

Emerging Markets - Business Jets

By Michael Chase

Chase & Associates

September 28, 2011 – USITC Hearings Business Jet Aircraft Industry: *Structure and Factors Affecting Competitiveness*

The emerging countries often referred to as the BRIC (Brazil, Russia, India, and China) have over 1,000 Business Jets. The following is a list of the “Top 20” countries and the current number of Business Jets that are in operation in each country.

As shown in the table, the United States accounts for over 10,000 or 60% of the 18,000 business jets worldwide. Mexico is a distant 2nd with 716 business jets. Highlighted in “**Yellow**” are the BRIC countries of Brazil (ranked 3rd), India (15th), Russia (18th) and China (20th).

| "Top 20" Countries - Business Jets | | | |
|---|---------------------------|---------------|--------------|
| Rank | Country | Count | Cum % |
| 1 | United States | 10,889 | 60% |
| 2 | Mexico | 716 | 64% |
| 3 | Brazil | 643 | 67% |
| 4 | Canada | 482 | 70% |
| 5 | United Kingdom | 452 | 72% |
| 6 | Germany | 435 | 75% |
| 7 | Switzerland | 233 | 76% |
| 8 | France | 222 | 77% |
| 9 | Austria | 221 | 79% |
| 10 | Venezuela | 215 | 80% |
| 11 | Portugal | 180 | 81% |
| 12 | Australia | 178 | 82% |
| 13 | South Africa | 166 | 83% |
| 14 | Italy | 165 | 83% |
| 15 | India | 146 | 84% |
| 16 | Argentina | 132 | 85% |
| 17 | Spain | 131 | 86% |
| 18 | Russian Federation | 129 | 86% |
| 19 | Saudi Arabia | 118 | 87% |
| 20 | China | 109 | 88% |
| | Other | 2,242 | 12% |
| | Total | 18,204 | 100% |

Source: JETNET – Sept. 2011

Brazil and South America

Brazil has the third highest number of business jets in the world. The following is a list of the “Top 25” cities where business jets are based.....and Sao Paulo, Brazil is ranked 2nd with 131 business jets behind Toluca, Mexico of all Non-U.S. Cities. Highlighted in Yellow are the other cities in the BRIC countries with the number of business jet aircraft.

| "Top 25" Cities - Business Jets | | |
|--|--------------------|--------------|
| Rank | Non-US City | Count |
| 1 | Toluca | 202 |
| 2 | Sao Paulo | 131 |
| 3 | Caracas | 99 |
| 4 | Johannesburg | 98 |
| 5 | Calgary | 92 |
| 6 | London | 89 |
| 7 | Geneva | 84 |
| 8 | Vienna | 79 |
| 9 | Farnborough | 78 |
| 9 | Moscow | 78 |
| 10 | Toronto | 77 |
| 11 | Paris | 72 |
| 12 | Monterrey | 69 |
| 13 | Milan | 59 |
| 14 | Zurich | 59 |
| 15 | Montreal | 58 |
| 16 | Belo Horizonte | 57 |
| 17 | Madrid | 55 |
| 18 | Stuttgart | 46 |
| 19 | Istanbul | 43 |
| 20 | Dubai | 42 |
| 21 | Beijing | 41 |
| 22 | Jeddah | 39 |
| 23 | Delhi | 36 |
| 23 | Melbourne | 36 |
| 24 | Mexico City | 34 |
| 25 | Dusseldorf | 33 |
| 25 | San Fernando | 33 |

Source: JETNET Sept. 2011

The economy in most of the countries in South America has been referred to as relatively resilient when compared to other nations during the recent worldwide economic crisis of 2008-2009. With a rapidly developing economy, the rate of recovery in South America is projected to be significant in 2010 as trade with China and the US is expected to reach large proportions.

