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Newsletter

Market Comment

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No Price War to Sell Final A320ceo and 737 NGs. EADS Chief Financial Officer, **Harald Wilhelm**, told the stockholders that **Airbus** wanted to sell its remaining current engine option A320s at a reasonable price and margin. **Airbus** will resist offering its final 300 slots for the regular A320 at bargain basement prices. From late 2015 through 2017, production will gradually transition to the re-engined A320neo Family. Mr. **Wilhelm** said that holding out for the best price would not necessarily be rational, "We definitely won't move into what some might call a price war." He said the company was satisfied with the prices it negotiated and that the number of remaining A320ceo slots were a "pretty remote number," about nine months' production at the current rate (approximately 360 aircraft). **Airbus** achieved healthy pricing on the A320neo and customers were willing to pay a premium for the aircraft, Mr. **Wilhelm** said. EADS CEO **Tom Enders** stated that **Boeing** was "desperately trying to catch up" to the 2,000 A320neo sales, which created some tension in the market. While **Airbus** was trying to fill its empty A320ceo production slots, it was considering boosting its A320neo Family build-rates above 42 per month, "it's getting tight for deliveries," Mr. **Leahy** said, "I have only a handful of delivery slots left for 2019. We're looking at whether we can increase the rate." So far, **Airbus** delayed plans to accelerate output because it was worried that its suppliers could not provide enough components fast enough to keep up. Mr. **Leahy** said the manufacturer would not make a firm decision on a production rate increase for two years or more. By then, **Airbus** can accelerate output of the A320neo without worrying about selling more of the standard model.

Boeing has a two-year disadvantage in the race to produce a re-engined narrow body. Its first 737 MAX will be delivered in 2017, so it must sell two years' worth of 737 NGs (912 aircraft - at 38 per month). So far, its 737 MAX sales have been impressive, reaching 1,180 firm orders by mid-February. However, this is 60 percent of **Airbus'** 2,000 A320neo sales total. In March **Boeing** won an order from **Ryanair Holdings** for 175 737-800NGs, worth \$15.6 billion (\$89.1 million each) at list price. **Ryanair** CEO **Michael O'Leary** said he won a 50 percent discount on his last big 737 NG order in January 2002. In the depths of the post 9/11 recession, **Ryanair** purchased 100 737-800s and optioned 50 more, worth \$9.1 billion at list prices (\$60.7 million each). Later he boasted that he was selling used 737-800s for more than he paid for the new ones being delivered. **Echelon Research & Advisory** analyst, **Sash Tusa**, said Mr. **O'Leary** "found his time and he's found his aircraft. If

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he does this deal, he'll get it for nothing. He's buying the bargain basement stuff and it's a lovely deal. Ryanair looked at the A320neo and the Commercial Aircraft Corp. of China C919, a new competitor in the single-aisle market. Another option was to pick up jet orders from rivals which were struggling to fund their purchases. That option was found to be too expensive. The new -800NGs will be delivered from late 2014 to 2018, when the type will be phased out completely. Boeing's marketing chief, Randy Tinseth said, "We've had the strategy of getting MAX customers to also commit to NGs, and that's paid off." In the case of Ryanair, he hopes the Irish airline will follow up the NG order with a commitment for the 737 MAX, but Mr. O'Leary has expressed his doubts about the economics of the MAX. The airline hinted that it might buy from 100 to 200 737 MAX by 2020. At the end of March, the manufacturer had 3,275 737s in backlog, including 1,180 MAX. The 737 NG portion of the backlog represents 4.5 years of production (until September 2017), so it is possible that Ryanair soaked up most of Boeing's surplus NG slots. The manufacturer confirmed this by saying, "We didn't have a lot of open slots anyway, but this pretty much closes the gap we did have. We have a few more left over, but not that much." The big sale ensures a smooth production transition to the MAX.

AIRBUS ORDERS

Airbus Booked 41 Aircraft in February. Los Angeles-based Air Lease Corporation (ALC) placed its first order for Airbus' newest twin-jet widebody with its purchase of 20 A350-900s and five A350-1000s. The lessor took five -1000 options. ALC also firmed options for 14 A321neo (new engine option) jets that were reserved at the Farnborough International Airshow. The ALC deal raised A350 XWB orders to 617, placed by 35 international customers. Turkish Airlines (THY) contracted for two more A330-300s. The flag carrier now has 17 A330-300s on backlog and 10 -300s in service. At the end of February, Airbus' net orders reached 162 aircraft, while its overall backlog stood at 4,764.

Airbus delivered 34 larger A320 Family aircraft during February. International airlines, VIP operators and leasing companies, accepted one A318, two A319s, 23 A320s, and nine A321s. Nine of the A320s were equipped with Sharklet wingtip devices. Seven A330-300s and one A330-200 were handed over to airlines. Malaysia Airlines and China Southern took delivery of one A380 each. By mid-March, Airbus had sold

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more than 2,000 A320neo Family aircraft in just over two years, and 264 A380s. It has sold more than 9,150 A320 Family aircraft to more than 385 customers, and more than 5,450 have been delivered.

Airbus delivered the last A318 in its backlog to a corporate customer. The manufacturer sold only 79 of the shortest model in the A320 Family aircraft. Airlines and **GEACAS** ordered more than 150 A318s, but **Airbus** saw its backlog shrink when airlines cancelled their commitments due to the recession after September 11, 2001. **Airbus** delivered 48 A318 airliners to five airlines, a dozen to **GEACAS** and 19 to VIP operators from 2003 to 2013. Rival **Boeing** sold more than the 69 737-600s that it delivered between September 1998 and September 2006. It too saw its backlog evaporate as airlines and lessors switched their commitments to the larger 737 NGs. The A318 was a bust for **Pratt & Whitney** which developed the PW6000 engine specifically for that aircraft. Only one airline, **LAN**, Chile, took delivery of PW6000-powered airliners. **P&W** found that its first version of the PW6000 was more fuel-thirsty than expected, so it had to redesign the engine core which delayed the entry-into-service date by several years. By that time all of **Pratt's** other customers had switched to the CFM56 or cancelled their A318 orders altogether. **Airbus** has not announced that it ceased production of the A318, but there is no demand for a 130-seat Airbus given there are so many new competitors in that market. Both short-bodied airplanes, the A318 and 737-600, illustrate **AVMARK's** oft stated belief that it is better to stretch a short airplane than to shrink a longer one. The seat-mile costs of shrinking an airframe rise, while seat-mile revenue shrinks along with the number of seats available. Over the years, manufacturers have offered shortened versions of their aircraft but they have not sold well. The A300 out sold the A310 by two to one. **Airbus** sold 62 A340-200s and -500s, and 315 A340-300s and -600s. **Boeing** sold 300 707-120s and 720s, while they sold 710 intercontinental 707-320/-420 series. 737-100s, -500s and -600s accounted for only 488 of the 10,627 737s that **Boeing** has sold since February 1965. **Boeing** booked only 45 747SPs out of the 1,525 747s it had sold. **Airbus** found that it was hard to sell the 270-seat A350-800. Several customers have dropped the model in favor of buying more 314-seat A350-900s. The trend toward buying the larger A350 was so strong that **Qatar Airways' CEO Akbar al Baker**

Airbus Orders, Deliveries and Backlog

February 2013

FEB ORD	FEB DEL	FEB CANX	TOTAL ORD	TOTAL DEL	BACK LOG
A318					
-0-	1	-0-	79	79	-0-
A319					
-0-	2	-0-	1,522	1,361	161
A320					
-0-	23	-0-	6,041	3,239	2,802
A321					
14	9	-0-	1,466	788	726
A330					
2	8	-0-	1,246	951	295
A350					
25	-0-	-0-	617	-0-	617
A380					
-0-	2	-0-	262	99	163
This Month			This Year		BL
41	45	-0-	162	80	4,764

Airbus sold 12,474 aircraft and delivered 7,710 as of February 28, 2013. Nineteen orders have been cancelled. Total orders, deliveries and backlog include cancellations and order changes.

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suggested that **Airbus** drop the A350-800 altogether. **Airbus** said it will continue to develop the type, for which it already has 92 orders. The -800 will enter service in mid-2016, two years after the A350-900.

Turkish Airlines (THY) signed a firm order for two additional A330-300s and took options for three more A330s in February. The new \$480 million contract raised the airline's firm A330 Family orders to 38. **THY** now operates 75 A320 Family aircraft, three A310s, 21 A330s and seven A340-300s.

Air Lease Corporation (ALC), the Los Angeles-based aircraft leasing company, has signed a contract for 20 A350-900s and five A350-1000s. The company also optioned five additional A350-1000s. The 25 A350 XWBs are valued at \$7.4 billion (\$296 million each) at current list prices. With this new order, **ALC** became the 35th A350 XWB customer, and the order took the A350 XWB backlog to 617. Also in February, **ALC** firmed options for 14 A321neo aircraft which brought the lessor's cumulative A320neo Family orders to 50. The lessor ordered 36 A320neo and reserved 14 A320neo Family aircraft options at the 2012 **Farnborough International Airshow**. The lessor can choose to take delivery of up to 34 A321neo airplanes. The latest 14 A321neos are worth nearly \$1.6 billion (\$114 million each) at **Airbus'** published list price. **ALC** will announce its engine selections at a later date. The A321neo will be ready for delivery in late 2016. The first A350-900 is scheduled to enter airline service in 2014.

Airbus Sold More Than 400 A320 Family Aircraft, in mid-March, raising total A320neo sales above 2,000. **Turkish Airlines (THY)** ordered 82 A320 family aircraft, worth \$9.3 billion at list prices. The airline purchased 25 A321ceo, four A320neo, and 53 A321neo aircraft. **THY** optioned 35 additional A321neo aircraft, bringing the order total to 117 if all options are confirmed. The Turkish flag carrier

The Lufthansa's Supervisory Board approved the purchase of 30 A320ceo with Sharklets, 35 A320neo, and 35 A321neo aircraft, as well as two more A380s in March. The 102 airplanes are valued at approximately \$11.2 billion at list prices. The airline will announce its choice of engines at a later date. **Lufthansa Group** is **Airbus'** largest airline customer, and has now ordered 532 aircraft and taken delivery of 385 Airbuses. This included 271 A320 Family, 41 A330s, 63 A340s, and 10 A380s. **Lufthansa Group** will use the A320ceo and A320neo Family aircraft for network development and fleet modernization. **Lufthansa** wants to replace its last 17 737-300s and 22 737-500s by 2016. The airline had previously ordered 25 A320neos and five A321neos which will be powered by **Pratt & Whitney** PW1100G engines. With the new order, **Lufthansa** has one A319, 51 A320ceo and two A321ceo airplanes scheduled for delivery before the first A320neo Family aircraft enters service in 2015. The airline now has 60 A320neo and 40 A321neo on backlog. Many of them will replace **Lufthansa's** oldest A320s, the first of which was delivered in 1989. **Airbus** touts the fuel efficiency of its new A320 Family. It said that the A320ceo with **Sharklets** will deliver a four percent fuel burn reduction, and the A320neo will cut **Lufthansa's** fuel burn by another 15 percent. **Boeing** offered its 737 NG and 737 MAX, but the German flag carrier has not purchased a **Boeing** product since it bought 20 747-8Is in December, 2006. **Lufthansa's** board ordered two A380s, bringing the A380 commitments to 19, with 10 delivered. The airline group ordered six 777-300ERs valued at \$1.9 billion at current list prices. They will be operated by its subsidiary **Swiss International Airlines**. **Lufthansa's** 2012 net profit was €990 million (\$1.32 billion) from revenues of €30.08 billion (\$40.1 billion). The airline has been reinvesting its profits into its fleet to improve its competitiveness against ever-expanding Gulf carriers and its European rivals.

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will select the engines to power the Airbuses at a later date. Deliveries are scheduled to begin in 2015. Including this contract, **THY** will have 375 passenger and cargo airplanes in its fleet by the end of 2020. **John Leahy**, **Airbus** Chief Operating Officer – Customers, said, “We are delighted with this new order from **Turkish Airlines**, which takes us above 2,000 Neo orders in a little over two years after launch.” **THY** already operates 75 A320 Family aircraft.

A New Customer for Airbus, Indonesian low-cost carrier, **Lion Air**, ordered 234 A320 Family aircraft, comprising 60 A320ceo, 109 A320neo, and 65 A321neo airplanes. The order was finalized on March 18 at a ceremony at the **Elysée Palace** in Paris. The French President **François Hollande** witnessed the signing of documents by **Rusdi Kirana**, Co-Founder and CEO of **Lion Air Group** and **Fabrice Brégier**, President and CEO of **Airbus**. The 234 A320 Family aircraft are worth €18.4 billion (\$24 billion, an average of \$102.6 million for each aircraft) at list prices. President **Hollande's** office said **Lion Air's** order was “the biggest for **Airbus** in terms of the number of aircraft and the overall sum.” The A320s can be configured with 180 tourist-class seats, while the A321 can carry up to 236 passengers. **Lion Air Group** said it will use the aircraft to meet growth requirements on its expanding domestic and regional route network in the world’s fourth most populous country. The engine selections for the aircraft will be announced in the near future. Mr. **Kirana** said he would use the Airbuses to set up new airlines to fill the strong demand for travel in Asia. **Lion Air** started operations in Malaysia, but may pursue a venture in Australia, he added. The airplanes will be purchased with funds raised through an initial public offering that is planned in 2015. Mr. **Kirana** dismissed worries about Asia’s ability to absorb the large quantities of new aircraft that have been ordered by **Lion Air** and its Malaysian rival **AirAsia**. “People don’t understand the market in Asia,” he said. Air travel in East Asia is expected to grow by more than 6.4 percent annually through 2031. Mr. **Kirana** continued by saying the newly ordered aircraft would not be used to set up a leasing business. **Lion Air** has 201 737 MAX, 113 737-900ER and eleven 737-800 aircraft on order, as well as five 787-8s. It currently operates 16 737-800s and 67 -900ERs. **Lion Air** started in 2000 with a mixed fleet of used airliners, and it seemed firmly planted in **Boeing's** camp, until the **Airbus** deal. It bought 201 737 MAX airplanes for \$22 billion in 2011. **Lion** now has 559 new aircraft on order. The **Airbus** delivery schedule was not announced, but one may surmise that the A320ceo aircraft will be delivered by 2018 at the latest, since the first A320neos will enter service in 2016.

