category. Assistance is expected to be sought from Bombardier or Embraer.

HEAI
Harbin Embraer Aircraft Industry Company, 15 Youxie Street, Pingfang District, PO Box 201-29, Harbin, Heilongjiang 150066, China Tel +86 451 650 1122 Fax +86 451 650 2273

Sino-Brazilian joint venture set up in 2003 for the licence production of the ERJ-135/140/145 (see *Embraer*), to avoid 23% import tax for domestic customers. Embraer has a 51% majority holding.

HARBIN EMBRAER ERJ-145
First flown in December 2003, China Southern Airlines took delivery of its first of six aircraft in June 2004. Other customers are China Eastern Airlines' Jiangsu branch and Wuhan Airlines unit, which have taken delivery of five aircraft each. In September 2006 committed to 50 ERJ-145s for operation by Grand China Express. Delivery of the ERJ-145s began in September 2007. The 1,000th ERJ-145 built (all variants including military) was handed to Grand China Express in September 2007. Discussions are under way about slowing deliveries to Grand China.

PRODUCTION
The assembly line at Harbin delivered seven ERJ-145s in 2007, and output this year has averaged

just under one a month. Production capacity is 24 aircraft a year.

ORDERED: 66
DELIVERED: 23

ILYUSHIN

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IL-112

The 40-seat IL-112 utility derivative of the IL-114 turboprop was launched in 2000 and has been identified by United Aircraft (OAK) – the umbrella organisation tasked with reviving Russia's aircraft manufacturing industry – as a key project in plans to build 1,200 airliners in Russia between now and 2015. Although the development phase was due for completion in 2008, no recent progress reported.

The IL-112 is 5.1m shorter than the IL-114, retaining the high-wing, T-tail configuration and Klimov TV7-117 turboprops. The aircraft would be assembled by VASO plant in Voronezh.

IL-114

Ilyushin's An-24-class replacement aircraft first flew in March 1990, but has suffered a series of funding problems, which slowed production and is still affecting sales. The initial 2,466shp Klimov TV7-117S-powered 64-seat IL-114 finally obtained its certification in April 1997, since when it has entered service only in small numbers with Uzbekistan Airways and Russian airline Vyborg.

Apart from the TV7-117-powered IL-114, available in IL-114T cargo configuration and various civil and military special missions versions, Ilyushin has promoted the P&WC PW127H-powered IL-114-100 with Western avionics and increased range and economy. Further improvements to the aircraft, under development since 2005, feature NIIAO TsPNK-114M upgraded avionics, including some Rockwell Collins equipment and Barco displays, and a modified interior with 48 or 52 seats. A short-range variant, designated IL-114-300 had been in development but with a first flight due before the end of 2007, but appears not to have flown yet.

PRODUCTION

Final assembly is by Tashkent Aircraft Production Enterprise (TAPO) in Tashkent, Uzbekistan.

DELIVERED: 11

IL-214

This is the designation of the military Multirole Transport Aircraft being developed by Ilyushin, Irkut and Hindustan Aeronautics, now designated IRTA-21. First flight is targeted for 2012, with the tactical transport version targeted to enter service in 2014. The aircraft will be built in India by HAL's Kanpur division and in Russia by Aviastar at Ulyanovsk.

INDONESIAN AEROSPACE

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pub-rel@indonesian-aerospace.com
www.indonesian-aerospace.com

State-owned Indonesian Aerospace (IAe) – IPTN until 2000 – had identified 19-seat passenger aircraft and light helicopters as new manufacturing projects in its 2003 five-year business plan, which envisaged a 3,400-employee workforce generating annual revenues of \$150-200 million. The N-219 has been put on ice, but IAe continues to manufacture the 44-seat CN-235 as a military transport, although it has stopped offering a commercial variant. It also

produces the NC-212 turboprop and the NAS-332 Super Puma helicopters under licence.

NC-212

IAe has small backlog for the Indonesian armed forces of the 26-seat NC-212-200 it builds under licence from EADS Casa. It has assembled almost 100 since 1976 for civilian and military customers. In January 2006, EADS Casa extended the licence to include the C-212 Series 400 (see EADS Casa).

CN-235

IAe continues to produce the 44-seat, high-wing, multi-role CN-235 Series 200/220 with EADS Casa under the Airtech collaborative venture. Recent customers have all been military forces and government agencies (see EADS Casa).