From an aviation perspective, Brazil is home to Empresa Brasileira de Aeronautica S.A. (Embraer), one of the largest aircraft manufacturers in the world, and continues to grow and expand in the business aviation sector as shown in the following table.

| Embraer Business Jet Deliveries | | |
|--|--------------|-----------------|
| Year | Units | Billings |
| 2002 | 8 | \$163m |
| 2003 | 13 | \$265m |
| 2004 | 13 | \$275m |
| 2005 | 20 | \$449m |
| 2006 | 27 | \$637m |
| 2007 | 36 | \$890m |
| 2008 | 38 | \$921m |
| 2009 | 122 | \$1.108b |
| 2010 | 145 | \$1.249b |
| 1st 6 mos 2011 | 31 | \$301m |

Source: GAMA

Last year, the Olympic committee announced that the 2016 Olympics would be held in Rio de Janeiro and Brazil has also secured the 2014 FIFA World Cup that will surely boost its local economy.

See Appendix A Charts- Since 1955, corporate jet manufacturers has seen a reduction in the number of companies from 19 to 7 in 1999. This reduction has come about as a result of both consolidation and stopped production.

Russia

In March, Forbes magazine issued their annual billionaires list for 2011 and they reported that Moscow had more billionaires than any city in the world. The Russian capital boasts 79 billionaires, a stunning increase of 21 in just one year, that more than edges out New York with 59 billionaires and London with 41, which took the number two and three spots on the billionaires list.

INDIA

Long term prospects for business aircraft sales in India are bright. While the US accounted for a "classic over-order cycle" in the past few years that recently imploded, that didn't happen in India -- or China. US sales of business aircraft will be very slow to recover. New aircraft sales roughly track GDP and the US economy is forecast to grow at less than three percent for the next two years.

Meanwhile, India's GDP is forecast to grow 8.0 percent in 2010 and 7.6 percent in 2011. That will fuel potential demand for business aircraft. At present, though, there are only 120 business jets in India of more than 18,000 in active service worldwide.

Why? India faces major airport and airspace infrastructure challenges, plus service and support issues. About 1,000 government officials make all aviation decisions for this nation of 1-billion inhabitants.

India's individual and corporate wealth is growing at triple the rate of the US, so there ought to be plenty of business aircraft buyers. One million Indians control \$100-billion in assets, according to some reports. These people need efficient air transportation to grow their businesses and they are discovering that traveling on the airlines' hub-and-spoke route structure eats up too many hours in their work weeks.

So there's plenty of pent-up demand for business aircraft, if India's politicians and bureaucrats can take decisive action. First, India places a regressive import duty of about 25 percent on non-airline aircraft. The country also puts stiff tariffs on imported aircraft parts, discouraging local MROs from investing in robust spares inventories needed to keep aircraft flying.

The country also has a paucity of runway and overnight parking capacity at airports near major industrial hubs, so that shortage needs to be remedied. At some airports, business aircraft crews have to drop their passengers and then reposition their aircraft to outlying airports for overnight parking.

India's notoriously bureaucratic procedures deter many potential business aircraft operators from taking the plunge. Non-commercial aircraft older than 15 years cannot be imported into the country.

But, there are signs of growth in the business aircraft sector, in spite of these challenges. It has been reported that 35 business jets were imported into India from mid-2007 through the end of 2008. The fleet jumped from 89 aircraft to 120 by the end of 2009. Hawker Beechcraft and Cessna Citation products are among the most popular makes with 30 and 28 units respectively, followed by 24 Bombardier Challengers and Learjets, plus 15 Gulfstream and 15 Dassault Falcon jets. Embraer has a half dozen business jets there and Airbus has two in corporate use.

If India rids itself of its regressive import taxes on non-commercial aircraft, streamlines its aircraft operator permit processes and builds up its airport and airspace infrastructure, this nation could account for an impressive share of new business aircraft sales in the coming decade.

China

According to the 2010 Hurun Rich List, **one-sixth of the 2,000 Renminbi Chinese billionaires have plans to buy private aircraft** - jet or helicopter- to serve business purposes as well as personal ones. That is 333 billionaires which if each purchased only one aircraft would be 3 times the number of business aircraft currently based in China.

