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Market Comment

USA

EXECUTIVE OFFICE

PO Box 189
Vienna, VA 22183 – USA
Tel: +1-202-241-6419
Fax : +1-202-618-6267
enquiries@avmarkinc.com

PUBLISHING OFFICE

523 Stephens Avenue
Missoula, MT 59801 – USA
Tel: +1-406-274-3521
mrmtomontana@msn.com

EUROPE

AVMARK ESPAÑA

Gran Via de les Cortes
Catalnes 712, 6, 5
Barcelona 08013
SPAIN
Tel: +34-93-245-0659
enquiries@avmarkinc.com

LATIN AMERICA

AVMARK-SLEM S.A.

Avda. Carlos Julio Arosemena Km 2.5
C.C. La Linea, Oficina 3
Guayaquil
ECUADOR
Tel: + 593 4 222 0640
Fax: + 593 4 220 6726
Cell: +593-9-979-2586
enquiries@avmarkinc.com

ASIA & ASIA-PACIFIC

AVMARK ASIA-AMS

70 A Boat Quay
Singapore 049859
Tel: +65-65-38-38-35
Fax: +65-65-38-38-10
enquiries@avmarkinc.com

Boeing Rolled Out its First 737 MAX 8 on December 7, one month after **COMAC** debuted its first C919 and the **Airbus A320neo** was certificated by the **EASA** and **FAA**. **Keith Leverkus**, VP and General Manager—737 MAX, **Boeing Commercial Airplanes**, said, “Today marks another in a long series of milestones that our team has achieved on time, per plan, together. With the rollout of the new 737 MAX – the first new airplane of **Boeing’s** second century – our team is upholding an incredible legacy while taking the 737 to the next level of performance.” **Boeing** is boasting that the airplane was on schedule, which has been a rarity in the aviation industry this century, due to the complexities of introducing new technology. Then again, other than new engines, the 737 MAX is very similar to the preceding 737 Next Generation. The 737 MAX 8 (SN 42554) was named the *Spirit of Renton*, and was painted in a special teal **Boeing** livery. The airplane will undergo pre-flight preparation at the factory in Renton before its first flight in early 2016. The second and third 737 MAX 8 flight test airplanes are currently in final assembly and the sub-assemblies of the fourth and final test plane are being joined. **Boeing** has 2,955 orders for the 737 MAX as of November 30, and it is on track to deliver the aircraft to **Southwest Airlines** in the third quarter of 2017. The MAX is the third major renovation of 100-seat, short-haul, 737-100 that was launched 50 years ago, with an order from **Lufthansa** in April 1965. The airplane was stretched several times to carry up to 215 passengers and has been re-engined three times, as engine technology evolved. The MAX will burn an estimated 14 percent less fuel per seat than current 737 NGs and will fly farther, allowing airlines to open new routes.

Its rival **Airbus A320neo** will enter service in December 2015, 21 months before the MAX. The NEO has captured 60 percent of the market and has won 4,443 firm orders as of November 30. The NEO also lead sales in the first 11 months of this year, having sold 822 units while **Boeing** sold 292, only 35 percent of the **Airbus** total. **Boeing** said it expects to sell approximately 760 new airplanes this year, so it needs to sell nearly 200 new planes in December. The manufacturer usually announces dozens of sales to “undisclosed customers” at the end of each December, so it may come closer to European total. One reason for NEO sales lead is that **Airbus** offers the A321neo which can seat up to 220 passengers and has trans-oceanic range. **Airbus** sold 1,067 A321neos to date, while **Boeing** has approximately 418 orders for its

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largest 737 MAX 9. The MAX can also be used for long-haul routes, replacing or challenging larger 757 and 767 aircraft.

Lufthansa is set to become the first airline to fly the **Airbus A320neo** when it takes delivery of its first A320-271N (SN 6801) on December 22. **Qatar Airways** was expected to be the launch operator, but it refused to accept the aircraft because of operational restrictions placed on the jet's **Pratt & Whitney PW1127G** engines. Under certain circumstances, the engine must be turned over for three minutes before they can be started, allowing the engines to cool down. **Pratt** is working on changing the bearing of the engine shaft and a software update which are scheduled for completion by February. **Lufthansa** expects to be financially compensated for the operational restrictions, and the first A320neo will enter revenue service on January 6, 2016, between Frankfurt and Hamburg, where it has large maintenance bases. The airline plans to take five more A320neos in 2016. **Qatar** told **Airbus** it was prepared to take its first A320neo (A7-AJB, SN 6772) in December, but CEO **Akbar al Baker** said engine manufacturer **Pratt & Whitney** would be held to account if the year-end deadline is missed. **Qatar** will be the second A320neo operator, followed by **Indigo**.