N-219

IAe proposed the N219 – a 19-seat, short take-off and landing turboprop to replace the 26-seat NC-212 programme – in possible co-operation with a consortium involving Brunei, Indonesia, Malaysia, Singapore and Thailand, or perhaps partnership with China. IAe put the cost of development and construction of two flying prototypes and three test articles at \$60-80 million. It had hoped to fly the aircraft in April 2006, with certification by August 2007, but no progress has been reported since.

N-250

The 50-seat twin-turboprop flew on 10 August 1995, followed by a second aircraft on 19 December 1996. No certification was achieved. Plans to build the stretched N-270 in the USA came to nothing.

KAWASAKI

Kawasaki Heavy Industries, Aerospace Group, World Trade Center Building, 4-1 Hamamatsu-cho, 2-chome, Minato-ku, Tokyo 105-6116, Japan Tel +81 (3) 3435 2111
Fax +81 (3) 3436 3037 www.khi.co.jp/aero

YPX

Shown for the first time at Farnborough in July 2006 in model form, the YPX suggests an airframe similar to the Embraer E-Jets with underwing engines and winglets, and a capacity probably similar to that of the E-190/E-195, incorporating wings and other design features from its P-1 maritime patrol aircraft, but with greater use of composites. The model was again displayed at Farnborough in 2008 but no further details were disclosed. However, Kawasaki is believed to be continuing market research and preliminary design studies, based on 100- to 150-seat capacity for programme launch around 2012 and service entry in 2018.

KELOWNA FLIGHTCRAFT

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CONVAIR 5800

First flown in February 1992 and certificated on 11 December 1993, the 5800 is a 4.25m-stretch of the R-R (Allison) 501-powered Convair 240/340/440/580 series of turboprops. Other features are modern avionics and internal strengthening to account for the increased take-off weight. First commercial service was in January 1994.

DELIVERED: 5

LET

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LZ Aeronautical Industries (the former Let Kunovice acquired by Moravan Aeroplanes from bankrupt Ayres

in 2001) was responsible for the Let L-410/L-420 and later bought the Let L-610 programme back from Ayres, before itself entering bankruptcy in 2003. Operation was resurrected under the new ownership of Let Aircraft Industries, when the company was acquired by private Czech group Pamco. In June 2008, the Russian industrial holding company, Ural Mining and Metallurgical acquired a controlling 51% interest.

L-410/L-420

The 19-seat Let L-410 high-wing transport aircraft was developed primarily for the Soviet Union and its satellite countries and made its first flight in April 1969, initially powered by PT6A engines, replaced by Walter turboprops in production aircraft. More than 1,000 were built, of which in excess of 800 were delivered to the Soviet Union. The L-420, upgraded with more powerful 780hp Walter M601F engines, flew in 1993. Four completed L-410UVP-E20 aircraft from unfinished stock were delivered to Brazilian operator NHT Linhas Aéreas in 2006/7 and two more were said to be on order for South Korea. The main emphasis of the company's work is on refurbishment of low-time aircraft.

DELIVERED: 1,070 (INCLUDING TWO L-420s)
IN SERVICE: 789

L-610

The Westernised GE CT7-9D-engined L-610G flown on 18 December 1992 replaced the initial Walter M602-powered L-610M, which had flown in December 1988 before Ayres acquired the 44-seat, twin-turboprop programme in 1998. It was then known as the Ayres 7000 until that company's bankruptcy.

MITSUBISHI

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www.mhi.co.jp

Formed on 1 April 2008 as a wholly owned subsidiary of Mitsubishi Heavy Industries following the official launch of the Mitsubishi MRJ regional jet on 28 March and a launch order for 25 aircraft from All Nippon Airways. The new company has been capitalised at ¥3 billion, with plans for an increase to ¥100 billion in line with development. Of this, MHI will furnish two-thirds of the requisite capital, with the rest likely to be provided by Toyota, Mitsubishi, Mitsui, Sumitomo, Tokyo Marine and Development Bank of Japan. Mitsubishi Aircraft will be responsible for key activities in the MRJ project, including design and engineering, acquisition of type certification, procurement, sales and customer support.