The business aviation aircraft fleet in operation today in China compared to the United States:

Companies operating in Business Aviation

- China: 88
 - +45 in approval process
- USA: 10,993

Number of people working in the industry

- China: 7,000
- USA: 1,200,000

Infrastructure, including airport and maintenance facilities will need to be established to prepare for China's future and that is exactly what is happening. The recent moderation of Business Aircraft operating regulations and permits in China is a contributor to the increased demand. Authorities have reduced the time from 6 days to 3 hours to get a flight permit for a Chinese-registered business aircraft. Also, new FBO facilities have been opening across Asia and the Pacific over the past few years. Another significant contributor to the increased demand according to a 2010 Asia-Pacific Wealth Report, is the growth in population of high net worth individuals across Asia-Pacific has risen substantially, catching Europe in 2009 and recently surpassing the net wealth numbers in Europe.

According to a report from Bombardier, the market which includes Hong Kong, Macau, Taiwan and mainland China could grow to 2,100 new aircraft over the next 20 years which is very impressive by any standard.

Airports

As the fourth largest country in the world, based on square miles (after Russia, Canada, and U.S.), China is actually smaller than the United States. Chart A shows a comparison of China and U.S. (48 states). **Chart A**

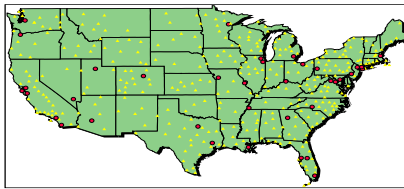
What's larger in square miles, China or U.S.A.?

CHINA



China at 3,705,000 square miles.

USA – 48 States



Total U.S.A at 3,794,000 square miles.

China is the world's fourth largest country in the world (after Russia, Canada, and US)

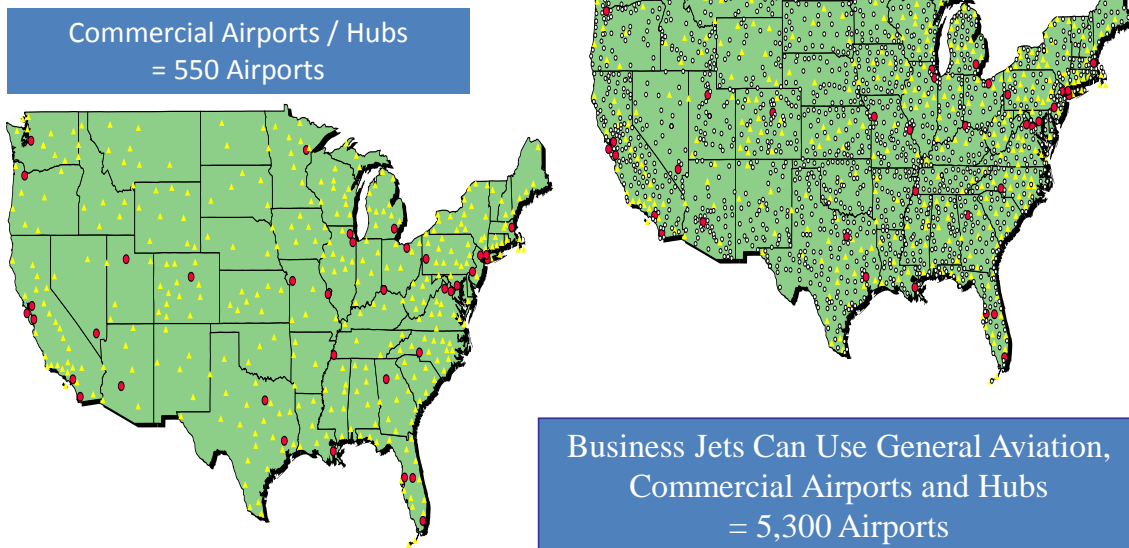
Source: The World Fact book

So the sheer size and population of China supports the demand for aviation and an expanded airport structure. As mentioned, the further development of infrastructure including airports is the key to the success of business aviation. The true benefits of business aviation really come to fruition when we consider the general aviation airports not served by commercial airlines providing access and economic growth to other parts of the country. In Chart B, we can easily see the benefits of accessing the entire group of 5,300 general aviation airports versus the 550 commercially served U.S. airports. So similar to the United States, China will experience economic benefits from the increase in airport access and provide their travelers more choices.