United Aircraft Corporation's Irkut unit has finished assembling all the fuselage sections of the first MC-21-300 prototype. The composite wing, produced by **Aerocomposit**, Ulyanovsk, will be joined to the fuselage shortly. **Irkut** plans to roll out the MC-21 prototype in early 2016, and it will be ready for the maiden flight in the second quarter. The first aircraft will be fitted with **Pratt & Whitney PW1400G-JM** geared turbofan engines. Later aircraft can be powered by Russian-built **Aviadvigatel PD-14s**. The manufacturer started flight testing the aircraft type on October 24. The plane will be certified by Russian authorities in 2017 and European **EASA** certification will follow in 2018, the same year the aircraft should enter service. **Irkut** said it had 300 orders and commitments for the MC-21. Fifty MC-21s were ordered by the **Aviakapital-Service** leasing company, which is a subsidiary of the state-owned **Rostec Corporation**. They will be leased to **Aeroflot**. Other governmental customers bought 35 PD-14-powered aircraft. **Ilyushin Finance Co.** bought 50 aircraft and **VEB Leasing** purchased 30 airliners. **IrAero**, Iran, committed to acquire 10 aircraft and **Sberbank Leasing** is buying 20 MC-21s. State-owned **Red Wings** will be the launch operator and it will lease 10 MC-21s from **Ilyushin Finance**. To date, no Russian airline has announced the purchase of a NEO or MAX.

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COMAC Claims 517 C919 Orders, but almost all of them (347) were placed by Chinese leasing companies. Domestic airlines, including **Air China**, **China Eastern**, **China Southern**, **Hainan**, **Hebei**, **Joy Air** and **Sichuan** have each ordered 20 C919s, while the only international airline customer, **City Airways**, Thailand, bought 10. The only other foreign customer, **GECAS**, ordered 20 **GE Aviation** LEAP-1C powered C919s, probably for lease to Chinese airlines. Will Chinese airlines actually fly the C919 once it is delivered in 2018, well after the NEO and MAX are in service? Apparently so, to date, Chinese private airlines have ordered 42 737 MAX and none of the larger and state-controlled have announced commitments to buy the MAX. No Chinese carriers have officially ordered the NEO, although **Airbus** lists 479 orders from undisclosed customers, and **Boeing** reports 647 MAX sales to unidentified customers. Chinese airlines are often reluctant to announce their orders before the planes are delivered. It is very unlikely that the C919 will be the only 156-seater in service in China in the 2020s.

There will soon be four of the latest-generation trunkliners in service and it seems likely that the Russian/CIS airlines will prefer their domestic aircraft, and the Chinese will operate their indigenous aircraft for political reasons, and perhaps economic ones. The Chinese and Russian aircraft will be priced in the local currency and should, therefore be cheaper to buy. They will have western engines and electronics so they should cost the same as western jets to operate. It looks like **Airbus** and **Boeing** will dominate in the world market, but some significant domestic markets may be closed to them.

Airbus Orders

Airbus Sold 19 A330s and 150 Single-Aisle Aircraft in November, and sold 1,007 new aircraft in 2015. It delivered 61 aircraft to international customers from across its product line, including the A320 Family, the A330, A350 XWB and A380. **Airbus'** backlog stood at 6,837 aircraft at the end of November, marking another industry record, and equal to 10 years of production. Single-aisle sales were led by **TAP Portugal's** acquisition of 15 A320neo and 24 A321neo aircraft, including the A321LR. **EasyJet** ordered six A320ceo and 30 A320neo aircraft, and **Korean Air** bought 30 A321neo jetliners, becoming a new customer for the A320 Family aircraft. **VietJet**, Vietnam, placed a repeat order for nine A321ceo and 21 A321neo aircraft, while **International Airlines Group (IAG)** bought 12 A320neos and three A321neos for **Iberia**, Spain. The 87 sales of the stretched A321 variant accounted for more than half of the 150 A320 Family aircraft purchased in November, illustrating the air transport industry's move toward larger-capacity aircraft. **TAP Portugal** also signed a firm order for 14 A330-900neo jetliners (becoming a new A330neo customer) and it dropped its 12 long-standing A350 XWB orders. Two A330-200 aircraft were ordered by the **International Airlines Group** for **Iberia** (also a new operator of this type), and **IAG** bought two more A330-300s for its newly acquired Irish subsidiary, **Aer Lingus**. One ACJ330-200 corporate jet was acquired by an unnamed private customer. **Airbus'** gross orders for the first 11 months of 2015 rose to 1,079, including 102 A318/A320/A321ceo jetliners, 825 A319/A320/A321neo aircraft, 99 A330ceo versions, 39 A330neo aircraft, and 14 A350s. Seventy-two

Garuda Indonesia will choose between the **Airbus** A350 and **Boeing** 787 by the end of the year. At the **Paris Airshow**, Indonesia's flag carrier signed letters of intent for both types, but will go ahead with only one order. The deal is potentially worth \$9 billion for the winner. **Garuda** will use the 30 new jets to replace the 23 leased **Airbus** A330s that it uses on medium- and long-haul routes within Asia, and it will potentially add cities in Europe. The airline made a net profit of \$27.7 million in the first half of 2015, a dramatic improvement over the \$203 million loss a year earlier.

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cancellations and order conversions lowered the net orders to 1,007, as of November 30.