MRJ70/MRJ90

The MRJ twinjet family will comprise two basic models: the MRJ70 seating 70-80 passengers in a two-abreast configuration and the MRJ90 with 86-96 seats. A number of variants are being promoted, including the MRJ70STD with a range in excess of 1,700km, the MRJ70ER extended-range and MRJ70LR long-range models, the last-named capable of flying a distance of 3,900km. The long-fuselage MRJ90 is also available in STD, ER and LR variants, with ranges from 1,600km to almost 3,300km. Cruise speed for all models is Mach 0.78. Maximum take-off weight for the MRJ70LR is 40,600kg, while the MRJ90LR has a MTOW of 42,700kg.

A key feature of the aircraft is the new P&W PW1000G GTF geared turbofan, which promises to deliver significant reductions in specific fuel consumption, emissions and noise. It will be rated at 17,000lb thrust on the MRJ90 and derated to 15,000lb thrust on the MRJ70. Other features include extensive use of composite materials and new slimline 3D-Net seats. Rockwell Collins will

supply its Pro Line 21 Fusion flightdeck avionics; Hamilton Sundstrand the electrical power, air management and APU; Sumitomo Precision Products the landing gear; Parker the hydraulic system; and Nabtesco the flight control actuator. Saab Aerotech has signed a memorandum of understanding to support the MRJ in Europe and the USA.

The MRJ's detailed design phase – covering smaller parts and equipment – is under way and should be 80% complete by April 2009. First flight is projected for 2011, with type certificate and first delivery in 2013.

Meanwhile Mitsubishi is evaluating the potential for a stretch version, tentatively dubbed the MRJ110, with any decision to proceed not planned until after the design freeze next year.

PRODUCTION

MHI's Nagoya Aerospace Systems Works will manufacture and flight-test the aircraft. A total of 15 aircraft are to be produced in the first year.

ON ORDER: 25
DELIVERED: 0

PZL MIELEC

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M28 SKYTRUCK

The M28 Model 05 Skytruck, a Westernised development of the Antonov An-28 aimed at the Twin Otter replacement market, first flew in July 1993 and received FAA certification in March 2004. It features the replacement of the PZL Rzeszow TW10 engines with P&WC PT6A-65B and Hartzell propellers, installation of a forward passenger door and Honeywell Bendix/King avionics. The Skytruck Plus project under development is a stretched derivative to be available as a passenger transport with fixed-type seats for 19-27 passengers and lavatory; passenger/cargo combi with folding seats, and a cargo aircraft either with a hydraulically operated rear ramp door and cargo hoist for small packages; or with a large cargo door on the forward starboard side of the fuselage, and a roller floor for loading and unloading three LD3 containers. Maximum take-off weight is 8,600kg. The M28 05-SG Skytruck is a maritime patrol version, while M28B Bryza is the designation for military derivatives.

An offset agreement covering Lockheed Martin's provision of expertise following Poland's Lockheed Martin F-16 acquisition stipulates sales of 100 M28s in North America and the Caribbean over 10 years. As an offset to Polish carrier LOT's order for Embraer 170s, Brazil will help PZL with M28 exports.

PRODUCTION

Assembly by PZL at Mielec, Poland. US marketing



Ruag's relaunched Dornier 228 is equipped with MT-Propeller's five-bladed props

arm Skytruck can produce final fitting and equipment installation for up to 20 aircraft a year.

DELIVERIES: >50

MIG

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mig@migavia.ru www.migavia.ru

MIG-110

The 48-seat, 3,700km-range MiG-110 is optimised for rear access to the cargo hold with a wide track landing gear. The aircraft features an inverted high gull-wing configuration with twin boom and two 2,762shp Klimov TV7-117S turboprop engines. The turboprop was announced in 1993 and certification had been scheduled for 2007, but after the Ilyushin IL-112VT selection for Russian air force tactical-transport duties over the MiG-110, no further progress has been reported.

RUAG AEROSPACE

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DORNIER 228

Ruag Aerospace Services acquired Dornier 228 support and modification work, as well as the type certificate from the administrator of Fairchild Dornier in December 2002. The company is to reinstate production under the designation "228 NG" using airframes from Hindustan Aeronautics – which has undertaken production in India since 1983 (see entry) – and completing them at the original Dornier factory at Oberpfaffenhofen.

A demonstrator was displayed by Ruag at the Berlin air show in May 2008, sporting Honeywell TP331-10 engines with a Universal glass cockpit and new Rockwell Collins avionics.

