



2017 Q4 Report

Perceptions from the Middle Kingdom

China Thirty Years Later

The Fleet and the Challenges Have Matured

It is the 30th anniversary of China opening up to western-built commercial aircraft. In 1988, China was an exciting potential market and largely untested and unknown. Back in the 1980's, increasing numbers of western aircraft business people travelled to Beijing with little more than a valet bag over their shoulder, ideas, proposals, ambition and hope. In May 1988, Guinness Peat Aviation achieved its first aircraft operating lease in China, a 737-200, into China Southern Airlines. So much has changed since.

During the past 30 years, the Chinese western-built mainline commercial passenger aircraft fleet has grown from about 50 aircraft in May 1988, to about 2,600 aircraft today. This is an extraordinary accomplishment which has revolutionized transportation within China and globally.

China Western Built Mainline Commercial Passenger Aircraft 1988	
Aircraft	Aircraft
Airbus A310-100	5
Boeing 737-200	14
Boeing 747-200	8
Boeing 757-200	2
Boeing 767-200	4
British Aerospace BAe 146/Avro RJ	7
McDonnell Douglas MD-80	10
Total	50

Data Source: www.planespotters.com

Today, China is the single most important new commercial aircraft market in the world. On Airbus' and Boeing's ramps it seems easier to count the number of aircraft not in Chinese airline colors than to count those *en route* to China.

During the past 30 years, China has addressed the issues of growing its commercial aviation infrastructure in the air and on the land. Legions of pilots, engineers, mechanics, customer service and business people have been developed as airports have been built and airlines grown. The economic impact of this infrastructure development is huge.

From a fleet planner's perspective, the challenges of 2018 have changed and matured, as has the fleet itself. Going forward, more consideration of aircraft retirements and transitions will be needed.

Ariel Aviation China Western Built Mainline Commercial Passenger Aircraft 2018									
Manufacturer	Model	Fuselage	Production Status	Operational	Ave Age	Oldest Year of Manf.	Oldest Age (years)	Youngest Year of Manf.	
Boeing	767-300ER	WB	Out	9	22.0	1994	24	2006	
Boeing	747-400	WB	Out	3	20.4	1994	24	2000	
Boeing	777-200	WB	Out	11	18.5	1995	23	2001	
Boeing	737-700	NB	In*	170	9.8	1998	20	2017	
Airbus	A319-100	NB	In*	189	8.2	2000	18	2016	
Boeing	737-900/900ER	NB	(ER) In*	8	8.1	2005	13	2005	
Airbus	A330-200	WB	Out	96	6.5	2005	13	2016	
Airbus	A320-200	NB	In*	708	5.9	1997	21	current	
Airbus	A321-200	NB	In*	258	5.5	1998	20	current	
Boeing	737-800	NB	In*	954	5.5	1999	19	current	
Airbus	A380-800	WB	In	5	5.4	2011	7	2012	
Airbus	A330-300/E	WB	In*	80	5.2	2005	13	current	
Boeing	787-8 Dreamliner	WB	In	27	3.2	2013	5	2015	
Boeing	777-300ER	WB	In*	45	2.9	2013	5	2014	
Boeing	747-8 Intercontinental	WB	In	7	2.3	2014	4	2015	
Boeing	787-9 Dreamliner	WB	In	11	0.8	2016	2	current	
			Total:	2,581					
Data Source: Thanom Aerospace Intelligence						* In transition to new models.			

Overall, the China passenger aircraft fleet is young with an average age of 6.2 years, with the oldest comprising just 23 out-of-production, wide-body aircraft. While fleet growth and the consistent high level of new aircraft deliveries do much to keep down the fleet's average, the Chinese government regulations requiring retirement of commercial passenger aircraft at age 20 contribute the youth of the fleet in China.

Used wide-body aircraft represent a unique set of challenges to reposition them. Most operators of wide-body aircraft purchase them new. While passenger-to-freighter ("P2F") conversion of wide-body aircraft has declined in recent years, the 767-300ER aircraft remains a P2F possibility for the best aircraft with excellent records. There is little demand for 747-400 or 777-200 aircraft because they have been superseded as passenger aircraft. Finding and successfully managing end-of-life good solutions for these aircraft will take creativity, expertise, hard work and some good fortune.

The fleets of A319-100 and 737-700 aircraft represent the greatest challenge for the fleet planners because of their large numbers and declining demand globally as the mainline fleet upsizes and the directly-competing Bombardier C Series offers significantly superior economics and operating capabilities. P2F conversion of 737 series aircraft is well established and work progresses towards A320/A321 P2F conversions. Holding these aircraft models in service longer

may be a viable solution, as long as the opportunity cost of replacing them with newer technology models is not compelling.

It will be some years before the A320neo family, the 737MAX family and the C Series will have the mass to become the new baseline for mainline aircraft productivity and efficiency. Pratt & Whitney created and launched the industry into a new paradigm with its Geared Turbofan engine design, which spurred CFM to develop the Leap engine to compete. The differential in fuel burn established by the GTF engine will be the underlying driver of narrow-body fleet planning decisions in years to come with oil seeming to settle for now around \$60 to \$70 per barrel.

In the final analysis, the completeness and quality of airframe, engine and component records, with all the required traceability, will separate aircraft with the potential to transition either as operating passenger aircraft, or a P2F conversion candidates or for part-out successfully from those destined for the scrap heap. While ‘back-to-birth’ traceability of all Life Limited Parts (“LLPs”) is mandatory, excellent component records directly translate into marketability and value.

A mature aircraft fleet required more of fleet planners, engineering and maintenance to develop and implement strategies to maximize the value of aging assets. Having excellent records systems in place during the operating life of an aircraft not only meets the highest maintenance standards, they lay down an important basis of value as aircraft age.

Buying and flying new aircraft is indeed challenging although, in a number of aspects, easier than effectively and profitably managing issues of a maturing aircraft fleet. Airlines would be well advised to establish specific plans and responsibilities targeted on optimizing marketability and value of maturing aircraft.

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PGA Aviation is an aircraft re-marketing firm with focus on the Greater China market. We work closely with many airlines in the Greater China region. Our goal is to provide profitable solutions to our clients, especially working with Chinese airlines that are phasing out mid-life and end-of-life aircraft, and Chinese leasing companies that are leasing and/or selling aircraft assets. PGA Aviation can also provide PRC Aviation Policy advisory services by interacting with Chinese governmental agencies on behalf of its clients.