Hawaiian Airlines confirmed the Memorandum of Understanding (MoU) for 16 A321neo aircraft that was signed in January 2013. This was the carrier’s first order for single-aisle **Airbus** aircraft. The aircraft will be fitted with approximately 190 seats in a two-class cabin. **Hawaiian** has not yet announced its engine selection. The airline will receive its A321neos between 2017 and 2020. The order was valued at \$1.8 billion (\$112.5 million each) at list price, and the airline reserved the right to purchase another nine aircraft. **Hawaiian** plans to operate the long-range single-aisle A321neos on long-haul routes between Hawaii and the U.S. West Coast.

Airbus' Latest Market Forecast said Asia-Pacific airlines will lead global demand for larger and more eco-efficient aircraft types over the next 20 years. Airlines in the region will take delivery of approximately 9,870 new passenger and cargo aircraft from 2013 through 2032. The aircraft will be worth \$1.6 trillion and represent 35 percent of all new aircraft deliveries worldwide over the next 20 years. Asia-Pacific has leapt ahead of Europe and North America as the market leader. In terms of value, it will account for 40 percent of the new airliner market, due to the higher proportion of widebody aircraft to be used by Asia-Pacific carriers. The region’s fleets of passenger aircraft will more than

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double in number over the next two decades, from 4,300 aircraft today to 10,440 jets. Approximately 3,500 of the aircraft that are in service today will be replaced with new ones. **Airbus** predicts that the region's airlines will buy or lease some 3,840 widebody aircraft by 2032, which will equal 44 percent of the worldwide twin-aisle demand. The new fleets will include 3,080 twin-aisle aircraft, in the A330/A350/777/787 classes and around 760 of the A380/747 class of very large aircraft. **Airbus** forecasted that it will deliver 45 percent of new A380s to airlines in the region. The growing low cost market will fuel the need for up to 6,030 new single-aisle aircraft. The new forecast states that Asia-Pacific airline fleets will grow from 316 dedicated freighters today to nearly 887 freighters in 2032. This will account for 30 percent of the global freighter fleet. While most of the freighters will be converted from passenger aircraft, approximately 251 new production freighters will be delivered. As of February 28, the Asia-Pacific region accounted for 31 percent of all **Airbus** orders. More than 2,100 **Airbus** aircraft are in service with 97 operators in the region. Another 1,800 **Airbus**es are on order, which represents more than 37 percent of the company's total backlog of 4,764, reflecting that the region is the fastest growing market for new civil aircraft.

Qatar Airways Chief Executive Akbar Al Baker said **Airbus** would not build the A350-800. "They are not going to make the -800. This is what they told us," he reported to the press at an airshow. **Airbus** asserted that it was going to stick by the shortest of the A350 models. "The A350-800 is a key member of our next-generation A350 family," a spokesman said. **Airbus** still has orders for 92 A350-800s after several airlines switched to the larger 314-seat A350-900. The manufacturer has sold 415 -900s and 105 350-seat A350-1000s. The first -900 was scheduled to enter service in late 2014. The -800 was due for delivery two years later and the -1000 was expected to enter service in 2017. Mr. **Al Baker** was the most vocal of a growing number of industry analysts who doubt the future of the A350-800. If the -800 is not cancelled, its entrance into service date may be delayed until after the first -1000 is delivered.

Boeing Orders

Boeing Sold 179 New Aircraft in February. **American Airlines** purchased 100 737 MAX aircraft, one 777-300ER, 12 787-8s and 30 787-9s. **Icelandair** confirmed its January commitment for 16 737 MAXs. **ALC** picked up five 737 MAX options and ordered another 10 777-300ERs. At the end of the month, **Qantas** purchased five more 737-800 NGs. **Boeing** delivered 34 737 NGs, two 767-300s and seven 777s during February.

American Airlines (AA) ordered its 15th 777-300ER on February 1, by confirming its last 777 option. The airline also switched its five 777-200ER orders to the -300ER model. The -200ERs were ordered in December 2001 and had been on **Boeing's** order book until February 2013. **American** has now ordered 20 777-300ERs, and will have taken four of them by the end of February. The carrier will receive six more -300ERs in 2013, and five are due in 2014. When **American Airlines** signed its five-year-old commitment to buy 42 787-9s, worth \$8.7 billion (\$207.14 million each), the airline later switched a dozen of those orders to the 787-8 model. **American** will keep to its original schedule and take delivery of its first Dreamliner in November 2014. The 787-9 program has been delayed several times, and this pushed the first 787-9 deliveries into late 2014 or early 2015. The last of **AA's** firmly ordered 787s will be delivered in September 2018. **American** optioned another 58 787s. The airline also finalized its purchase of 100 737-8 MAX aircraft in February. They will be delivered between 2016 and 2022.

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American reserved options for 60 more MAX aircraft, for delivery from 2022 through 2026. In July 2011, **American** purchased 100 737-800 NGs and optioned another 40. That order is still listed on **Boeing's** official order book. Since February 2009, the airline has purchased 307 737-800s and has taken delivery of 202.

Qantas Airways, Australia, ordered five additional 737-800 NGs for delivery in 2014. The airline extended the leases on two existing 737-800s for domestic operations. The **oneworld** alliance member has now ordered 74 737-800s and taken delivery of 61, leaving a backlog of 13 aircraft. **Qantas** will also lease five Boeing 717 aircraft for its **Qantaslink** subsidiary in the second half of 2013. In January, **Qantas** cancelled one of the 15 787-8s that it ordered in March 2006, leaving a backlog of 14. The airline signed up for 50 Dreamliners at the launch of the program and cancelled 35 787-9 orders in August 2012. The airline still holds options and purchase rights for 50 787-8 and 787-9s.

Icelandair committed to buy nine 737 MAX 8s and seven MAX 9s in mid-February. The MAX aircraft were valued at more than \$1.6 billion (\$100 million each) at list prices. The first of **Icelandair's** new jets will be delivered in the first half of 2018. To date, **Boeing** has sold 1,180 737 MAX aircraft.

Air Lease Corporation (ALC) picked up five more 737 MAX aircraft, through confirmation of options taken in July 2012. The new order raised **ALC's** 737 MAX backlog to 80. The leasing company purchased 10 more 777-300ERs, worth \$3.2 billion at current list prices. The leasing company has now ordered 185 airplanes from **Boeing** including 78 737-800 NGs, 80 737 MAXs, 15 777-300ERs, and 12 787-9 Dreamliners. The leasing company holds reconfirmation rights for 20 additional 737 MAX airplanes.

In March, GE Capital Aviation Services (GECAS) ordered four more 737 NGs. The lessor has now ordered seven 737-600s, 87 737-700s, 269 737-800s and four 737-900ERs. All but 57 737-800s have been delivered. **United Airlines** purchased eight 737 NGs. The airline has now ordered 90 737-900ERs

Boeing February 2013 Orders, Deliveries

FEB ORD	FEB DEL	FEB CANX	TOTAL ORD	TOTAL DEL	BACK LOG
737					
126	34	-0-	10,627	7,491	3,136
747					
-0-	-0-	-0-	1,525	1,458	67
767					
-0-	2	-0-	1,108	1,043	65
777					
11	7	-0-	1,442	1,079	363
787					
42	-0-	-0-	890	49	841
This Month			This Year		BL
179	43	-0-	181	82	4,472

Boeing sold 23,122 aircraft and delivered 18,650 as of February 28, 2013.

The Current Program includes sales and deliveries of 737s, 747s, 767s, 777s and 787s.

Sales totals are net, minus cancellations.

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(with 13 delivered) and its merger partner **Continental** has purchased 185 737 NGs and has taken delivery of all of them. **Boeing** reported that two 737 orders were cancelled in March.

Cathay Pacific Airways signed an order for three 747-8F freighters on March 4; this will bring their 747-8F fleet to 13 airplanes. The freighters were valued at approximately \$1 billion at list prices. As part of the deal, **Cathay Pacific** downgraded five of its eight 777F freighter orders to options and transformed the other three 777s into orders for the 747-8Fs. **Boeing** said, "[the] Hong Kong flag carrier is in the midst of renewing its freighter fleet with newer, more efficient airplanes, while also looking to strengthen its position as a market leader in the air cargo business." The airline currently operates eight 747-8Fs. **Cathay** will trade-in four of its six 747-400BCFs (Boeing Converted Freighters) to the manufacturer as part of its fleet restructuring. The airline also operates six factory-built 747-400Fs and six 2008-09 era 747-400ERFs (Extended Range Freighters). The new airplanes will be used for long-haul services to Europe and North America. The airline also said it expects to take delivery of the new 747-8Fs in 2013. **Cathay's** 777F pre-delivery payments will be used toward the purchase of the three 747s, it said. The airline said in a statement to the Hong Kong stock market that **Cathay's** and **Air China's** joint venture cargo carrier, **Air China Cargo**, ordered eight 777F freighters and it will sell seven 747-400BCF converted freighters back to **Boeing**. The 777 freighters were valued at about \$2.2 billion (\$275 million each) at list prices. Seventy 747-8 Freighters have been ordered by six airlines, two leasing companies and one unidentified customer. As of March 1, **Boeing** had delivered 28 747-8 Freighters to six airlines.

Air China agreed to order two 747-8 Intercontinental passenger aircraft, one more 777-300ER (Extended Range) and 20 Next-Generation 737-800s in March. **Boeing** announced that **Air China Cargo**, a subsidiary of **Air China**, agreed to buy eight 777F freighters. The 31 airplanes have a combined catalog value of \$4.8 billion, but the airline said **Boeing** granted "significant price concessions" through credit agreements. The contract includes the right to sell seven of its oldest 747-

Boeing's 747-8 sales have not been robust. The manufacturer sold two 747-8Fs to **GECAS** in 2011 and two -8Fs to an unidentified customer in November 2012, as well as the first five 747-8I passenger planes to **Air China** in September 2012. The lack of large volume sales since 2006 shows weak demand for the largest of **Boeing's** aircraft line. The manufacturer advised the **U.S. Securities and Exchange Commission (SEC)** that it will be forced to cut its current two-per-month production rate or build white-tail 747-8s after 2013. "If we are unable to obtain orders for multiple Freighter aircraft in 2013, consistent with our near-term production plans, we may be required to take actions including reducing the number of airplanes produced and/or building airplanes for which we have not received firm orders," **Boeing** said. More succinctly, it faces a number of unsold production slots for 747-8 Freighters and Intercontinental passenger planes in 2014. **Boeing** will build down its backlog of 39 747-8Fs and 28 747-8Is in only 34 months. So far, weak demand for cargo capacity and less than expected interest in the 747-8I have frustrated the sales staff. **Boeing** said it will continue to focus on reducing travelled work, improve supply chain efficiency and implement more cost reductions. "If market and production risks cannot be mitigated, the program could face an additional reach-forward loss that may be material," a spokesman said. **Boeing** is working hard to sell more 747-8s to carriers in the Asia-Pacific region. The airplane's capacity and range are best-suited for long-haul routes between the large cities along the Pacific Rim. **Airbus** faces less of a problem, having only 164 A380s in backlog and a production rate of 2.5 per month. It will fill its current backlog in July 2018.

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400 freighters back to **Boeing** and the option to convert four new 737 NG orders to one additional 777-300ER, the airline said. The **Air China** plans to expand its capacity to meet the fast growing demand in Asia-Pacific and China. The contract must be approved by the **Chinese Government**. **Air China** previously ordered five 747-8Is, 19 777-300ERs and 83 737-800s.

Ryanair to Buy 175 737-800 NGs. The airline announced its commitment today to order 175 737-800s for the airline's fleet expansion. The deal will be worth \$15.6 billion at list prices when finalized. The cut-rate deal keeps **Ryanair** as an all-**Boeing** customer. Approximately 75 of the new aircraft will replace the oldest of its fleet of 305 737-800s. The airline will grow to more than 400 airplanes by 2018, and it will carry more than 100 million passengers across Europe per year. The new jets are scheduled for delivery between late 2014 and 2018. The deal will be funded through cash flow and debt, while some aircraft will be sold and leased back. **Ryanair** currently has more than \$3 billion in cash on hand. The airplanes will be powered by CFM56-7BE-engines. It is not considered a firm order yet and will be posted on **Boeing's** website when the final contract is signed. It will be **Boeing's** biggest European sale and will let the Dublin-based carrier add discount flights in markets vacated by full-service rivals. The airline's CEO **Michael O'Leary** said, "Today's order is very much an interim order and a forerunner for what I very much hope will be an order for MAX aircraft once our teams finish their study." **Ryanair** may buy as many as 200 737 MAX aircraft later this year, becoming a "lead customer" for the re-engined MAX. A **Ryanair** MAX order would help **Boeing** catch up to **Airbus's** A320neo, which surpassed 2,000 sales in March and will enter service in late 2015. **Airbus's** narrow-body production line is sold out until 2018 so it was unlikely for **Ryanair** to get the discount on the A320neo. The airline bought 100 737-800s in January 2002 and exercised 120 options between August 2002 and December 2009. It negotiated a heavy discount for those purchases, and won similar terms at "slightly higher prices" for this order, Mr. **O'Leary** said. The last of 348 previously-ordered 737-800s were delivered in December.