The updated aircraft underwent a five-day test-flight programme in September 2008 equipped with MT-Propeller designed five-bladed propellers, which increase performance and reduce noise. Detailed information on flight characteristics and the performance of the aircraft is expected by year-end.

The new propeller is lighter, low in vibration and less susceptible to corrosion, and could be retrofitted on older examples of the 228.

Initial deliveries of the 228 NG are expected in January 2010. Ruag has secured a launch customer located in Asia, and has announced orders for five aircraft.

The 15-seat Dornier 228-100 originally flew in March 1981, with the 19-seat, stretched 212-200 following two months later. Series 101 and 201 variants have increased weights, while the -202 has greater range and payload. The final European

certificated variant was the 900km-range, 2,200kg-payload 228-212. Original German manufacture ceased in 1994.

Modifications of existing aircraft for special missions include environmental pollution and control, search and rescue, calibration and navigational aids and surveillance.

DELIVERED: 308 (INCLUDING HAL-BUILT AIRCRAFT)
IN SERVICE: 232

SAAB AIRCRAFT

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www.saabaircraftleasing.com www.saabgroup.com

SAAB 340

Developed as a 34-seat regional aircraft jointly by Saab and Fairchild and initially known as SF-340, the 340A with GE CT7-5A engines flew in January 1983 and entered service with launch customer Crossair in June 1984.

The 340A was superseded by improved performance 340Bs with increased tailspan and CT7-9B engines in 1989, and the 340BPlus in 1994. The 340BPlus featured a new interior, active noise control and (from 1996) wing extensions for better performance. Quick-change and corporate versions were also built. Production ceased in 1999.

Saab Aircraft Leasing offers bulk-freighter versions certificated in 2004. Retaining the 1.32 x 1.35m aft door, the aircraft offers 21m³ capacity under the approved volume, or 4,000kg, and the aircraft has a 1,930km range.

DELIVERED: 456
IN SERVICE: 415

SAAB 2000

Developed to complement the Saab 340, the faster, 50-seat Model 2000 has a larger wing, Rolls-Royce AE2100 turboprop engines with six-blade propellers and advanced flightdeck. It first flew on 26 March 1992, and entered Crossair service in September 1994. Production ended in 1998.

DELIVERED: 60
IN SERVICE: 59

SHAANXI AIRCRAFT

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Y-8

The long-awaited maiden flight of the four-engined Y-8F600 freighter that was due to take place in 2007 is still awaited. The "Westernised" Y-8F600 with P&WC PW150B turboprops and Dowty six-bladed all-composite propellers is a derivative of the WJ6-engined Y-8F400, which first flew in August 2001 and introduced a shorter fuselage and "solid" nose. It also features a two-pilot cockpit compared with the three-man Y-8F400 (and five-person crew in the earlier Y-8F100 and Y-8F200), with Honeywell Primus Epic avionics suite.

Based on the Antonov An-12B, it has a pressurised forward cabin and 136.6m³ aft cargo space. Sales of more than 100 are projected over 15 years, mostly for the military market.

Y-9

Revealed in model form at Airshow China, Zhuhai in November 2002 as an enlarged successor to the Y-8, then designated Y8-X, it has since been downsized to that of the Y-8. It retains the general configuration, but is planned with improved WJ6C turboprops with six-blade Baoding JL-4 composites propellers and modernised glass cockpit, with a flightcrew of four. Its current state is uncertain.



SHORTS

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SHORTS 330

The 30-seat, twin P&WC PT6A-45-powered Shorts 330 twin-tail commuter aircraft, initially known as the SD3-30, flew on 22 August 1974 and entered service with Time Air in Canada on 24 August 1976; it was produced until 1982.

The 330-100 initial production version was followed by the 330-200 with increased fuel capacity for greater range.

Also built were the strengthened 330-UTT utility tactical transport and the C-23A Sherpa military freighter for the US Air Force and C-23B utility version for the US Army National Guard.

DELIVERED: 136
IN SERVICE: 62

SHORTS 360

The twin-engined Shorts 360 with conventional swept tailfin succeeded the 330 in 1982 and was built until 1991. The initial 360-100 was followed by the 330-200, initially referred to as the 360 Advanced, with more powerful PT6A-67AR engines. The final -300 variant had new P&WC PT6A-67ARs and greater passenger comfort. Shorts converted ex-airline 360s into utility aircraft for the US Army National Guard as the C-23B+ Sherpa, featuring a loading ramp and the Shorts 330's twin fins.