Chart B

Benefits of Business Jet Travel

USA – 48 States



Source: NBAA - 2009

Benefits of Business Jet Travel in the U.S. (Source: NBAA – 2009)

- The U.S. air transportation system is made up of approximately 5,300 public-use airports.
- The commercial airlines serve about 550 of these facilities – fewer than 11 percent. The busiest airports handle the majority of all airline passengers.

- Most operators of business aircraft *do not* use the busiest commercial airports, preferring instead to fly in and out of “reliever” airports, which often are not served by commercial airlines. The ability to use these smaller, less-congested facilities is the key to the value and flexibility of business aviation aircraft.
- As a result, business aviation operations at the nation’s 20 busiest hub airports account for *less than 3 percent* of total activity.

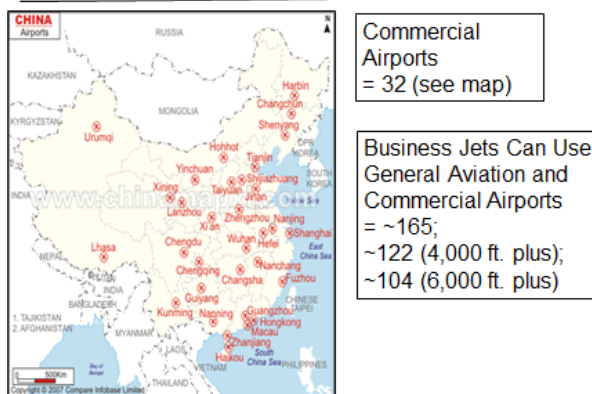
China’s Population and Airport Plans

- China has about one fourth of the total population of the world and many of those people live in the big cities on the Eastern side of China.
- Beijing is the capitol city, and Shanghai has the largest population.
- By 2010, China is expected to have 186 new airports, which include 3 national hubs, 7 regional hubs, 24 medium hubs, 28 medium airports and 124 small-size airports. It is yet unknown if these targets have been met.
- China plans to build world's largest airport. Beijing aims to become the world's largest aviation hub with its plans to construct its third airport, which could have up to nine runways, this article says. The planned airport reportedly is expected to eventually handle 120 million to 200 million passengers a year.
- It is estimated that the number of airports with scheduled airlines will be 260 by 2015. The total investment will be \$17.7 billion.

In Chart C we depict the 32 current airports existing in China and indicate the plans for expansion that will bring the total to 165+ airports that most Business and General Aviation Aircraft will have access to.

Chart C

Airports in China – Benefits of Business Jet Travel



When China's new Beijing airport opens in 2015 it will be the largest in the world, covering 21 square miles, with nine runways and the capacity to handle 370,000 passengers per day. Construction is expected to begin soon on a site about 30 miles southwest of the capital city in Daxing. The new runways will provide relief for the city's main airport, which is nearing its capacity of 75 million passengers per year. "Last year it handled 73 million," Cao Yunchun, a professor at the country's Civil Aviation University, told the London Telegraph. "In two years, it will be totally packed. And it cannot be expanded infinitely."

With the new airport, Beijing is expected to handle a total of 120 million to 200 million passengers per year, which would make it the world's busiest aviation hub. About 100 million travelers use the airports in London and Tokyo each year, most of them on international flights. Daxing also will have the most runways, beating out Denver, which has just six. Workers now on site are building a 30-foot-tall map of the world out of steel and concrete, topped by red characters announcing: "Construction of a New Airport City for the Capital." Work on runways and facilities are expected to begin sometime this year.