Swiss International Airlines, a subsidiary of the **Lufthansa Group**, announced it will order six 777-300ER aircraft, valued at \$1.9 billion at current list prices. The order will be posted to the **Boeing Orders & Deliveries** webpage after a firm contract is signed. The 777s will be the first **Boeing** aircraft in **SWISS'** fleet since it retired its 747-300s a decade or more ago. **SWISS** currently operates seven A319s, 23 A320s, seven A321s, 13 A330-300 and 15 long-range A340-300s. **Swiss European Airlines** flies 20 Avro RJ 100 aircraft. The 777-300ER is the largest long-range twin-engine commercial airplane in the world. It can seat up to 386 passengers in a three-class configuration and has a maximum range of 7,825 nautical miles (14,490 km). The new 777s will replace the six leased A340s in **SWISS'** fleet that were delivered between 1996 and 1999. The Swiss flag carrier currently serves 69 destinations in 37 countries from Zurich, Basel and Geneva international airports.

The Boeing Board of Directors is likely to launch the updated 777X in April. The manufacturer made conditional offers to three airlines, **Emirates Airline**, **International Consolidated Airlines Group (IAG)**, and **Japan Airlines**, to become the launch customer. The offers are contingent on the board's approval and finalization of price and technical considerations. The first of the two new 777 models could seat up to 400 passengers and would be available by 2019. The 777X's fuselage will not be significantly stretched, but **Boeing** will reshape the cabin walls and overhead bins to comfortably accommodate ten-abreast, economy-class seating. The 777 was launched in 1995 with nine-abreast seating in tourist class. In March, **Boeing** spokesman **Marc Birtel** said that the company hasn't set a

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firm timeline for the launch of the new 777 program, but it has often talked about a possible entry into service ñaround the end of the decade. Further, **Boeing** is ñaggressively moving forward per our plan and working with our customers on the requirements [of the 777X], he said. ñCustomers are happy with the airplane design and we are pleased with where we are in the process. So far, the airlines have not commented on any discussions with **Boeing**. **Emirates** CEO **Tim Clark** only said that the manufacturer was close to offering the updated jetliner. A second 777X model could be ready in 2021, carry around 350 passengers and would be a direct replacement for the popular 365-seat 777-300ER. It will compete directly with the A350-900 (due in 2014) and larger A350-1000 which could enter service in 2017. The 777X will be powered by the **General Electric** GENx as the exclusive engine for the airplane. ñThis decision to work with **GE** going forward reflects the best match to the development program, schedule and airplane performance, said **Bob Feldmann**, **Boeing's** vice president and general manager of 777X Development. The new 777 could feature a carbon fiber composite wing, based on the 787 wing, as well as a new flight deck with larger displays.

Air Lease Corporation (ALC) CEO Steven Udvar-Hazy Wants Longer Range 787-10X. **Boeing** proposed that the 787-10X Dreamliner would fly between 6,700nm (12,400km) and 7,000nm, (12,955km), but Mr. **Udvar-Hazy** expected more range. The manufacturer agreed to slightly increase the range to at least 7,100nm, and will raise the thrust requirement and gross weight of the 787-10X to accommodate the extra range. **General Electric** and **Rolls-Royce** confirmed they can meet the higher thrust requirement for the 7,100nm-range level, Mr. **Udvar-Hazy** said at the **International Society of Aircraft Trader (ISTAT)** conference in March. The thrust increase was necessary to lift a higher-gross weight aircraft into the air. **Boeing** did not comment about the additional range of the 787-10X, because the -10X's official launch has been delayed until the 787-8's battery crisis is dealt with. The airframer expects to formally launch the stretched aircraft later this year. Apparently, the 777X will be officially offered for sale in a month or so, beating the 787-10X to the market, but the upgraded 787 will have an entry-into-service date of 2018, one year earlier than the 777X. The **Boeing** board of directors intended to announce the 787-10X launch in December 2012.

Regional Report

Bombardier Aerospace Unveiled First CSeries Jet at its Mirabel facility near Montreal, Canada, on March 7. The prototype is scheduled to make its first flight by the end of June 2013, and the first production CS100 will enter service in mid-2014. **Bombardier** invested \$3.4 billion to challenge industry leaders **Airbus** and **Boeing** in the 100-150 seat market segment. The two have sold more than 20,000 single-aisle aircraft since 1965, but they have recently ceded the under-125 seat market to the regional jet manufacturers **Bombardier** and **Embraer**. **Boeing's** lowest capacity 737 is the -700 model that carries 127 passengers in twin class-configuration, while **Airbus' A319** seats 124 in two cabins. China and Russia are also building the C919 and MS21 respectively, to challenge the duopoly in a \$2 trillion share of the global jet market over the next 20 years. Currently **Bombardier** is the fourth-largest plane maker in the world, and it builds regional jets and executive aircraft. Its new 110-seat CS100 is priced at \$62 million and the 130-seat CS300's list price is \$71 million. The comparable A319neo costs \$88.8 million, and **Airbus** has firm orders for 26 to date. The 126-seat 737 MAX-7 is list priced at \$82 million, and **Boeing** has not won any firm orders yet. As of March 13, **Bombardier** booked firm orders for 66 of the smaller CS100 and 82 of the 130-seat CS300. At the unveiling ceremony, the manufacturer announced that it now offers a high-density seating option for the CS300. The airplane can be delivered with up to 160 tourist-class seats, or it can be retrofitted after the plane enters service. **Lufthansa Group**

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was the airline launch customer for the CS100. It ordered 30 aircraft and optioned another 30; the CS100s will be operated by **Swiss European Air Lines**, in 125-seat configuration, and will replace 20 AVRO RJ100s. At the ceremony, **Bombardier** hinted that it had a customer for another 30 aircraft, bringing its firm orders close to 180. Some analysts say that CSeries sales have been slow because the company does not entice customers with deep discounts or provide financing offers and walk-away rights like **Airbus** and **Boeing**. **Bombardier** CEO **Pierre Beaudoin** said the company does not need to offer discounts because the CSeries offers meaningful competitive advantages to airlines. The airplane offers 15 percent cash operating cost advantage and 20 percent fuel burn advantage over the A319neo and 737 MAX-7 because its airframe is lighter. The CSeries will be up to 12,000 pounds (5,443 kg) lighter than its rivals in the same seat category. The CS100 has a maximum takeoff weight (MTOW) of 59 metric tons and the CS300's MTOW is 65 metric tons. The A319's MTOW is 76 metric tons (due to greater fuel capacity) and the 737-700's MTOW is 71 metric tons. The first of the larger CS300s will enter service late in 2014, while the first A319neo will be delivered in late 2016 and the first 737 MAX will be ready in 2017, so the CSeries will beat its rivals to the market. **Bombardier** expects CSeries sales to pick up once the aircraft flies, and it is aiming to book 300 firm orders by mid-2014. It has commitments for up to 240 CSeries jets that could be confirmed into orders. The company forecast a world-wide market for 6,900 aircraft in the 100- to 149-seat category, between 2012 and 2031. It optimistically predicts the CSeries will capture about half of deliveries in the segment. In spite of the CSeries's attributes, the manufacturer has to overcome the airlines' tendency to stick with their existing suppliers, because their pilots will not need to be retrained, spare parts are plentiful, and repair stations are already qualified to service the current fleet. That inertia will be hard to overcome. The manufacturer sees **Air China**, **All Nippon Airways**, **Delta Air Lines**, **EasyJet**, **Japan Airlines**, **JetBlue**, **Southwest Airlines**, **Turkish Airlines**, and **Qatar Airways**, as potential customers.

Bombardier launched its extra capacity seating option that will increase seating in the CS300 up to 160 passengers. This will provide airlines with greater payload and range flexibility, and increase productivity. The manufacturer confirmed that **airBaltic**, Latvia, selected the 148-seat higher-density version for some or all 10 of its CS300s. **Lufthansa Group** has been interested in the higher-capacity version of the CS300. Its **Swiss European Air Lines** subsidiary, which will accept its first of 30 CS100s in early 2015, was also considering the extra capacity version of the CS300. **Swiss European** has 30 CS100 options that can be picked up as the larger aircraft. The airline chose to fit its CS100s with the maximum of 125 seats, so moving up to a 148-seat configuration of the CS300 will not be a giant leap for the carrier. The extra capacity seating option calls for the addition of a second pair of over-wing exit doors. The exit doors can be retrofitted in aircraft after delivery if customers need to increase capacity in the future. The launch of the 160-seat version caused **Bombardier** to add 1.97 feet (0.6 meters) to the length of the CS300 fuselage. The additional length and seating capacity caused the company to raise the maximum take-off weight by 2.4 percent, to 144,000 pounds (65,300 kilograms). This tweak of the design delayed the CS100 first flight by several months. The CSeries is powered by **Pratt & Whitney PurePower** PW1500G geared turbofan engines and will be the first plane in service to be propelled by the new generation of engines.

Embraer 2012 Revenues totaled \$6.178 billion, which was in line with the company's estimated annual revenue guidance range of \$5.8 to \$6.2 billion. The manufacturer generated \$525 million operating cash

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in the fourth quarter of 2012, which increased the company's net cash position to \$312.9 million at the end of 2012. The net income was \$123.2 million in the period and totaled \$347.8 million for 2012.

Engine News

AviancaTaca Holdings, Panama, chose the **CFM LEAP-1A** engine to power the 33 **Airbus A320neo** Family aircraft and **CFM56-5B** engines for the 18 **A320ceo** Family aircraft that it ordered in June 2011. The airline group opted to take the comprehensive engine maintenance service package that **CFM** offers. The agreement has a combined value of \$2.7 billion, at list price. **AviancaTaca** signed a 15-year RPFH (Rate per Flight Hour) agreement to support both the new **CFM56** and **LEAP** engine fleets under which **CFM** will guarantee maintenance costs on a dollar per engine flight hour basis. The **A320ceos** are scheduled to arrive between 2014 and 2016, while the **A320neos** will be delivered from 2017 to 2019. The new aircraft will be used for growth and to replace elderly aircraft in their fleets. **Avianca** has been a **CFM** customer since 2006 and currently operates a fleet of 66 **A320** Family aircraft powered by **CFM56** engines. The airline merged with **TACA** in 2010 to create one of the largest carriers in Latin America. They transported more than 30 million passengers in 2012. **CFM International** stated in a press release that, "LEAP and **CFM56-5B** engines are products of **CFM**, a 50/50 joint company between **Snecma (Safran)** and **GE**. **CFM**, the world's leading supplier of commercial aircraft engines, has delivered nearly 25,000 engines to date. The **LEAP-1A** has been selected to power more than 50 percent of all **A320neo** orders to date for which an engine selection has been announced. The **CFM56-5B** engine powers every model of the **Airbus A320** family and has been chosen to power nearly 60 percent of all **A320** aircraft in service or on order."

Bombardier Aerospace sold four more Dash 8 Q400 NextGen airliners to **Nordic Aviation Capital A/S (NAC)** of Billund, Denmark. The contract was valued at approximately \$134.77 million (\$33.7 million each) at the published list price. The Dash 8s will be leased to **airBaltic** of Riga, Latvia. The airline already operates eight Q400 NextGen turboprops that it acquired directly from **Bombardier**. Recently **NAC** purchased and leased-back 10 Q400 aircraft to **Marfin Investment Group** for operation by **Olympic Air**. **NAC** purchased and leased-back eight Q400 NextGens with **EuroLOT**, Poland, and bought 12 CRJ1000 NextGen regional jets that will be leased to **Garuda Indonesia**.

China Aircraft Leasing Co. (CALC) placed a firm order for 50 **CFM56-5B** engines to power the 25 **A320** Family aircraft that it ordered in 2012. The \$500 million (at list price) contract also covered spare engines. The Hong Kong-based aircraft leasing company will take delivery of the airplanes between 2014 and 2016. **CALC's** new Airbuses will be powered by the **CFM56-5B Performance Improvement Package** engine, which first entered service in October 2011. The lessor purchased one **A319**, 27 **A320s** and eight **A321s** in November 2012, and it is assumed that the other eleven Airbuses will be powered by **IAE V2500** engines. The first aircraft will be placed with Chinese airlines, but **CALC** intends to diversify its portfolio and to expand into the rest of Asia, as well as to Europe and the United States. The company was founded in 2006. It plans to grow its fleet to 100 aircraft by 2015. Until last year, **CALC's** fleet was acquired through new aircraft purchase-and-leaseback transactions, as well as operating lease agreements of both new and used aircraft.

Pratt & Whitney (P&W) may offer to build a bigger PW1000G geared turbofan engine for the **Airbus A350 XWB** to compete with the **Rolls-Royce (RR)** Trent XWB. **Rolls** currently has a monopoly on the new aircraft. So far, **P&W's** plan is not public, because no one involved in the decision will comment.