DELIVERED: 164
IN SERVICE: 125

SKY AIRCRAFT INDUSTRIES

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GECI Portugal, Avenida Engo Duarte Pacheco, Torre das Amoreiras - Torre 1 4o Andar-Salas 9/10, 1070-101 Lisbon, Portugal Tel +351 (21) 3807 410 Fax +351 (21) 3840 403 www.geci.net/fr

SK-100 SKYLANDER

The unpressurised, fixed-gear 18-seat Skylander is intended for short take-off and landing operation from rough airfields with minimal maintenance facilities. Capable of carrying 18 passengers plus one cabin attendant, the Skylander will be powered by two 1,100shp P&WC PT6A-65B turboprops, driving Hartzell five-blade propellers.

A proposed cheaper and lighter alternative is the Skylander L with 750shp PT6A engines and 2,000kg payload. Design of the Skylander is complete and the first of two prototypes is now to fly in 2009, with first deliveries to Turkish freight carrier ACT Airlines, which has signed a letter of intent for 15 aircraft, due in 2011.

PRODUCTION

Assembly will be at a plant in Evora, Portugal, which is said to have the capability to produce up to 72 aircraft per year.

SUKHOI

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SUPERJET 100

Sukhoi's Superjet 100, the first Russian aircraft designed from scratch to meet Western certification standards, finally took to the air on 19 May 2008, initiating the twinjet's delayed flight-test programme, which will now not be completed until well into 2009. Aeroflot is due to take delivery of its first aircraft in September 2009, with full Russian certification

expected in January 2010. Powered by the Franco-Russian Snecma/NPO Saturn joint venture PowerJet's SaM146 14,000-17,500lb-thrust powerplant, the Superjet is being developed Sukhoi Civil Aircraft (SCAC), which was founded in 2000. Boeing has advised on marketing, certification and customer support, and Italy's Alenia Aeronautica is investing \$100 million for a 25% stake in SCAC, plus another \$150 million in the programme. It also has a 51% stake in marketing arm Superjet International, responsible for marketing throughout the world, except in Russia and the CIS.

From a potential six-variant range involving basic and long-range models with 60, 78 and 98 seats, respectively, Sukhoi is now concentrating on the SSJ 100-95 (formerly RRJ-95), which will be produced in baseline -95B and long-range -95LR variants. Laid out in five-abreast configuration, family members have undercarriage, wing and engines in common. Both models have a seating capacity for 95 passengers in a two-class layout, or 105 in high-density configuration, while the baseline aircraft will have a range of 3,100km, increased in the SSJ 100-95LR to 4,500km.

Work on the proposed 60-seater SSJ100-60 and -60LR has been put on hold, but development is continuing on the 75-seat SSJ 100-75B/-75LR derivatives and a proposed stretch, which is now dubbed the SSJ 1XX and would add another 15 seats. Under study is an RBJ business jet version.

The Superjet programme was boosted with new orders and commitments signed at Farnborough 2008, which brought firm orders close to three figures. An as-yet unnamed European operator placed a firm order for 20 aircraft, and AMA Asset Management Advisors signed a deal for five.

Russia's Avialeasing made a preliminary commitment for 24, plus 16 options. Aeroflot holds firm orders for 30 SSJ 100-95s, but is planning to take another 15.

Other firm orders have been signed by the KrasAir-led AirUnion consortium for 15, plus 15 options (SSJ-100-75); Dalavia (six plus four), Finance Leasing (10), ItAli (10) and Armenian Airlines (two). Commitments, options and letters of intent have been received for many more.

The latest market forecast from Sukhoi predicts demand for around 6,100 aircraft in the Superjet class over the next 20 years, of which the Russian jet could account for as many as 1,040 sales.

Roughly 300 are projected to be sold within Russia and the CIS.

PRODUCTION

Russia's Komsomolsk-on-Amur Aircraft Production Organisation (KnAAPO) in Siberia builds the wings and main fuselage section as a risk-sharing partner, while final assembly is undertaken at the same plant by SCAC. Novosibirsk Aircraft Production Organisation makes the empennage and forward fuselage, and will undertake final assembly of the 75-

seat variant if it is built. The VASO plant in Voronezh is responsible for composite elements.