Chinese carriers earned an aggregate profit of CNY6.59 billion (\$1.03 billion) in August, up 27.4% over a net income of CNY5.17 billion in the year-ago month, crediting domestic market growth.

Passenger boardings rose 4.5% year-over-year to 27.6 million in August, but that growth rate is sharp contrast with the double-digit growth rates that domestic airlines have maintained in recent years. Passengers carried on domestic routes increased 4.6% to 25.6 million while international boardings grew 4.3% to 2 million. Load factor improved 0.8 points to 85%. Cargo traffic volume decreased by 3.1% to 455,300 tonnes. Daily aircraft utilization reduced 0.3 hrs. to 9.6 hrs.

As of Aug. 31, Chinese airlines' operated a combined fleet of 1,693 aircraft. During the month, the airlines added 23 aircraft, comprising one Boeing 777-300, two Airbus A320s, one 737F, eight 737-800s, six 737-700s, four Embraer 190s and **one Gulfstream 450** business jet. The airlines phased out three aircraft, comprising one MD-90 and two E-145s.

Summary

China's growth and potential success for Business Travel on Business Jets seems obvious. Although the inventories may not exceed the business aircraft numbers in North America any time soon, the demand from this part of the world and the other countries will certainly expand the business jet industry into the future for decades to come.

Appendix A

Today, there are 4 U.S. OEM's from the U.S. (Cessna, Hawker Beechcraft, Gulfstream, Boeing) and 4 Non U.S. from Canada (Bombardier), France (Dassault Falcon Jet) and (Airbus), and Brazil (Embraer).

The Business Jet Market

Since 1955, Business Jet manufacturers has seen a reduction in the number of companies from 19 to 7 in 1999. This reduction has come about as a result of both consolidation and stopped production.

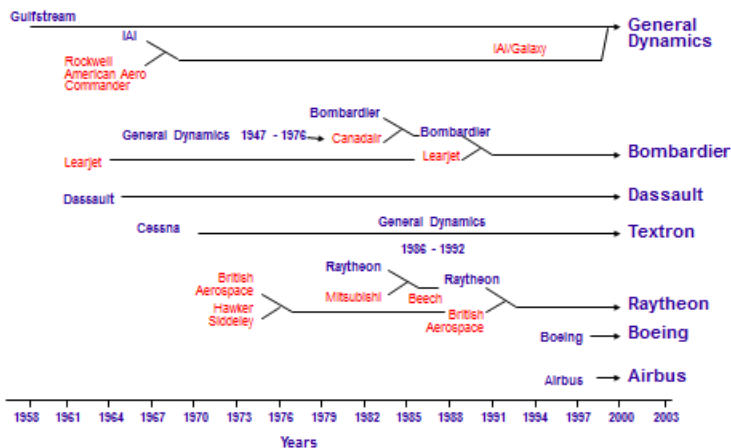
| No. | Airframe | Years | | Comments | Current Owner |
|-----|---------------------------|-------|---------|--|------------------|
| | | From | To | | |
| 1 | Moore Saunter | 1955 | 1967 | Stopped Production of the Paris Jet | None |
| 2 | Gulfstream | 1958 | Current | Produces Large Cabin Corporate Jets | General Dynamics |
| 3 | Lockheed Jetstar | 1961 | 1980 | Stopped Production of the Jetstar | None |
| 4 | Rockwell | 1963 | 1982 | Stopped Production of the Sabreliner | None |
| 5 | Lear | 1963 | Current | Produces Mid & Small Cabin Corporate Jets | Bombardier |
| 6 | Hawker-Beechley | 1964 | 1976 | Produces Mid & Small Cabin Corporate Jets | Raytheon |
| 7 | Dassault* | 1965 | Current | Currently produces Large, Mid Cabin Corporate Jets | Dassault |
| 8 | Messerschmitt-Bokow-Blomh | 1966 | 1982 | Stopped Production of the Hange Jet | None |
| 9 | AI | 1969 | Current | Produces Mid-Cabin Corporate Jets | General Dynamics |
| 10 | Pagallo | 1969 | 1972 | Stopped Production of the PD-808 | None |
| 11 | Cessna | 1971 | Current | Produces Mid & Small Cabin Corporate Jets | Textron |
| 12 | Aerospace | 1973 | 1981 | Stopped Production of the Conquest | None |
| 13 | British Aerospace | 1977 | 1992 | Produces Mid Cabin Corporate Jets | Raytheon |
| 14 | Canadair | 1980 | Current | Produces Large Cabin Corporate Jets | Bombardier |
| 15 | Mitsubishi | 1982 | 1987 | Stopped Production of the Diamond | None |
| 16 | Beechcraft | 1985 | Current | Produces Small Cabin Corporate Jets | Raytheon |
| 17 | Bombardier | 1986 | Current | Produces Large, Mid & Small Cabin Corporate Jets | Bombardier |
| 18 | Boeing | 1990 | Current | Produces Bizliner Corporate Jet | Boeing |
| 19 | Airbus | 1999 | Current | Produces Bizliner Corporate Jet | Airbus |