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The program may be approved this year. **General Electric** declined to build an engine for the A350, leaving the market exclusively to **Rolls-Royce**. The monopoly has kept **Air France** from firming up its commitment for 25 A350s, because it wants the right to maintain the Trent XWB turbines in its own maintenance shops. **Rolls-Royce** wants to protect its profitable after-sales income. The entrance of a new engine into the market would give **Air France** more leverage to deal with **Rolls**. **Pratt & Whitney's** new engine will have to be more than twice as big and powerful as its current PW1000G. Now that the PW1000G has been certified, the manufacturer can re-allocate its engineering resources to the widebody market, and study how to build the larger engine. **P&W** was locked out of the 777-300ER and 777X programs, but it can still offer a competitor to the Trent XWB on the A350-800 and -900. Unfortunately, it will be a very up-hill battle because 617 **Rolls**-powered A350s have been ordered.

Turkish Airlines (THY) ordered **General Electric** CF6-80E1 engines for the two new **Airbus** A330-300s that it ordered in January. The deal included options for three A330 aircraft. The maintenance, repair and overhaul of these additional CF6-80E1 engines will be covered under a 12-year **OnPoint** solutions agreement, which was announced in November. The total value of the engines and **OnPoint** solutions agreement for the five CF6-powered A330s was more than \$300 million. In November 2012, **THY** signed a contract to buy CF6-80E1 engines to power its fleet of 15 A330-300s.

Willis Lease Finance Corporation will purchase and lease back 19 jet engines with **Scandinavian Airlines System (SAS)**. **Willis Lease** will purchase 11 of the engines and Dublin-based **Willis Mitsui & Co Engine Support Limited** will purchase the other eight engines. The purchase lease-back transaction was valued at approximately \$120 million and was completed in mid-March.

Order Changes and Cancellations

Airbus Order Shuffle. In February, Chinese lessor, **ICBC Financial Leasing**, exchanged 12 of its 89 A320 orders for two A319 orders and 10 A321s. **TAM**, Brazil, switched its last six A319 orders and 17 of 111 A320 orders to the A321 type. It now has taken delivery of all 25 A319s and has ordered 94 A320 (61 delivered) and 47 A321s (nine delivered). **GECAS** dropped one of its 292 A320 orders and purchased its 21st A321. **Intrepid Aviation Group** cancelled three of its dozen A330-200F freighters and purchased its sixth A330-200 and two more A330-300s, for a total of five. **Intrepid** originally ordered 20 A330Fs and has not taken delivery of any of them yet. **Airbus** has seen its A330F freighter program shrink to only 49 sales, with 17 delivered. In January, two unidentified customers cancelled **Airbus'** last two orders for the A318 Elite executive jet. The manufacturer built only 79 of its smallest single-aisle aircraft, delivering 60 to airlines and lessors and 19 to corporate and government customers.

Airbus said that it no longer intends to deliver one of its prototype A380-841s (SN 002) to the **Kingdom Holding Company**, Saudi Arabia. The manufacturer did not list a cancellation on its **Orders and Deliveries** web page. The airplane flew in April 2005 and has been stored at Toulouse since 2007. In November, 2007, **Airbus** stated in a press release, ñHRH Prince **Alwaleed bin Talal bin Abdulaziz Al Saud**, Chairman [and owner] of **Kingdom Holding Company**, has signed a firm order with **Airbus** for an A380 Flying Palace, becoming the first customer for the VIP version of the new double-deck airliner. The A380 will be powered by **Rolls-Royce** Trent 900 engines. It will undergo cabin outfitting at

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a yet to be chosen completion center. The airplane was priced at \$485 million, which presumably included the VIP cabin installation.

Boeing's Order Cancellations and Changes.

Boeing did not announce any cancellations in January, but none the less, **Qantas Airways** cancelled one of the 15 787-8 Dreamliners that it ordered in March 2006. The airline said it was uncertain about the growth prospects of its Australian **Jetstar** unit's long-haul business. The first of the remaining 14 Dreamliners will arrive in Australia in mid-2013. They will be operated by **Jetstar** on low-cost, long-haul routes. The carrier already flies 11 A330-300s which will be returned to the parent airline's domestic fleet. The extra three 787s will be used for expansion. **Qantas** made the decision last December, before the battery problems grounded **Boeing's** flagship aircraft. **Qantas** remains committed to the Dreamliner. CEO **Alan Joyce** said, "We are using the flexibility in our agreement with **Boeing** to cancel a firm order knowing that we can replace it with one of our 50 options for this aircraft down the track." The airline committed to buy 45 Dreamliners, and took 20 options and purchase rights for an additional 50 787s in December, 2005. It retains the 50 purchase rights for 787-8 or 787-9 aircraft to be delivered after 2016.

Sukhoi Dropped Kartika Airlines' order for 30 Superjet 100s in January. The airline contracted to purchase the SSJ100s for \$900 million in 2010. The sale was cancelled because the airline did not meet the financial requirements of the deal, a **Sukhoi** executive said. "Kartika wanted to buy 30 planes but until now they haven't met the requirements," **Alexander Shamkov**, **Sukhoi's** regional director for Southeast Asia told reporters. A Superjet crashed during a promotional flight in Indonesia in May 2012, but the airline said it still wanted the planes. The Indonesian investigators blamed pilot error and Jakarta air traffic control's lack of a minimum safe altitude system for the crash of the demonstrator aircraft.

Cathay Pacific Airways, Hong Kong, canceled its order for eight 777F-200 freighters in March, and replaced them with the purchase of three 747-8 freighters worth \$1 billion at list prices. The carrier took options to purchase five 777-200 freighters at a later date. At the same time, **Air China Cargo** signed a commitment to buy eight 777Fs, so **Boeing's** 777 backlog will not change. **Air China Cargo** will trade in seven 747-400 converted freighters **Cathay** said in the statement.

Leasing Companies

GE Capital Aviation Services Limited (GECAS) will lease three A320s to **Vueling Airlines** for the expansion of the low-cost carrier's fleet. The first A320 was scheduled for delivery in March. By the summer of 2013, **Vueling** will operate a fleet of 70 aircraft to more than 100 destinations in Europe, the Middle East and northern Africa.

International Lease Finance Corporation (ILFC) agreed to purchase and lease-back 15 new 737-823/Ws and one new 777-323ER with **American Airlines**. The 737s are scheduled for delivery between May 2013 and December 2014, and the 777-323ER (SN 31546) was delivered in March. **ILFC** and **American** signed a similar sale-leaseback agreement for 15 737-800s in 2011 and the last of those aircraft were delivered in 2012. **ILFC** Chief Executive Officer **Henri Courpron** said, "We're pleased to strengthen our partnership with **American** by strategically leveraging our strong financial position to support the airline's efforts to enhance its fleet and increase network flexibility. This new agreement is

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another important achievement in **ILFC's** efforts to complement its order book opportunistically with sale-leaseback transactions.

FLY Leasing, Ireland, sold six **Boeing** 717-200s that were manufactured in 2001. **FLY** acquired the aircraft in 2011 as part of a 49-aircraft portfolio transaction. **Colm Barrington**, CEO of **FLY** said, "The sale of these non-core aircraft will result in a gain over our current book value and generate gross cash proceeds of \$17 million." The lessor was selling older aircraft as part of its strategy of selling non-core aircraft and reinvesting in younger, more popular models to maintain a fleet of modern, fuel-efficient commercial aircraft," he said.

Avolon published a comprehensive analysis of the expected market impact of the transition to new generation **Airbus** A320neo and **Boeing** 737 MAX single-aisle aircraft families. **Avolon** Chief Technical Officer **Lucas Mollan**, one of the report's co-author, commented that the transition from the current generation of jets to their more efficient successors was the subject of much debate in the aviation industry. "The successors to current generation A320neos and 737 NGs are an evolution of the existing models rather than fundamentally new aircraft types. They will deliver fuel efficiency advantages deriving from advances in engine technology, with no other material changes to structure or performance. Our analysis confirms that the neo and MAX do not pose a disruptive threat to the long-standing competitive balance between the two aircraft families and that the transition to the new aircraft will be orderly," he said. The other co-author, **Dick Forsberg**, **Avolon's** Head of Strategy added: "The pattern of customer orders confirms that there is still strong demand for current aircraft models, which bodes well for their continued liquidity and investment appeal. We believe that it will take 8 years from entry into service for the MAX and neo to build a 35 percent share of their respective family fleets, reflecting the very large installed base of current generation aircraft. Consequently, neo and MAX are not expected to directly impact values of current generation aircraft for a number of years."

Airline News

International Air Transport Association (IATA) no longer publishes passenger and cargo traffic numbers that are easily published in chart. **IATA** published global air travel demand statistics for January which showed the upward trend in passenger travel continues. Traffic demand rose 2.7 percent from January 2012, half of a point more than the 2.2 percent

International Air Transport Association January Global Traffic Growth.

Jan 2013 vs. Dec 2012	RPK Growth	ASK Growth	Pax Load Factor	FTK Growth	AFTK Growth
International	3.7%	2.7%	77.6%	4.5%	2.3%
Domestic	1.1%	1.4%	76.4%	7.5%	1.3%
Industry	5.0%	2.8%	77.9%	5.0%	2.1%
Year to Date 2013 vs. 2012	RPK Growth	ASK Growth	Load Factor	FTK Growth	AFTK Growth
International	6.1%	4.2%	78.9%	1.9%	0.9%
Domestic	4.0%	3.8%	79.5%	1.1%	-1.4%
Industry	5.3%	4.0%	79.1%	-1.5%	0.4%

RPK: Revenue Passenger Kilometers measures actual passenger traffic

ASK: Available Seat Kilometers measures available passenger capacity

PLF: Passenger Load Factor is the percent of **ASKs** used. In comparison of 2009 to 2008, **PLF** indicates point differential between the periods compared

FTK: Freight Tonne Kilometers measures actual freight traffic

AFTK: Available Freight Tonne Kilometers measures available total freight capacity

growth of capacity. The load factors stood at 77.1 percent. The growth of air travel demand in China has actually fallen from 5.3 percent in January 2012, to an estimated 3.5 percent in January 2013. "Passenger travel is growing in line with business confidence levels. Recent months have seen some positive economic signs emerge in both the U.S. and China, and the Eurozone crisis seems to have stabilized. Of course risks remain; the impact of U.S. budget cuts has yet to play out and fuel prices are high. But even with those headwinds, real and potential, we still see underlying support for continued and potentially even strengthened growth," said **Tony Tyler**, IATA's Director General and CEO. He commented on the air freight business, saying that it showed some encouraging signs, "But it's too early to be overly optimistic. While the decline has stopped, overall volumes are still below the levels of 2010 and 2011. Load factors are low, and the global economy is fragile. Our forecast remains for modest demand growth of 1.4 percent. But with weak load factors, yields are going to continue to be under severe downward pressure."

Etihad Airways will purchase three pairs of Heathrow slots from **Jet Airways** for \$70 million. The deal was structured as a sale and lease back agreement, where **Jet Airways** will continue to operate flights to London utilizing these slots. The sale strengthens the existing code-sharing relationship between the two airlines, dating from July 2008. **Etihad Airways** continued to discuss a 24 percent purchase of **Jet Airways**. **Jet** reportedly agreed to give up some management control, and several board seats to **Etihad**. The deal has been stalled because Abu Dhabi flag airline wanted to review its investment plan. Neither airline has officially commented on the deal for more than a month.

IATA Posts March Jet Fuel Prices. The association updates the world's average jet fuel price each week. On March 1 the average price of fuel was \$3.224 per gallon. The fuel price was \$3.329 per gallon on February 8. The March price was 0.8 percent higher than in the previous month, and was 2.0 percent less than in March 2012. The price of fuel is affected by location. It is only \$3.132 in the Middle East region and as high as \$3.34 per gallon in Latin America. **IATA** forecast that the global airline industry's fuel bill will total \$134.0 billion in 2013. This is an increase of \$13 billion over 2012. Fuel cost only 87 cents per gallon in 2000.

AirAsia won approval from the Indian **Foreign Investment Promotion Board (FIPB)** to form an airline joint venture, which includes the **Tata Sons Ltd.** and **Telestra Tradeplace Pvt.** Forty-nine percent of the airline will be owned by **AirAsia**, **Tata Sons** will hold 30 percent in the venture and **Telestra** 21 percent. The new airline, **AirAsia India**, will be the country's first foreign investment proposal after airline ownership rules were eased in September, 2012. **AirAsia** will invest about 800 million rupees (\$14.6 million) to start **AirAsia India's** operations. The low-cost, startup will need to get a license from the **Directorate General of Civil Aviation (DGCA)**. Other carriers in India will seek outside investment to raise money needed for expansion. **Etihad Airways** has been negotiating to invest in **Jet Airways**, India's biggest carrier by market value. The **DGCA** may take up to eight months to approve **AirAsia's** permit because of the many steps it must take, including the inspection of the aircraft. Indian government bureaucracy is notoriously slow. **AirAsia** and its partners will invest \$9 million shortly after winning approval. The entry of **AirAsia India** will increase competition for **Jet Airways** and the domestic market leader, **IndiGo**. The current Indian airlines oppose **AirAsia India's** aircraft purchase plan, saying they could lobby the ministry to block the airline if it tries to acquire too many airplanes. The new airline will operate from Chennai and will serve smaller cities in the south of India starting late this year. It will initially fly three or four A320s. There has been opposition to the

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joint venture. Aviation Minister **Ajit Singh** said he would have been happier had the **Tatas** launched their own airline. The rules allowing up to 49 percent foreign ownership in domestic carriers were for existing airlines and not for a new company, he said. The civil aviation ministry may cite **AirAsia's** losses on South-East Asian routes and lack of airport infrastructure in the cities that **AirAsia India** wants to serve, as excuses to delay or deny key permissions. The new joint venture will need an air operating permit and a no-objection certificate from the ministry. The ministry may object due to the precarious state of Indian airline profits. The startup also needs basic infrastructure at airports, including parking bays and landing slots.