ORDERED: 98 (200-PLUS LETTERS OF INTENT, COMMITMENTS AND OPTIONS)
DELIVERED: 0

SU-80

The prototype of this 30-seat, high-wing Su-80 (formerly S-80) turboprop flew in September 2001, but work on this programme was suspended until 2005.

The first stretched aircraft built to production configuration made its first flight on 29 June 2006 from Sukhoi's KnAAPO plant in Komsomolsk-on-Amur, but although eight other aircraft were on the assembly line at that time, it is believed only one has flown since. OAK has yet to decide whether or not to proceed with this aircraft.

The twin-tailboom design has a large rear loading ramp and is powered by two GE CT7-9Bs. Rugged design permits operation in harsh environments. Proposed versions include the Su-80GP passenger/cargo combi, Su-80M medical evacuation, Su-80P passenger, Su-80PT patrol and the Su-80TD for troop transport.

PRODUCTION

Production is due to be undertaken at KnAAPO in Komsomolsk-on-Amur.

TUPOLEV

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TU-324/414

This planned GE CF34-3B1 (or Progress AI-22) -powered 50-seat twinjet was to have been certificated in 2005, before Tupolev shifted focus to the larger Tu-414 after Sukhoi was chosen to produce Russia's new regional jet. R-R BR710s were chosen to power the stretched 58- to 76-seat Tu-414, but Progress D-436T1 turboprops have also been proposed. The aircraft has yet to fly and its status is unclear.

TU-334

It is almost 10 years since the 102-seat Tu-334-100 made its first flight on 8 February 1999 and the type has still to enter service due to a combination of funding problems and indecision over the allocation of production facilities.

However, in August 2008 the programme finally appeared to be making progress when Russia's United Aircraft (OAK) revealed that it would sell the aircraft primarily as a super-large-cabin business jet. In 2007 the Kremlin placed an order for six Tu-334s to serve with the presidential air detachment of GTK Rossiya. Deliveries are due to take place in late 2011 and early 2012.



Viking Air's upgraded Twin Otter 400 features a new Honeywell cockpit

OAK expects Russian government agencies alone will buy "not less than 50" Tu-334 VIPs to replace about 150 Tu-134s in service with the Russian air force and presidential air detachment.

A second Tu-334-100 prototype made its first flight in November 2003, and provisional Russian certification came the following month.

In Russian practice, a new type is cleared to begin operations as a government transport only after it has proved reliable in revenue service, so the two prototypes used for the test and certification process are being refurbished and will start passenger operations in November-December 2009.

The Tu-334-100 is powered by two ZMKB Progress/Motor Sich D-436T1 engines. Plans for a stretched 126-seat Tu-334-200 (also dubbed Tu-354) and Rolls-Royce BR715-powered versions came to naught.

PRODUCTION

Production of subassemblies is shared between Aviant in Kiev, Ukraine; Aviastar in Ulyanovsk and Tavia in Taganrog, Russia (empennage).

The KAPO plant in Kazan will undertake final assembly in a new production site that is due to be completed in 2010.

VIKING AIR

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DHC-6 TWIN OTTER 400

Canadian company Viking Air acquired the type certificate and production rights for the Twin Otter from Bombardier in February 2006 and has relaunched the programme as the Series 400. The Series 400 technology demonstrator made its first flight in October 2008.

The Series 400 incorporates new technologies, including current production P&WC PT6A-34 engines with three-bladed Hartzell propellers, upgraded avionics and systems, including the Honeywell Primus Apex avionics suite, and lighter seats. P&WC PT6A-35 engines with quieter four-bladed propellers will be available as an alternative.

Production of the 19-seater was relaunched in 2007 on the back of 16 orders, including five from Trans Maldivian Airways, two from Air Seychelles, two from Air Moorea, one from Zimex Aviation, and six from US leasing company Loch Ard Otters. Others

have since been signed for Emirates Advanced Investments (10) and the US Army's Golden Knights parachute demonstration team (three), bringing total orders and commitment to over 40. First delivery will be in the summer of 2009. The company estimates a market for 400 aircraft over the next 10 years.

PRODUCTION

Final assembly will be at Calgary, Alberta.