* Dassault stopped producing their small cabin aircraft in 1990

2

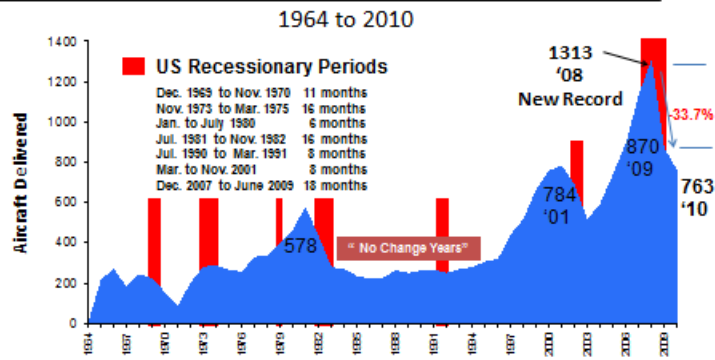
The above list is up to 1999. During the decade of 2001 to 2010, Embraer began delivering business aircraft in 2002 with 8 Legacy Executive with a total billing of \$163 million. In 2010, Embraer delivered 145 business jets with a total of \$1.250 billion according to GAMA reported figures. Eclipse Aviation delivered the first Very Light Jet (VLJ) in the 4th quarter of 2005 and stopped production in 2008.

Business Jet Industry Consolidation



3

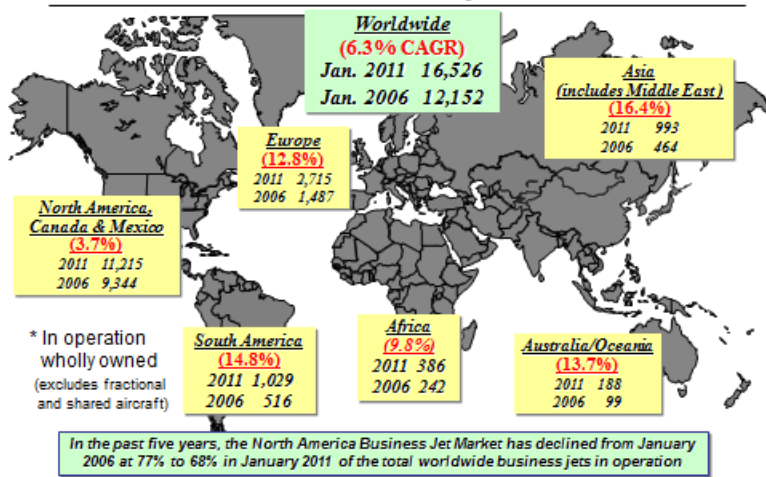
NEW Business Jet Deliveries



New Business Jet Deliveries have been on a steady increase since 2003 with a new record in 2008. In 2009 declined 33.7% to 870. Again declining in 2010 at 763 just below the peak at 784 recorded in 2001.