The Australian Competition and Consumer Commission said in February that **Virgin Australia's** plan to buy 60 percent of **Tiger Airways Australia** would risk muted competition following the reduction in the number of airline groups within Australia. It might approve the deal if **Virgin** would triple **Tiger's** fleet from the current 11 A320s to 35 aircraft by 2018. **Virgin Australia** is the country's second-largest carrier, but the flag carrier **Qantas** controls 65 percent of the market. **Virgin** said it will drop its bid to buy the third-largest airline if the anti-trust regulator specifies a minimum fleet number for **Tiger**. **Virgin's** Chief Executive Officer **John Borghetti** said, the airline would not give "commitments that are unrealistic" in order to buy **Singapore Airlines'** share of the small budget carrier. He said if the deal was not "attractive for us, I have no problem in not continuing. If there are conditions imposed on the deal that I don't believe are prudent for this company to commit to, we will walk." The purchase of loss-making **Tiger** was important in Mr. **Borghetti's** plans to challenge **Qantas** in the Australian domestic market. The airline was adding business class seats, had upgraded airport lounges and opened new routes to the "Outback." **Qantas** currently has the largest shares of leisure flights, corporate accounts and routes in remote areas. **Virgin** recently doubled its business class revenue with corporate customers, but **Qantas** still has 84 percent of the revenue in the corporate market. Also critical to **Virgin's** quest for mass, is its purchase of **Skywest Airlines** for A\$95 million (\$97 million) in cash and shares. **Skywest** is a regional carrier based in Western Australia. **Virgin Australia** raised the money by selling newly-issued shares to **Singapore Airlines** for A\$105 million (\$108 million), giving **Singapore** a 10 percent stake. **Tiger Australia** issued an ultimatum that it would not seek new investors if the anti-trust regulator does not approve the purchase by **Virgin**. It said in a statement that, "Virgin is the right party to partner **Tiger**, and will be able to strengthen **Tiger Australia**." **Tiger Airway's** parent in Singapore said it would pull out of Australia if **Virgin** did not buy into the budget airline. The implication was that if **Tiger** would fold up, it left Australia with only two major airlines.

AirAsia Philippines will acquire 49 percent of the larger regional carrier **Zest Airways**, as part of its plan to make a profit in the Philippines. **AirAsia**, Malaysia, is expanding aggressively into new markets to find places to put its hundreds of A320s. Recently the management said it will focus on its core Indonesian, Malaysian and Thai routes, then will grow its Japanese and Philippine routes to profitably. **AirAsia** CEO **Tony Fernandes** said, "This strategic partnership is all about growing the market." **AirAsia Philippines** is 40 percent owned by **AirAsia**, and will swap shares to acquire its stake in **Zest Airways**. **Zest's** owner, **Alfredo Yao**, will get a 15 stake in the **AirAsia** unit. It flies one A319 and 10 A320s from its base in Manila's **Ninoy Aquino Airport** to other cities in the Philippines, plus Shanghai and Taipei. **AirAsia Philippines** flies just two A320s from **Clark International Airport**, but it is backed by **AirAsia** with its more than 100 A320s with another 356 more on order. It flies to Davao and Kilibo, the Philippines, Kuala Lumpur and Kota Kinabalu in Malaysia, Hong Kong, Singapore, and Taipei.

Korean Air was the only bidder for a share of the state-owned **Czech Airlines (CSA)**. The Czech government offered to sell the airline to approximately 50 airlines in December, but only **Korean Air** and **Qatar Airways** had expressed interest. The Korean flag carrier officially confirmed that it submitted a bid, but the Czech finance ministry declined to comment. They offered several million dollars to buy 44 percent of **Czech Airlines**, and said it would not be involved in its management. **CSA** lost 241 million crowns (\$12.19 million) in 2011. It operates 17 A320 Family aircraft and eight ATR 42s, and ATR 72s on intra-European routes. It will acquire an A330-300 in May.

LATAM Airlines Group chose to join the **oneworld** airline alliance. **LAN**, Chile, was already a member of **oneworld**, and now that **TAM**, Brazil, has been taken over, it said it would leave the **Star Alliance** during the second quarter of next year. **LATAM** was formed in 2012 and is Latin America's biggest airline. As a pre-condition of the merger, Chile's regulator forced the airline to quit one of the two alliances. **LATAM's** board saw **oneworld** as "the most adequate for the interests of the company and [it] has the most synergies for **LATAM Airlines Group**. It also offers the best benefits, most connection and products to our passengers," the airline said in a statement. **TAM** expects to see a boost in its international and domestic traffic when Brazil hosts the 2014 soccer World Cup and the 2016 Olympics. **LATAM** operates in Argentina, Brazil, Colombia, Chile, Ecuador and Peru, and flies to Europe and North America.

U.S. Export-Import Bank Loan Guarantees.

The **Ex-Im Bank** will guarantee \$1.1 billion in financing, provided by New York's **Apple Bank for Savings**, to fund the export of a fleet of 737-900ER aircraft to Indonesia's largest carrier **Lion Air**. The financing will support a portion of the airline's outstanding orders for 113 737-900ERs. The airline ordered 180 737-900ERs between June 2005 and February 2012. **Ex-Im Bank** Chairman and President **Fred Hochberg** commented, "Ex-Im Bank is pleased to support part of **Lion Air's** historic purchase order of **Boeing** extended-range aircraft. This is a tremendous opportunity for American exporters and will help to sustain thousands of jobs in the U.S. aerospace industry for years to come." The **Export-Import Bank** authorized more than \$190 million in financing to support the export of several of six ordered **Boeing** 737-900ERs to **El Al Israel Airlines (El Al)**. Mr. **Hochberg** said, "Ex-Im has a long and productive history of working with **El Al**, dating back to 1960."

Bankruptcy of the Month

BH Airlines, Bosnia, was grounded in March and could be forced into bankruptcy due to its bank debt. The airline was based in Sarajevo, and was owned by Bosnia's autonomous Muslim-Croat Federation. **Turkish Airlines** withdrew from the airline in June, 2012 and handed over its 49 percent stake to the government. The airline currently owes 7 million Bosnian marka (\$4.6 million) to the Bosnian branch of **Hypo Alpe Adria Bank**, Austria. The airline owes 5.5 million marka back rent on two leased ATR 72s and 1.5 million marka from another loan. In February, the bank froze the airline's accounts, even though **BH Airlines** had nearly equal collateral deposited in the bank. The bank said **BH Airlines** delayed making lease payments. The airline was trapped by **Hypo Alpe Adria's** desire to pull out of southeastern Europe and shrink itself back to health. In 2005, **Hypo Alpe Adria** financed the lease of two ATR 72s, worth \$18.4 million. The airline paid back \$15 million and the planes are worth \$9 million today. **BH Airlines** offered to pay off the debt by selling the ATR 72s and the government would kick in another \$550,000 to keep the airline flying. The airline was helped by a 2.7 million marka

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annual government subsidy and some departure fees paid to **Sarajevo Airport**. **BH** wants to buy one A319 from **Airbus** to resume operations.

The Indian Government cancelled **Kingfisher's** international flying rights and domestic slots, so **Jet Airways** offered to buy six of the vacant slots from the aviation ministry. They applied to acquire six slots at Mumbai for four domestic and two international routes. **Kingfisher** used to operate daily flights to Britain, Nepal and Singapore, two flights a day to Bangladesh and Hong Kong, three flights a day to the UAE and Thailand, and five flights per day to Sri Lanka. These flights represented approximately 25,000 seats per week to these eight countries.

Vietnam's Privately-Owned Carrier Air Mekong suspended its flight operations on March 1, due to steep losses. The airline officially announced that it would restructure its fleet and personnel. It is the second private Vietnamese airline to stop operations. The local media said **Air Mekong** failed to make regular payments for their fuel prompting **Vietnam Air Petrol Company (Vinapco)** to demand settlement of accumulating debts. The airline flew niche routes that were not profitable trying to avoid direct competition with the state-owned **Vietnam Airlines**. **Air Mekong** flew from Vietnam's largest cities, Hanoi and Ho Chi Minh City, to seaside tourist resorts which were seasonal markets. Using 90-seat Bombardier CRJ900s, the airline flew the Hanoi-Ho Chi Minh trunk route against **Vietnam's** Airbuses which were twice as large. **Air Mekong** leased four CRJ900s from its part-owner **SkyWest Airlines** in the U.S. Due to the high lease costs and high wages paid to flight crew, the airline said the aircraft were not suitable and it wanted to look for replacement aircraft. **Air Mekong** was launched in October 2010 as the third private airline licensed in Vietnam. The first, **Indochina Airlines**, shut down after one year. **VietJetAir**, however, is still in business and it operates six A320s. Currently, **Vietnam Airlines** controls more than 80 percent of the domestic aviation market.

Kingfisher Airlines: The Incredible Zombie Airline. India's **Supreme Court** upheld a lower court decision that ordered the dying airline to pay 1.85 billion rupees in back wages and taxes. The debts must be paid immediately and it is not clear if **Kingfisher's** owner **Vijay Mallya** must pay the bill. The airline had begged the high court for three more weeks to come up with the money. The rumors that **Eithad Airways** would be a white knight and rescue the airline were unfounded. The airline's lenders said they may sell their shares in **UB Group's United Spirits** that were pledged as collateral. Disposal of the shares on the stock market, or in one lot to an outsider, may upset the proposed takeover of **United Spirits** by **Diageo** liquor company in Britain; they sought to buy the firm last year. The lenders had lost faith in **Mallya's** ability to turn around the airline. The banks told the press, "We are open to selling the shares to anyone who gives us the best price." Only 2 percent of **United Spirits** shares are in play. They were pledged to a **State Bank of India**-led consortium several years ago. **Kingfisher** has been in default for more than a year.

The Indian Government will now facilitate the repossession of airplanes from **Kingfisher**. Leasing companies and banks have complained that India was interfering in the process. **DVB Bank**, Germany, had to sue India's **Directorate General of Civil Aviation (DGCA)** to have two planes deregistered so they could fly them out of the country. **ILFC** was unable to repossess several planes because they were stranded by administrative hurdles and problems getting the aircraft ready to fly. In March, the **DGCA** decided to help remove obstacles to leasing companies' repossessing planes from airlines that cannot pay. This put India in compliance with international standards.

Cargo Pallet

Aeronautical Engineers (AEI) launched its **Passenger to Freighter Conversion Program** for **Bombardier** CRJ100 and CRJ200 aircraft after studying the program for over a year. The aircraft will be marketed as CRJ100SF and CRJ200SF Special Freighters. **AEI** paid for the design and development from its own pocket. The modification touch labor will be performed at **Commercial Jet** at the **Miami International Airport**. In addition to the CRJ100SF and CRJ200SF conversions, **AEI** became a **Bombardier** licensed **Third Party Supplemental Type Certificate (STC) Provider**. It plans to make the conversion available to its worldwide network of authorized conversion centers upon issuance of the **STC** by the **FAA**. **AEI** expects the initial certification to take two years and plans to certify the program with the **FAA**, **Transport Canada**, **EASA**, **CAAC** and Russian authorities. The CRJ100SF and CRJ200SFs will be fitted with a Large Cargo Door (LCD) that is 94 inches (2.39 meter) wide by 77 inches (1.96 meter) high. The CRJ200SF will carry a maximum payload of 6.7 tons. The total cabin volume will be 1,864 cubic feet (52.8 cubic meters). The freighter will be equipped with an **Ancra** cargo loading system which is capable of hauling pallets, containers or bulk loaded material. The Main Deck Cargo Door will feature **AEI's** proven hydraulic actuation and latching systems which has been installed on more than 370 freighters. The main deck will be converted to a Class ñEò cargo compartment, with a rigid 9G barrier, and the cabin windows will be replaced with lightweight aluminum window plugs.

Air Transport Services Group reported the merger of two of its airline subsidiaries, **Air Transport International (ATI)** and **Capital Cargo International Airlines** in March. The surviving airline, **ATI** is headquartered in Little Rock, Arkansas, and its operations center is in Wilmington, Ohio. The combined airline's management team is led by **ATI** President **Dennis Manibusan**. **ATI** currently operates seven Boeing 767 special freighters (five 767-200s and two 767-300s), three Boeing 757 freighters, and three DC-8-62/-72 combi (combination passenger and main-deck cargo) aircraft. The three DC-8s will be replaced with four 757 combis. **ATI** surrendered **Capital Cargo's** Air Carrier Certificate to the **Federal Aviation Administration**.

USA Jet of Belleville, Michigan, selected **Aeronautical Engineers (AEI)** to provide one MD-83SF 12 Pallet Passenger to Freighter Conversion. The MD-83 (SN 49791) was built in 1989 and is currently undergoing freighter modification at **Commercial Jet**, Miami, Florida. This was the first of 20 production MD-80SFs to enter the conversion process.

