

COMMERCIAL AIRCRAFT

ered to the US Air Force. In 1996, MDC launched the MD-10 programme following an agreement with FedEx, covering the conversion of around 60 former American and United DC-10-10s to cargo aircraft equipped with an MD-11 based two-crew cockpit. The first phase began in early 1997 with the conversion of the initial aircraft to freighters. The freighter conversion involves structural strengthening to raise maximum take-off gross weight, from 186t

to 203t. Initial conversions were carried out by Sabretech's Dimension Aviation but that contract has now been terminated. Other conversion sites involved include Mobile Aerospace, Alabama, Aeronavali in Italy and the newly created Boeing Aerospace Support Center at the former Kelly Air Force base. Boeing's plant in Wichita is also undertaking some conversions.

Phase two of the programme began earlier this year, with installation of the first

Honeywell-based advanced common flight-deck (ACF) into a FedEx DC-10-10, with flight testing starting in the third quarter of 1998. The ACF closely resembles the MD-11's EFIS cockpit, but has LCDs rather than CRTs. It also provides Category IIb automatic-landing capability. Certification is due in December 1999.

Delivered 446

MD-80, MD-90, MD-11 - see Boeing/Douglas Products Division.

SHANGHAI AVIATION INDUSTRIAL (SAIC)

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SAIC has been the prime Chinese contractor for the MD-80/MD-90 co-production programme with MDC, and more recently Boeing. Chinese industrial participation in the SAIC MD-90 programme involved three Chinese companies producing subassemblies - Xian Aircraft: wing and fuselage sections; Chengdu Aircraft: nose; and Shenyang Aircraft: the empennage and electrical-power systems.

China originally concluded a licensed production deal with MDC in April 1985 which ultimately resulted in some 35 MD-80s being assembled at Shanghai from kits supplied by MDC. The last aircraft was completed and delivered in October 1994. Thirty of the aircraft (MD-82s) were delivered to Chinese operators, with the remaining five (MD-83s) sold back to MDC for onward sale.

A follow-on agreement was concluded for the assembly of 20 MD-90-30 TrunkLiners for the Chinese market in Shanghai, but the programme has become a casualty of the major shake-up of China's state-run aerospace industry. Aviation Industries of China (AVIC) has instructed Boeing's Long Beach plant to stop shipments of material beyond the initial three consignments already delivered to SAIC. Similarly, China National Aero Technology Import & Export has asked the US manufacturer to terminate its TrunkLiner supplier contracts, such as avionics and engines.

It is understood that SAIC has already taken delivery of sufficient substructures, components and systems to complete final assembly of three aircraft. AVIC is thought to want to finish the three aircraft, but it is not clear which

Chinese airline will take the aircraft. The roll-out of the first licence-built MD-90-30 by SAIC had already slipped from April until November 1998 and could now slip into next year.

AVIC, meanwhile, is said to be discussing becoming a second supplier to Boeing for the 717-200's wing, in a bid to fill the void. Fuller involvement in the 105-seat twinjet would be a virtual full circle for China, which had hoped to produce the aircraft, then the MD-95, as a follow-on to the TrunkLiner.

In early 1997 McDonnell Douglas (MDC) proposed an MD-80 cargo conversion plan to Aviation Industries of China (AVIC), as part of the supply of MD-90s to Chinese airlines, which would involve the trade-in of the existing fleet of 35 MD-80s for conversion by AVIC into freighters.

SATIC

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SATIC A300-600ST "BELUGA" SUPER TRANSPORTER

Development of an outsized version of the Airbus A300-600R to carry large aircraft subassemblies was initiated by Airbus Industrie, which needed a replacement for its ageing fleet of four Aero Spacelines Super Guppy turboprops employed to ferry subassemblies between Airbus partner plants.

The Aerospatiale/Dasa 50:50 consortium Special Aircraft Transport International Company (SATIC) was selected for the project, with the work carried out at Toulouse. The type is based on new-build A300-600R airframes and has an upward-opening nose-section, 7.4m-diameter fuselage, and a lowered flightdeck structure. An enlarged fin and horizontal-tail end-plates improve directional stability. The aircraft has 400m³ greater volume than that of the Super Guppy and 22.5t greater payload capacity.

The first A300-600ST "Beluga", powered by General Electric CF6-80C2 engines, was flown in September 1994. Certification was awarded in October 1995, after which the first of five aircraft was delivered to Airbus.

Beluga capacity is now being marketed to third parties by a recently created Airbus division - Airbus Transport International (ATI) - which operates the Beluga on commercial cargo

| SATIC | | | | | | | | | | | | | | | |
|---|----------|------------|------------|-----------------------------|-----------------|---------------|------------------|-----------------|--------------------|--------------------|-----------------|--------------------|-----------------------------|-----------------------------|----------------------------|
| Model | Engines | | Dimensions | | Landing gear | Accommodation | Max weights (kg) | Fuel (litres) | FAR field lengths | Speeds | | Cruise performance | | Payload details | |
| | Span (m) | Length (m) | Height (m) | Wing area (m ²) | Track (m) | Typical pax | Take-off | Standard | ISA sea-level | ISA sea-level | V _{no} | M _{no} | Max cruise speed (kt) | Long range speed (kt) | Max (kg) |
| | | | | | Wheelbase (m) | Max pax | Landing | Optional | ISA+20/c sea level | ISA+20/c sea level | V _{mo} | M _{mo} | Max alt (ft) | At alt (ft) | Range with max p1 (km) |
| | | | | | Turn radius (m) | Cabin width | Zero fuel | Operating empty | ISA 5,000ft | ISA 5,000ft | V _{ne} | M _{ne} | Max cruise fuel cons (kg/h) | Long range fuel cons (kg/h) | Payload with max fuel (kg) |
| | | | | | | | | | ISA + 20/C 5,000ft | ISA + 20/C 5,000ft | | | | | Range with max fuel (km) |
| notes | | | | | | | | | | | | | | | |
| A300-600ST Airbus Super Transporter (Beluga) | | | | | | | | | | | | | | | |
| 2 x 262kN GE Aircraft Engines CF6 80C2AB turbofan | | | | | | | | | | | | | | | |
| | 44.84 | 56.158 | 260 | | 9.6 | 21.25 | 155,000 | 62,000 | 1,950 | 1,176 | 295 | 0.7 | 295 | 235 | 47,300 |
| | | | | | | | 140,000 | | 2,100 | 1,280 | 295 | 0.7 | 35,000 | 35,000 | 1,666 |
| | | | | | | | 133,800 | | 2,200 | 1,352 | 355 | 0.77 | 4,500 | | 18,900 |
| | | | | | | | 86,500 | | 2,350 | 1,450 | | | | | 6,667 |
| Field lengths at max weights, speeds. Fuel consumption at max weights | | | | | | | | | | | | | | | |

charters, in between commitments to the Airbus production schedule. The division is targeting up to \$15 million in revenue annually from the spare capacity on the fleet.

ATI was awarded its commercial operating licence in late 1996, and flew its first charter shortly after.

A fifth Beluga was ordered by Airbus in 1998 for delivery in 2001, which will enable ATI

effectively to dedicate one aircraft to the third party contract work. As well as commercial opportunities, the Beluga is also being considered by the military for outsized airlift roles.

SATIC is studying the Beluga concept on other airframe chasis, such as the A340, to provide even larger outsized-cargo capability.

Ordered 5

Delivered 4