Source: Bus Av Wk; GAMA; Analysis and presentation by Chase & Associates. Chase & Associates "Knowledge is Power"

Worldwide Business Jets* by Continent



Source: JETNETIAvData Star Report - Based at Presentation and Analysis by Chase & Associates

There are 181 that are below the Max. Take-off weight of 50,000 pounds or less. There are 30 New and Pre-Owned Business Jet Aircraft Models that are above the 50,000 pound Maximum Takeoff Weight. See list below.

| No. | MODEL NAME | Max. Takeoff (lbs): |
|-----|----------------------|---------------------|
| 1 | BOEING BBJ3 | 187,700 |
| 2 | BOEING BBJ2 | 174,200 |
| 3 | BOEING BBJ | 171,000 |
| 4 | AIRBUS A320 PRESTIGE | 169,754 |
| 5 | AIRBUS A319CJ | 168,650 |
| 6 | AIRBUS A318 ELITE | 145,505 |
| 7 | EMBRAER LINEAGE 1000 | 120,150 |
| 8 | GULFSTREAM G-650 | 99,600 |
| 9 | GLOBAL 6000 | 99,500 |
| 10 | GLOBAL EXPRESS XRS | 98,000 |
| 11 | GLOBAL EXPRESS | 95,000 |
| 12 | GULFSTREAM G-550 | 91,000 |
| 13 | GULFSTREAM G-V | 90,500 |
| 14 | GLOBAL 5000 | 87,700 |
| 15 | GULFSTREAM G-500 | 85,100 |
| 16 | CHALLENGER 890 | 84,500 |
| 17 | CHALLENGER 870 | 75,000 |
| 18 | GULFSTREAM G-IVSP | 74,600 |
| 19 | GULFSTREAM G-400 | 74,600 |
| 20 | GULFSTREAM G-450 | 73,900 |
| 21 | GULFSTREAM G-IV | 73,200 |
| 22 | GULFSTREAM G-300 | 72,000 |
| 23 | GULFSTREAM G-350 | 70,900 |
| 24 | FALCON 7X | 70,000 |
| 25 | GULFSTREAM G-IIB | 69,700 |
| 26 | GULFSTREAM G-III | 69,700 |
| 27 | GULFSTREAM G-II | 64,800 |
| 28 | EMBRAER LEGACY 650 | 53,572 |
| 29 | CHALLENGER 800 | 53,000 |
| 30 | CHALLENGER 850 | 53,000 |

Professional Bio

Michael Chase is the Principal at Chase & Associates, an aviation consulting that specializes in industry product and market research in the Commercial & Business Aviation sectors. Mr. Chase has over four decades of extensive global experience in marketing/sales, operations, and finance and has worked in several distinct sectors within the industry. Since late 2008 Mr. Chase has been outside director for JETNET, LLC an aviation market research company. Mr. Chase also served as a Senior Management Consultant for Sabre Holding, where he consulted with several airlines, including Aloha Airlines. Mr. Chase served as VP of Sales and Marketing for DPI Labs Inc., a supplier aircraft cabin management and in-flight entertainment products. For seven years, Mr. Chase was Director of Market and Sales Research for Gulfstream Aerospace, where he led sales and product research that included feasibility and viability studies for market expansion, competitive intelligence, forecasts, and market outlook studies. Additional experience includes: Director Marketing/Sales for Scheduling Systems, Inc.; Senior Manager, Market Analysis and Planning at McDonnell Douglas; and Manager, General Accounting at Western Airlines. Mr. Chase has a BA with a major in Transportation Administration from the University of Washington and is an accomplished spokesperson at industry conferences. Mr. Chase has written over 50 business aircraft articles and was a Guest Lecturer for four years at MIT.

Mike Chase
Principal
Chase & Associates



'Knowledge is Power'

Michael D Chase • Principal • Chase & Associates
1628 Snowmass Place • Lewisville, TX 75077 • www.mdchase.aero
Cell: 214-226-9882 • fax: +1.972-966-1449 • services@mdchase.aero