PEMCO World Air Services (PEMCO) started the conversion of the first two of 20 737-400s for **AERGO Cargo Solutions (AERGO)**. The first 737 entered the conversion line at **PEMCO's** Tampa facility and the second was flown to **HAECO Group's** **STAECO** facility at Jinan, China. **PEMCO** said both aircraft will become 737-400F 11-position, high-yield freighters capable of carrying a wide variety of containers or pallets, including: 88×125, 108×125, 96×125, military pallet, demi, LD3, AEH, 11,000-pound engine hauling pallets, and a smaller hazmat-capable container. The airplanes will be the world's only 737-400Fs that comply with the new fire hazard related hazmat regulations.

China Postal Airlines and **PEMCO World Air Services** announced the completion and redelivery of **China Postal's** latest **PEMCO**-converted 737-400F (SN 26337) freighter. This was the 10th **PEMCO**-converted airplane for China's national express mail service.

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TNT Airways S.A. sold two BAe146-200QTs (SN E2067 & E2078) to **KMD Leasing Ltd.** in Hong Kong. **Cabot Aviation** acted as remarketing agent on behalf of TNT.

Atlas Air Worldwide Holdings purchased a Boeing 777-FZN freighter for its dry-leasing subsidiary, **Titan Aviation**. The aircraft continues to be long-term leased by **AeroLogic GmbH**, Germany. **Norddeutsche Landesbank Girozentrale (NORD/LB)** provided financing for the 2010 vintage aircraft. **AeroLogic GmbH** was founded in September 2007 as a joint-venture cargo airline by **DHL Express** and **Lufthansa Cargo**. **AeroLogic** operates eight 777Fs; the other seven are leased from **Deucalion Capital**.

Military Market

Airbus Military A400M First Flight. The first production A400M (SN 007) flew from Seville, Spain, on March 6. The flight lasted five hours and 42 minutes. The A400M is a multi-role aircraft capable of Mach 0.72 cruising speeds at altitudes of up to 37,000 feet. The **French Air Force** is the launch customer for the aircraft, and will take delivery of its first A400M in May or June 2013. **Airbus Military** and **Thales UK** announced an 18-year contract with the U.K. **Ministry of Defense** to supply training services for A400Ms operated by the **Royal Air Force**.

Airbus Military received full **European Aviation Safety Agency (EASA)** Type Certification for the A400M Atlas on March 14. The A400M was the world's first large military transport to be designed and certified to civil standards from the beginning. The military certification has been ongoing and will be due in May or June. **Airbus** said the A400M underwent "exhaustive testing of its handling qualities throughout the flight envelope in normal and failure conditions" demonstrated outstanding performance in the heat of the Gulf, cold of Sweden and Canada, and at the high altitude of La Paz, Bolivia "and satisfactorily completed more than 300 hours of function and reliability testing to demonstrate the robustness of its TP400 engines and systems." **Airbus** has started "tests of more advanced military functions such as air-to-air refueling, air-dropping of supplies and paratroopers, and low-level flight" all with highly encouraging results. The five-strong fleet of "Grizzly" development aircraft has now completed some 4,800 hours in the air during more than 1,600 flights and will continue intensively to expand the A400M's military capabilities, the company said.

Technical

Flying Colours Corp., Peterborough, Ontario, will modify the interiors of seven CRJ700 NextGen aircraft. The fleet will be fitted with executive interiors over the next two years and delivered to an undisclosed Chinese client. **Flying Colours** will apply for new supplemental type certificates (STCs) and final certification will be completed in conjunction with the **Civil Aviation Authority of China**. The first aircraft was scheduled to arrive at **Flying Colours**'s completions, refurbishment and maintenance facility in the fourth quarter of this year. The final aircraft will be delivered in the first quarter of 2015. The modification of a CRJ700 NextGen aircraft will be a first for **Flying Colours**. It will be built on the extensive experience of its **ExecLiner** program which saw more than 12 CRJ200 regional airliners converted to executive VIP configurations, the company said.

AIRCRAFT DELIVERIES & SALES

Airbus

Airbus A318 & A319. Airbus delivered the last A318 in its backlog in February; **Universal Entertainment Corp.** acquired ACJ318-112 (SN 5478). **LAN Airlines** returned the last five of 15 A318-121s (SN 3469, 3509, 3602, 3635 & 3642) to their lessors, which leased them to **Oceanair/Avianca Brasil**. Only two A319s were delivered in February. **Germanwings** acquired two -132s (SN 5457 & 5467) and it has four more on order.

Airbus A320. Airbus delivered 23 A320s in February, including five to **Qantas Airways'** **Jetstar** family of airlines. **BOC Aviation** leased its first Sharklet-fitted -232/W (SN 5472) to **Jetstar Asia**. **AWAS** leased one new -232 (SN 5482) to **Jetstar Asia** and one -232 (SN 5489) to **Jetstar Airways**. **AWAS** has now leased eight A320s to the **Qantas Group**. **Qantas** leased Japan's first A320-232/W (SN 5492) with Sharklet wingtips to **Jetstar Japan**. The subsidiary also leased -232 (SN 5499) from **Qantas**. This airplane was the 100th A320 to be delivered to Japanese carriers. In the nine months since beginning operations in July 2012, **Jetstar Japan's** fleet has reached 10 aircraft and will grow to 24 A320s by the end of 2014. Airbus delivered 16 A320s in 2012, and will deliver 28 A320s to four Japanese operators in 2013. **IndiGo** accepted three -232/Ws (SN 5460, 5473 & 5476). The airline now operates four Sharklet-equipped and 62 standard A320s. **LATAM Airline Group** acquired its 52nd -214 (SN 5493) and sold it to **Lioca Leasing** for lease to **LAN Airlines**, Chile. Elsewhere in the Americas, **Avianca**, Colombia, received the first Sharklet-equipped A320-214/W (SN 5477) to be delivered in the hemisphere. **Avianca** has 70 more A320 Family aircraft on order, and all or some of them can be Sharklet equipped. **Volaris** accepted -233 (SN 5488). In Europe, **Lufthansa** bought its first -214/W (SN 5487). The German flag carrier was the first airline in Europe to operate A320s with the wing-tip devices, and it has 21 more Sharklet-fitted A320 Family aircraft on order through 2015. **Vueling** leased -232 (SN 5479) from **BOC Aviation**. **NIKI Luftfahrt** accepted -214 (SN 5464) and leased it to **Iraqi Airways**. **Iberia** took delivery of -216 (SN 5486). Airbus delivered six A320s to Asian airlines. **AirAsia** acquired its third -216/W (5505), and **Tiger Airways** received its 21st -232 (SN 5496). **SMBC Aviation Capital** leased -214 (SN 5511) to **Citilink**, Indonesia, and **China Eastern Airlines** leased one -232 (SN 5461) from **Aviation Capital Group**. **Airbus Tianjin Final Assembly Line** delivered one -232

March Sharklet Deliveries.

Monarch Airlines, the U.K.'s third-largest carrier, received its first Sharklet-equipped A320, and became the first U.K. carrier to benefit from winglets. The airline is a scheduled leisure airline, and it flies principally to destinations around the Mediterranean, the Canary Islands and winter ski destinations. Low-cost **Wizz Air Ukraine** received its first Sharklet-fitted A320, and was the first Ukrainian and Eastern European carrier to do so. **Wizz Air Ukraine** currently operates two standard A320s and will receive its second A320/W by this summer. Germany's **airberlin** group accepted its first A320 equipped with Sharklets, and it joined the fleet of **NIKI**, the Austrian subsidiary of the **airberlin** group. By 2015, the **airberlin** group will receive 13 more A320-Family aircraft with Sharklets. The first Sharklet-equipped A320 was delivered to **Vueling**, Spain's largest low cost airline. It was the first Spanish carrier to fly the airplane, and had an additional 60 A320 Family aircraft in its fleet.

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(SN 5352) to **Air China**, and one -214 (SN 5369) to **Shenzhen Airlines**. In the Middle Eastern region, **Air Arabia** accepted its 16th new -214 (SN 5502), and **Tunis Air** bought its 16th -214 (SN 5474).

Airbus A321. **Airbus** delivered nine A321s in February, including two -211s (SN 5444 & 5475) to **US Airways** for a total of 77. **Vietnam Aircraft Leasing** leased its eighth -231 (SN 5456) to **Vietnam Airlines**, and **Asiana Airways** leased -231 (SN 5462) from **ICBC Financial Leasing**.

Aviation Capital Group leased one -231 (SN 5459) to **Air Macau**, and one -211 (SN 5485) to **EVA Airways**. **China Eastern Airways** accepted one -231 (SN 5481). **Turkish Airlines** bought its 34th -231 (SN 5465), and **Saudi Arabian Airlines** accepted its 13th of 15 -211s (SN 5447).

GECAS leased one new A320-214 (SN 5378) to **Spring Airlines** on March 1, to expand the Chinese low-cost carrier's fleet to 33 A320s. The airline serves 34 destinations in China, Japan, Macau and Thailand. The aircraft comes from **GECAS'** existing order book and joins another eight A320s from the lessor. **GECAS** delivered two -214s to **Tyrolean Airways** in late March. The airline now operates all of **Austrian Airlines'** flights and has a fleet of around 80 aircraft.

Airbus A330 & A340. **Airbus** delivered one -200 and seven -300s in February. **Hawaiian Airlines** acquired its sixth -243 (SN 1389) and it has 12 more on order. **Iberia** took delivery of its first two of eight ordered -302s (SN 1377 & 1385), and **KLM Royal Dutch Airlines** purchased its first -303 (SN 1381). The airline also leases three -303s. In Asia, **Airbus** delivered one -343E (SN 1384) to **Hong Kong Airlines**, one -343E (SN 1383) to **Air China**, one -343E (SN 1387) to **Cathay Pacific**, and one -323E (SN 1388) to **Malaysia Airlines**.

Airbus Military took delivery of A330-243 (SN 1390) in March. The airplane will be converted into a MRTT (multi-roll tanker transport) for the **Royal Air Force**. **Airbus Military** redelivered the second A330-202 MRTT (SN 996) to the **Royal Saudi Air Force (RSAF)**. A third completed MRTT will be handed over to the **RSAF** later this year.

Air Pacific, Fiji's national airline, will adopt its new **Fiji Airways** brand name in June. The new paint scheme was debuted when the airline's first new A330-243 (SN 1394) was delivered in March. The airline ordered three A330-200s in 2011 to replace **Air Pacific's** 747s and 767s on trans-Pacific routes.

LOT Polish Airlines will wet lease an A330 from **HiFly**, a Lisbon-based lessor, from April 12 to the May 31. The A330 will replace **LOT's** grounded 787 Dreamliners on its important routes from Warsaw to New York and Chicago. If the 787 operations are still suspended after May, the lease can be extended. **LOT** will use its own cabin crews for the duration of the wet-lease.

Norwegian Air Shuttle signed an agreement to wet lease two A340-300s, with crews from **HiFly**. The aircraft will operate long-haul services because **Norwegian's** 787 Dreamliner deliveries were delayed. Europe's fourth-largest discount carrier intends to fly the A340s to New York and Bangkok. **Kuwait Airways** converted its A340-542 (SN 1091) into an ACJ340 VIP transport at San Antonio, Texas, and was redelivered to the airline in February. The airplane was delivered in November 2010.

Airbus A330s and A340s Stored in France. Five ex-**China Eastern Airlines'** A340-313X (SN 129, 131, 141, 161 & 182), three **Iberia** A340-313X (SN 302, 318 & 332) and **South African** A340-313X (SN 378) are parked at Bordeaux and Lourdes, France. Several A330s are parked in France and Zurich,

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Switzerland, including four ex-**Kingfisher** -223s (SN 874, 927, 939 & 946), **Eurofly's** -223 (SN 364), and **Arik Air's** -223 (SN891).

Airbus A380. Two A380s were delivered in February. **China Southern Airlines'** fifth A380-841 (SN 120) was handed over on February 28. **Malaysia Airlines** received its fifth of six -841 (SN 094) in mid-February and accepted its sixth -841 (SN 114) on March 14. The latter aircraft was painted with the 100th A380 titles to mark the delivery of the hundredth super jumbo jet. The manufacturer delivered the first A380 to **Singapore Airlines** 5.5 years ago. **Airbus** reported that 65 percent of A380 capacity is [flying] to, from, or within Asia-Pacific, with more than 50,000 seats offered on nearly 500 services performed every week. A380s operate approximately 250 weekly services to Europe and more than 200 services per week to North America. Further, A380s regularly fly to more than 30 airports and cover some 65 scheduled routes that circle the world with the nine current operators: **Malaysia Airlines, Air France, China Southern, Emirates, Korean Air, Lufthansa, Qantas, Singapore Airlines and Thai Airways International, Airbus** said. **Airbus** intends to deliver 25 A380s this year, and has handed over two as of March 1.

British Airways (BA) said it would operate its first A380 from London to Los Angeles, and that its second superjumbo would serve Hong Kong. LA services were to start on October 15, and the Hong Kong flights will begin a month later. **BA** was scheduled to receive the first of 12 A380s in July, and the last were to arrive in late 2016. It will fit only 469 seats in its four-class layout, while **Lufthansa's** A380s seat 526 passengers and **Air France** A380s can carry 516 passengers.