ORDERED: 29
DELIVERED: 0

XIAN AIRCRAFT

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Y7/MA60/MA600

The latest derivative of the Y7/MA60 family, the MA600 was rolled out by Xian Aircraft at its Yanliang plant on 29 June, and completed its first flight on 9 October. Developed from the Antonov An-24, the design has a wider fuselage and larger wing. The twin-WJ5A-1-powered 48- to 60-seat Y7 first flew in December 1970, although it did not enter service until 1984. The initial Y7 was superseded by the winglet-equipped Y7-100, and then by the Y7-200 with new avionics, propellers and winglets deleted. The Y7H was a military cargo variant, with its equivalent civil model designated Y7H-500.

The Westernised MA60 (Modern Ark) flew as the Y7-200A in December 1993, and was shown as MA60 for the first time outside China at Asian Aerospace at Singapore in 2002. The prototype reportedly made its first flight in March 2000 and began revenue service with Sichuan Airlines in August that same year. Powered by P&WC PW127J engines, the 56- to 60-seat MA60 has four-bladed Hamilton Sundstrand propellers, Rockwell Collins 2 avionics and a new cabin.

The main differences between the MA60 and the latest MA600 variant are that the latter's passenger door is located towards the front of the aircraft, it is around 300kg lighter and features upgraded Pro Line 21 avionics and cabin enhancements. It is seen as a stop-gap until the new larger MA700 enters service.

Chinese certification of the MA600 variant is targeted for 2009, and its commonality with the MA60 means that only one MA600 is needed for the test programme.

Export orders and commitments have been received for at least 35 aircraft, including from Air Fiji (one), Air Zimbabwe (three), Cuba (four), Democratic Republic of Congo (three), TAM Bolivia (two), Lao Aviation (four), Merpati Nusantara (15), Royal Nepal Air Force (one), and Zambian air force (two). In early October 2008, Philippine carrier Zest Airways officially took delivery of its first two MA60s.

The domestic order situation is unclear, but the *Chinese People's Daily* reported in August that total orders now amounted to 136 aircraft, which would include 101 for domestic airlines and leasing companies.

Other projected variants include the MA60-500, which is the updated equivalent of the Y7H with rear loading ramp/door, fully pressurised cargo compartment, electric winch and hydraulic conveyor and a shortened 40-seat MA40 derivative primarily for use at high-altitude airports.

PRODUCTION

Xian Aircraft's production capacity at Xi'an is 12-15 aircraft.

ORDERED: 136
DELIVERED: 12

MA700

This planned all-new 70-seat commercial twin-turboprop will be built using advanced manufacturing techniques and more composite materials. It is under consideration for launch in 2008, first flight in 2013 and service entry in 2015.

The manufacturer says the MA700 will be a completely new aircraft and will bear no physical resemblance to the MA60/600 family.

YAKOVLEV

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YAK-40

The 24-seat AI-25-powered trijet made its first flight in October 1966 and entered passenger service with Aeroflot in September 1968.

The basic Yak-40 was supplemented by the Yak-40EC export version with Westernised avionics, the Yak-40K passenger/cargo model, and the Yak-40V with AI-25T engines and higher gross weight. Production ceased in 1981.

Two additional torsion-box fuel tanks (increasing capacity from 4,430kg to 6,000kg and range to 2,500km) and customised interiors are offered in the Yak-40D, and aircraft can be fitted with TCAS, GPS and GPWS for European operations. Flight hours are being increased from 35,000h to 40,000h. The Yak-40TL was a modification with Textron Lycoming LF507-1N powerplants.

DELIVERED: 1,011
IN SERVICE: 731

YAK-48

The Yak-48 is the latest programme being studied by the Russian design bureau and is a follow-on to the Yak-40. Powered by twin rear-mounted AI-22-2 turboprops, the aircraft is projected to fly 30-50 passengers a distance of 2,000-4,700km depending on the configuration and have a maximum take-off weight of 22,750kg. Russian avionics and equipment are planned, but optional Western systems will also be offered.

Yakovlev is promoting a large family, including the basic Yak-48BB with subtypes for 33, 42 and 51 passengers; the Yak-48BG for unpaved runways; Yak-48B business aircraft for four to 12 passengers; Yak-48R regional airliner; together with long-range variants. No timetable for the programme has yet been given.