Boeing 737 NG. Boeing delivered 34 737s in February, including three -823/Ws (SN 29572, 31163 & 33228) to **American Airlines**. The 737s were sold to **Wells Fargo Bank Northwest**, trustee for the lessors, and the airline leased them back. Also in the Americas, **Southwest Airlines** received two -8H4/Ws (SN 36635 & 36893), and **United Air Lines** bought two -924ER/Ws (SN 32836 & 33537). **GOL Airlines** received two -8EH/Ws (SN 39612 & 39613), for a total of 72, with another 70 on order. **AWAS** purchased one of the two new -8EH/Ws and leased it back to **GOL**. The **U.S. Navy** accepted its sixth production P-8I Poseidon -8FV/W (SN 40816), and **Alaska Airlines** took delivery of its fifth -990ER/W (SN 41733). **Aviation Capital Group (ACG)** leased -8V3/W (SN 38882) to **COPA Airlines**. **AWAS** leased the fourth of five new -8GJ/Ws (SN 39428) to **Spicejet**, India, and two -8JP/Ws (SN 39434 & 39435) to **Norwegian Air Shuttle**. **Norwegian** also acquired its 35th -8JP/W (SN 39020) from its own backlog. In Europe, **airberlin** received its 67th -8K2/W (SN 36120) and sold it to **Celestial Aviation Trading**, which leased it to **Transavia France**. **TUI Travel PLC** leased one -8K5/W (SN 37249) to **Thomson Airways**, and another -8K5/W (SN 37250) to **JetairFly**, Belgium. **Turkish Airlines (THY)** bought its 55th -8F2/W (SN 42000). Fourteen 737s were delivered or leased to Asian airlines. **RBS Aerospace** leased -8FH/W (39927) to **Skymark Airlines**, and **GECAS** leased -86N/W (SN 38036) to **Solaseed Air**, Japan. The aircraft was the 14th 737 in **Solaseed's** fleet. **China Southern Airlines** accepted two -81B/Ws (SN 38938 & 38939), and **Lion Air** received its 15th and 16th -8GP/Ws (SN 38686 & 38728). The latter airplane was leased to **Malindo Air**, a joint venture between **Lion Air** and Malaysia's **National Aerospace and Defense Industries**. **Avolon** purchased one of the -8GP/Ws and leased it back. This was the first of a six aircraft sale/leaseback deal with **Lion Air**. **Shandong Airlines** leased -85N/W (SN 39330) from **Babcock Brown Asset Management (BBAM)**, and **BOC Aviation** leased -8AL/W (SN 39055) to **Jet Airways**. **All Nippon Airways** received its fourth -881/W

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(SN 33914), and **Malaysia Airlines** took delivery of its 16th -8H6/W (SN 40143). **Xiamen Airlines** purchased -85C/W (SN 38403), and **Hainan Airlines** acquired -84P/W (SN 39196). Only two 737-700s were delivered in February, one -79L/W (SN 41092) to **Air China**, and one -76D/W (SN 39303) to **Shanghai Airlines**.

Boeing 747. Boeing delivered no 747-8s in February. The manufacturer flew -8KZF (SN 37394) to Marana, Arizona, for storage. The freighter will be delivered to **Nippon Cargo**. Boeing prepared -87UF (SN 37562) for delivery to **Saudi Arabian Airlines/Saudi Cargo** in March.

Boeing 767. UPS-United Parcel Service received its 53rd -34AF (SN 37863) in February. The airline has six more on order. **LAN Airlines** accepted its 31st -316ER (SN 41994), and has three more on order.

Boeing 767. Air Do, the Hokkaido, Japan-based, low-cost airline purchased one -33AER (SN 27476) off lease from **AWAS**. The lessor delivered this aircraft new to **Air Do** in 1998. **AWAS** later provided a second -33AER (SN 28159) to allow **Air Do** to offer several daily low-fare services on the high-density trunk route from **Tokyo Haneda** to Sapporo's **New Chitose Airport** and to other destinations in Hokkaido.

Boeing 777. Boeing delivered seven 777s in February. **American Airlines** accepted its fourth -323ER (SN 33522) in February and will receive its fifth -323ER (SN 31546) in March. **Emirates** took delivery of its 54th of 120 -31HERs (SN 35604). **Aeroflot** received two -3M0ERs (41679 & 41680). **Korean Air** took delivery of its third of five -7FB5 freighters (SN 37640) and the 10th -3B5ERs (SN 41998). **Cathay Pacific Airways** accepted its 26th -367ER (SN 39237); the airline has 20 more on order.

Boeing 787. Boeing did not deliver any 787s in February.

Boeing 737 Milestones. The manufacturer delivered the 7,500th 737 to come off the production line to **Malindo Air**, Malaysia. **Malindo Air** is partially owned by **Lion Air** and has always sourced its airplanes from them. It took delivery of the milestone aircraft 737-9GPER/W (SN 38729) on March 19, joining one -8GP/W (see above), and one -9GPER/W (SN 38687) leased from **Lion Air** on March 13. The airline launched its low-fare services in the face of **AirAsia's** massive fleet of A320s. **China Eastern Airlines** received the 1,000th Boeing airplane to be delivered to China. It received a 737-800 NG on March 28. Boeing said China was one of the world's most dynamic markets for commercial airplanes and that it will need 5,260 new airplanes, valued at \$670 billion, over the next 20 years. Boeing has sold more than 10,600 737s over the last 48 years and it has a backlog of more than 3,100 Next-Generation 737s.

United Airlines sold one United/Continental-owned 1995 vintage 737-524s (SN 27532) to **BLF Limited (Bermuda)**. The aircraft will be operated by **UTair Ukraine**. **Bristol Associates** was the remarketing agent. Further **Bristol Associates** sold one ex-American Airlines 1991-vintage MD-83 aircraft (SN 27532) to **Jet Midwest Group**, on behalf of **US Bank** (as Trustee).

Regional Jet

Bombardier delivered CRJ702 NextGen (SN 10334) to **Ibex Airlines**, Oman, in February.

March 2013

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Mesa Airline will lease nine CRJ900s for operation on behalf of **US Airways Express**. Eight of the CRJ900s were previously operated by **Pluna**, Uruguay. Six of the aircraft are owned by **Scotiabank**, Canada, and two CRJ900s will be leased from the **Export Development Canada**. The final aircraft was operated by **Andes Lineas Aereas**, Argentina. The CRJs will enter **Mesa's** fleet between April and July and will operate under an eight-year capacity purchase agreement through 2021. The CRJs will seat 79 passengers in two-class configuration, and will replace nine 50-seat **Embraer** EMB-145s. **Mesa** currently flies 38 CRJ900s for **US Airways** under an existing agreement that expires in 2015.

Embraer. The manufacturer delivered one EMBRAER 190-200 LR (E195) (SN 19000596) to **Jetscape** in February. The E195 was leased to **LOT Polish Airlines**. **Lufthansa/Air Dolomiti** received one E195 (SN 19000597), and **JetBlue Airways** received one E195 (SN 19000601). **Kenya Airways** took delivery of its seventh of 10 EMBRAER 190-100s (E190) (SN 19000599). The airline has been receiving an E-jet a month since August 2012. The remaining three will be delivered between May and November 2013. **CDB Leasing** leased E190 (SN 19000598) to **China Southern Airlines**. **JetairFly** an airline subsidiary of **TUI Travel**, leased the first of two new E190s (SN 19000603) from **BOC Leasing**. The leases for both aircraft were signed in 2012, and the second E190 (SN 19000607) was scheduled for delivery in March. The E190s were configured with 112 slim line seats in a single-class layout. **JetairFly** will operate the aircraft from Brussels airport to various destinations in its European network including Faro in Portugal, Málaga in Spain, and Zakynthos in Greece.

Turboprop Aircraft

ATR. **Nordic Aviation Capital (NAC)** took delivery ATR 42-600 (SN 1004) in February, and leased it to **Jhonlin Air Transport**, Indonesia. **NAC** leased the first ATR 72-600 (SN 1068) to **Air KBZ**, Myanmar, in February, and will lease a second -600 (SN 1070) to the airline in June. **Azul Linhas Aéreas** acquired -600 (SN 1072). **Aviation** leased -600 (SN 1073) to **Skywest Airlines** for operation on behalf of **Virgin Australia Airlines**.

Bombardier delivered three Dash 8Q-402 NextGens (SN 4432, 4433 & 4434) to **Chorus Aviation/Jazz Air**, Canada, and another Q400 (SN 4431) to **QantasLink** in February.

Accidents and Safety

From Aviation Safety Foundation

Compagnie Africaine d'Aviation (CAA) Fokker 50 (9Q-CBD, SN 20270) was destroyed when it came down in a residential area as it was landing at **Goma Airport**, Democratic Republic of the Congo. The three passengers on board survived the accident, but the five crew members and a loadmaster died. The airplane was operating a cargo flight from **Lodja Airport** on March 4.

ACE Air Cargo Beechcraft 1900 (N116AX, SN UC-17) flew into the side of the Muklung Hills, on March 8. Both crew members were killed. The hills are approximately 20 miles northeast of **Dillingham Municipal Airport**, Alaska.

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Since its establishment in 1962, AVMARK has been providing consulting management services to all sectors of the aviation community. From offices in Washington DC and Singapore, together with associates based in United States (North America), Ecuador (South America), Spain (Europe), Congo (Africa), New Delhi (India and Asian Market), we serve a worldwide clientele. Our staff is comprised of professionals with extensive, successful careers in technical, commercial and managerial areas of aviation enterprises; combining real world operational experience with sophisticated analytical tools to provide our clients with the most effective solutions to their problems.

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AVMARK's Transport Aircraft Values (TAV); reports current fair market values by year of build and projects the future value of all transport category aircraft.

AVMARK's Historic Jet and Turboprop Values; summary of the then current fair market values as published in the AVMARK Newsletter for all jets and turboprops in service.

AVMARK's Small Transport Aircraft Catalogue (STA); designed as an easy to use reference guide to compare the operating and cost parameters of 35 regional jet and turboprop aircraft.

Sample of Avmark Publications

SMALL TRANSPORT AIRCRAFT CATALOG

STA is designed as an easy to use reference guide to compare the operating and cost parameters of 35 regional jet and turboprop aircraft. Information includes development history, current production status, configuration and operating performance and costs as reported to the DOT. Pictures of each aircraft are also included.

SMALL TRANSPORT AIRCRAFT
A Catalog of New and Used Commuter / Regional Aircraft
2004
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MARKET OVERVIEW

Most dynamic and fastest growing segment in the world, using old generation propeller aircraft to transport 90 million passengers using state of the art technology.

Airline Association (RAA):

Aviation:

DOT:

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ATR 42-300

In Service: 1985 Orders: Out of Production Deliveries: 284

Specifications	
Accommodations	
Passengers*	46
Pilot	2
Cabin Attendants	1
Powerplant	
2 Pratt & Whitney PWC120 Turboprops	1,800 SHP / 1,342 kW
Hamilton Propellers	4 blades
External Dimensions	
Length	74 ft 8 in
Wingspan	60 ft 7 in
Height	24 ft 11 in
Weight	
Empty	48,815 lb
Max Ramp	56,105 lb
Max Takeoff	53,510 lb
Max Landing	22,875 lb
Max Ramp	10,325 lb
Max Takeoff	9,920 lb
Max Landing	40.53 lb / sq ft
Max Ramp	10.23 lb / cu ft

Standard Equipment: Right engine Propeller Brake, Airsearch Air Conditioning, Stall Warning.

Optional Equipment: KLN 900 GPS/W, FMS, Area Navigation (RNAV), Microwave Landing System, VLF Omegat Long Range Navigation System, Dual Honeywell AZ-800 Digital Air Data Computers, PA System, HF Radio, Collins Avionics in place of King Avionics, CAT II.

Avionics: EDZ 820 Electronic Flight Instrument System (EFIS) - 4 CRT's for dual Attitude and Heading Reference Systems (AHRS), Dual Autopilot, Dual Computer (ADC), 1 CFZ 600 Automatic Flight Director, Dual King Gold Crown VHF Nav, Radios, DME, Radio Altimeter, Honeywell P-800 Weather Radar.

Price List

Years Built	Base (\$ mil)
85-99	2.0

ATR 42-300 85-99 2.0

Direct Operating Costs (\$ per block hour)

Utilization (Block Hours / Year)	
Average Stage Length (nm)	100 300
Flying Operations	
Flight Crew, Salaries / Expenses	\$198 \$188
Fuel, Oil, Taxes	\$173 \$162
Other	\$3 \$3
Aircraft Costs	
Insurance	\$3 \$3
Maintenance	\$478 \$415
Depreciation	\$62 \$62
Rentals	\$318 \$318
Total Direct Operating Costs	\$806 \$683
Cost per Available Seat Mile - \$	12.33 8.65
Cost per Airplane Mile	\$5.67 \$4.44
Cost per Seat Block Hour	\$16.67 \$15.1

Note: Data from DOT Airline Reports.

ATR 42-300

PAYLOAD VS. RANGE

Range (nm)

Distance (nm)

Distance (nm)

ATR 42

THE AVIONIC DE TRANSPORT REGIONAL (ATR) first flew in August 1984, and entered service in December 1985 with the French regional Air. The aircraft is a joint venture between Aerospatiale of France and Aeritalia of Italy. The ATR 42's name originally designated it as a 42 passenger aircraft, but subsequent reduction of the forward baggage compartment now allows for a seating configuration of up to 50 passengers.

The baseline aircraft is the ATR 42-300/320 powered respectively by PW120/121 engines. The latest version is the ATR 42-500 powered by PW127s engines and Hamilton six-bladed propellers. Thus increasing the payload to 12,015 lb and the cruise speed to 300 kts.

The standard front cargo door allows the aircraft to be quickly converted from a passenger layout to freighter. Unique among turboprops, is the integration of a Propeller Brake on the right engine, which allows running of the engine in "Hotel Mode" to provide aircraft electrical power and air conditioning without the inconvenience and safety hazards of a rotating propeller.

The ATR 42 and ATR 72 have a very high degree of commonality, allowing for cross-crew qualification, and a common spare parts holding.

TYPICAL CABIN CONFIGURATION

48-seats in a four-abreast layout with a center aisle. Access to the cabin is by an air stair at the rear passenger door, and a modular galley in the rear of the aircraft is serviced through the same door. A standard toilet is located in the rear of the aircraft behind the passenger door. Baggage is accommodated in overhead bins on both sides of the cabin, under seat storage, in an externally accessed forward and aft baggage compartment, and in a closet.

US \$ 350.00

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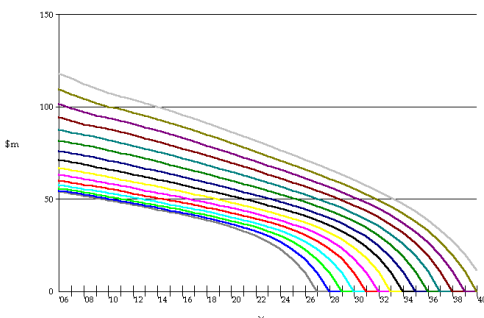
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TAV reports current fair-market values by year of build and projects the future value of 116 transport category aircraft. The future values are based on an economic model that projects the values based on the earning stream of approximately 130 different types of aircraft for their useful lives. The model takes into account the operating cost and characteristics of each aircraft, worldwide and future traffic volumes, fare levels and current and future fleet compositions. The values are presented in both constant and then-current dollars.

CAVAS Graph



Profit & Loss Report

Aircraft Type	Period	1	2	3	4	5	6
REVENUES (US\$)							
Passengers	49,328,754	49,270,739	49,212,559	49,154,213	49,095,701	49,037,189	48,978,677
Freight & Mail	8,879,176	8,868,733	8,858,261	8,847,758	8,837,226	8,826,673	8,816,141
Other Revenue	986,575	985,415	984,251	983,084	981,914	980,744	979,574
TOTAL OPERATING REVENUE	59,194,505	59,124,887	59,055,070	58,985,055	58,914,841	58,844,626	58,774,411
VARIABLE EXPENSES							
Fuel	6,918,975	6,917,340	6,915,670	6,913,977	6,912,265	6,910,533	6,908,781
Landing Fees	3,021,823	3,021,823	3,021,823	3,021,823	3,021,823	3,021,823	3,021,823
Enroute Charges	392,440	392,440	392,440	392,440	392,440	392,440	392,440
Pax Commissions	7,399,313	7,399,313	7,399,313	7,399,313	7,399,313	7,399,313	7,399,313
Freight Commissions	1,331,876	1,331,876	1,331,876	1,331,876	1,331,876	1,331,876	1,331,876
Food & Supplies	3,993,194	3,993,194	3,993,194	3,993,194	3,993,194	3,993,194	3,993,194
Passenger Liability Insurance	379,590	379,590	379,590	379,590	379,590	379,590	379,590
TOTAL VARIABLE COST	23,443,212	23,443,212	23,443,212	23,443,212	23,443,212	23,443,212	23,443,212
SEMI-VARIABLE EXPENSES							
Crew Salaries & Expenses	5,177,760	5,177,760	5,177,760	5,177,760	5,177,760	5,177,760	5,177,760
Maintenance & Engineering	587,650	587,650	587,650	587,650	587,650	587,650	587,650
TOTAL SEMI-VARIABLE COST	5,765,410	5,765,410	5,765,410	5,765,410	5,765,410	5,765,410	5,765,410
TOTAL OPERATING COST	29,208,622	29,208,622	29,208,622	29,208,622	29,208,622	29,208,622	29,208,622
OPERATING PROFIT OR LOSS	29,985,883	29,916,265	29,846,448	29,776,631	29,706,814	29,636,997	29,567,180
D-CHECK ADJUSTMENT							
Cumulative Hours	4,830	9,650	14,459	19,257	24,045	28,833	33,621
Cumulative Dollars	315,000	0	0	0	0	0	0
ADJUSTED CASH FLOW	25,841,782	25,329,851	24,506,290	23,686,100	22,869,282	22,052,464	21,235,646
AIRCRAFT LIFE ADJ. CASH FLOW	25,841,782	25,329,851	24,506,290	23,686,100	22,869,282	22,052,464	21,235,646

Profit & Loss Report

Aircraft Type	Period	1	2	3	4	5	6
FIXED EXPENSES							
Station Overhead	346,597	345,923	345,249	344,575	343,901	343,227	342,553
Maintenance Burden	176,295	351,824	526,586	700,581	873,810	1,047,039	1,220,268
Other Overhead	0	0	0	0	0	0	0
TOTAL FIXED COST	522,892	697,747	871,835	1,045,156	1,217,711	1,390,266	1,562,821
TOTAL OPERATING COST	31,464,497	32,185,749	32,903,601	33,618,052	34,329,104	35,039,156	35,749,208
General and Admin. Allocation	1,573,225	1,609,287	1,645,180	1,680,303	1,716,455	1,752,607	1,788,759
TOTAL COST	33,037,722	33,795,036	34,548,781	35,298,355	36,045,559	36,791,763	37,537,967
OPERATING PROFIT OR LOSS	26,156,782	25,329,851	24,506,290	23,686,100	22,869,282	22,052,464	21,235,646
D-CHECK ADJUSTMENT							
Cumulative Hours	4,830	9,650	14,459	19,257	24,045	28,833	33,621
Cumulative Dollars	315,000	0	0	0	0	0	0
ADJUSTED CASH FLOW	25,841,782	25,329,851	24,506,290	23,686,100	22,869,282	22,052,464	21,235,646
AIRCRAFT LIFE ADJ. CASH FLOW	25,841,782	25,329,851	24,506,290	23,686,100	22,869,282	22,052,464	21,235,646

Select Aircraft Type

Available Aircraft

- Airbus A300B4-600R
- Airbus A300B4-600RF
- Airbus A310-200
- Airbus A310-200F
- Airbus A310-300
- Airbus A310-300F
- Airbus A318
- Airbus A319-100
- Airbus A320-100
- Airbus A321-100
- Airbus A321-200
- Airbus A330-200
- Airbus A330-300
- Airbus A340-200
- Airbus A340-300
- Airbus A340-500
- Airbus A340-600
- Airbus A350-800
- Airbus A350-900
- Airbus A380-800
- Avro RJ-100
- Avro RJ-70
- Avro RJ-85
- BAe 111-200/300/400/500

Picture

Selected: Airbus A340-300

Description: Widebody 4 Engine Passenger

Manufactured: 1992 To 2006

Values: \$54.00m to \$118.00m

Estimated Life: 35 years

File No: 013

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Aircraft: Airbus A340-300 - Widebody 4 Engine Passenger

CAVAS Figures

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
2007	54.00	54.61	55.83	57.66	60.10	63.14	66.80	71.07	75.94	81.43	87.52	94.23	101.54	109.47	118.00
2008	52.85	53.49	54.73	56.56	58.99	62.01	65.62	69.95	74.86	80.37	85.92	92.18	99.12	106.73	115.25
2009	51.68	52.36	53.61	55.43	57.85	60.84	64.42	68.69	73.65	79.18	84.76	90.48	96.97	104.20	112.39
2010	50.49	51.19	52.46	54.29	56.70	59.67	63.24	67.50	72.44	77.95	83.52	89.32	95.34	101.54	107.94
2011	49.28	49.99	51.27	53.10	55.50	58.46	61.93	65.90	70.79	76.30	81.81	87.52	93.34	99.34	105.54
2012	48.06	48.78	50.06	51.89	54.29	57.24	60.71	64.68	69.15	74.26	79.37	85.18	91.18	97.38	103.78
2013	46.83	47.55	48.83	50.66	53.06	55.91	59.38	63.35	67.82	72.93	78.04	83.85	89.85	96.05	102.45
2014	45.59	46.31	47.59	49.42	51.82	54.67	58.04	61.91	66.38	71.49	76.60	82.41	88.41	94.61	101.01
2015	44.35	45.07	46.35	48.18	50.58	53.43	56.80	60.67	64.94	69.71	74.92	80.73	86.73	92.93	99.33
2016	43.11	43.83	45.11	46.94	49.34	52.19	55.56	59.43	63.70	68.47	73.68	79.49	85.49	91.69	98.09
2017	41.87	42.59	43.87	45.70	48.10	50.95	54.32	58.19	62.46	67.23	72.44	78.25	84.25	90.45	96.85
2018	40.63	41.35	42.63	44.46	46.86	49.71	53.08	56.95	61.22	65.99	71.20	76.91	82.91	89.11	95.51
2019	39.39	40.11	41.39	43.22	45.62	48.47	51.84	55.71	59.98	64.75	70.06	75.87	81.87	88.07	94.47
2020	38.15	38.87	40.15	41.98	44.38	47.23	50.60	54.47	58.74	63.51	68.72	74.53	80.53	86.73	93.13
2021	36.91	37.63	38.91	40.74	43.14	45.99	49.36	53.23	57.50	62.27	67.48	73.29	79.29	85.49	91.89
2022	35.67	36.39	37.67	39.50	41.90	44.75	48.12	51.99	56.26	61.03	66.24	72.05	78.05	84.25	90.65
2023	34.43	35.15	36.43	38.26	40.66	43.51	46.88	50.75	55.02	59.79	65.00	70.81	76.81	82.91	89.31
2024	33.19	33.91	35.19	37.02	39.42	42.27	45.64	49.51	53.78	58.55	63.76	69.57	75.57	81.77	88.17
2025	31.95	32.67	33.95	35.78	38.18	41.03	44.40	48.27	52.54	57.31	62.52	68.33	74.33	80.53	86.93
2026	30.71	31.43	32.71	34.54	36.94	39.79	43.16	46.93	51.20	55.97	61.18	66.99	73.19	79.39	85.79
2027	29.47	30.19	31.47	33.30	35.70	38.55	41.92	45.69	49.96	54.73	60.04	65.85	72.05	78.25	84.65
2028	28.23	28.95	30.23	32.06	34.46	37.31	40.68	44.45	48.72	53.49	58.70	64.51	70.71	76.91	83.31
2029	26.99	27.71	28.99	30.82	33.22	36.07	39.44	43.21	47.48	52.25	57.46	63.27	69.47	75.67	82.07
2030	25.75	26.47	27.75	29.58	31.98	34.83	38.20	41.97	46.24	50.91	56.12	61.93	68.13	74.33	80.73
2031	24.51	25.23	26.51	28.34	30.74	33.59	36.96	40.73	44.90	49.67	54.88	60.69	66.89	73.09	79.49
2032	23.27	23.99	25.27	27.10	29.50	32.35	35.72	39.49	43.76	48.53	53.74	59.55	65.75	71.95	78.35
2033	22.03	22.75	24.03	25.86	28.26	31.11	34.48	38.25	42.52	47.29	52.50	58.31	64.51	70.71	77.11
2034	20.79	21.51	22.79	24.62	27.02	29.87	33.24	36.91	41.18	45.95	51.16	56.97	63.17	69.37	75.77
2035	19.55	20.27	21.55	23.38	25.78	28.63	31.90	35.67	39.94	44.71	49.48	54.69	60.49	66.69	73.09
2036	18.31	19.03	20.31	22.14	24.54	27.39	30.66	34.43	38.70	43.47	48.68	54.49	60.69	66.89	73.29
2037	17.07	17.79	19.07	20.90	23.30	26.15	29.42	33.19	37.46	42.23	47.44	53.25	59.45	65.65	72.05
2038	15.83	16.55	17.83	19.66	22.06	24.91	28.18	31.95	36.22	40.99	46.20	51.91	58.11	64.31	70.71
2039	14.59	15.31	16.59	18.42	20.82	23.67	27.44	31.21	35.48	40.25	45.46	51.27	57.47	63.67	69.87
2040	13.35	14.07	15.35	17.18	19.58	22.43	26.20	29.97	34.24	38.91	44.12	49.33	55.53	61.73	67.93
2041	12.11	12.83	14.11	15.94	18.34	21.19	24.96	28.73	32.90	37.67	42.88	48.09	54.29	60.49	66.69
2042	10.87	11.59	12.87	14.70	17.10	19.95	23.72	27.49	31.76	36.53	41.74	46.95	53.15	59.35	65.55
2043	9.63	10.35	11.63	13.46	15.86	18.71	22.48	26.25	30.52	35.29	40.50	45.71	51.91	58.11	64.31
2044	8.39	9.11	10.39	12.29	14.69	17.54	21.31	25.08	29.35	34.12	39.33	44.54	50.74	56.94	63.14
2045	7.15	7.87	9.15	10.98	13.38	16.23	20.00	23.77	27.54	31.81	36.58	41.79	47.00	53.20	59.40
2046	5.91	6.63	7.91	9.74	12.14	15.03	18.80	22.57	26.34	30.61	35.38	40.59	46.10	51.70	57.90
2047	4.67	5.39	6.67	8.50	10.90	13.75	17.52	21.29	25.06	29.33	34.10	39.31	44.91	50.51	56.71
2048	3.43	4.15	5.43	7.26	9.66	12.51	16.28	20.05	23.82	28.09	32.86	38.07	43.67	49.27	55.47
2049	2.19	2.91	4.19	6.02	8.42	11.27	15.04	18.81	22.58	26.35	30.62	35.83	41.43	47.03	53.23
2050	0.95	1.67	2.95	4.78	7.18	10.03	13.80	17.57	21.34	25.11	29.38	34.59	40.19	45.79	51.99

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