Airbus delivered 47 A320 Family aircraft, 10 A330s (including a VIP A330-200), one A350 and three A380s in November. Among the month's deliveries were the 10th A380 for **British Airways**. By the end of November, **Airbus** had provided a total of 24 A380 flagship airliners to customers.

Korean Air ordered 30 A321neos worth around \$3.7 billion (\$123.3 million each) at list prices, and the commitment was announced at **Paris Airshow**. The contract was signed by **Airbus** CEO **Fabrice Bregier**, during French President **Francois Hollande's** visit to Seoul. **Korean** took options on another 20 jets. The flag carrier exclusively operated **Boeing** Next Generation 737 airliners before it decided to replace some of its 17 737-800s and 22 737-900/ERs with the new A321neos. They will be delivered between 2017 and 2025. **Korean Air** has been an **Airbus** customer for 40 years, beginning with its first A300B4 which entered service in October 1975. **Korean** currently flies 29 A330s and 10 double-deck A380s. The flag carrier will operate the A321neo on regional services, including on longer sectors to South East Asia.

Airbus Orders, Deliveries and Backlog November 2015

NOV ORD	NOV DEL	NOV CANX	TOTAL ORD	TOTAL DEL	BACK LOG
			A318		
-0-	-0-	-0-	80	80	-0-
			A319		
-0-	-0-	-0-	1,473	1,453	20
			A319neo		
-0-	-0-	-0-	49	-0-	49
			A320		
6	29	-0-	4,769	4,097	672
			A320neo		
57	-0-	-0-	3,327	-0-	3,327
			A321		
9	18	-0-	1,625	1,191	434
			A321neo		
78	-0-	-0-	977	-0-	977
			A330		
5	10	-0-	1,444	1,240	204
			A330neo		
14	-0-	-0-	159	-0-	159
			A350		
-0-	1	-0-	775	11	764
			A380		
-0-	3	-0-	317	176	141
This Month			This Year		BL
169	61	-0-	1,007	556	6,837

Airbus sold 16,278 aircraft and delivered 9,441 as of November 30, 2015. Seventy-two orders were cancelled. Total orders, deliveries and backlog include cancellations and order changes.

The International Airlines Group

(IAG) firmed up options for two A330-200s, two A330-300s and 15 A320neos. This latest contract takes **IAG's** cumulative **Airbus** orders to nearly 470 aircraft. The two A330-200s will be delivered to **Iberia**, and the two A330-300s will be operated by **Aer Lingus**. **Aer Lingus'** -300s will enter service in 2016 and **Iberia's** aircraft will arrive in 2017 and 2018. The 15 converted A320neo options will be filled

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between 2018 and 2021, and can be used by any of the four airlines in the Group for fleet replacement, **IAG** said.

Vietjet Air firmed up purchase rights for 30 more A321s at the **Dubai Airshow**. The nine A321ceos and 21 A321neos will join the airline's current fleet of 26 A320s and three A321s. **Vietjet** took to the skies at the end of 2011, and it now serves a growing number of destinations across Asia. The airline has placed firm orders with **Airbus** for a total of 99 A320 Family aircraft. No delivery schedule was mentioned.

EasyJet ordered six A320ceos and confirmed 30 A320neo options. To date, the airline ordered 451 A320 Family aircraft. The airplanes will be delivered between 2018 and 2021, and fitted with the higher-density, 186-seat configuration. The carrier has reserved another 30 purchase rights for A320neos to replace those being exercised, the airline said. The aircraft are list priced at \$3.2 billion (\$88.89 million each). **CFM International** will supply CFM56 and LEAP-1A engines for all 36 jets. **EasyJet** flies more than 750 routes to over 130 airports across 31 countries. The low-cost carrier took delivery of its first A319 in September 2003, and has received an average of two new **Airbus** airplanes per month since then.

TAP Portugal signed a firm order for 14 A330-900neos, 15 A320neos and 24 A321neos, including some A321LRs. **TAP** replaced its previous order of 12 A350-900s with the A330-900neos. The aircraft are part of a fleet renewal plan announced by the airline's new majority owner **Atlantic Gateway**. CEO **Fernando Pinto** said the A350 was more airplane than **TAP** needed and the A330neo was a better fit. The new long-range A321LR will be used on 6-7 hour flights to New York, Northern Brazil and Eastern Europe. **TAP** currently operates 43 A320 Family aircraft, 14 2007-2008 era A330-200s, and four 20-year old A340-300s.

Citilink, Indonesia, is studying the larger A321 as a way to boost its capacity. CEO **Albert Burhan** said, "Because of the slot constraints we need to be able to increase capacity, one of the options is by way of bigger aircraft, but we want to stick to one type. A321s could be a sensible option." The **Garuda Indonesia** subsidiary could order either the A321ceo which would be available sooner, or the A321neo Long Range variant which could be used on **Citilink's** proposed long-haul network. The low cost carrier operates 34 A320-200s, and four 737 Classics between 27 domestic cities.

Spring Airlines signed an agreement to buy 45 A320neo and 15 A321neo airplanes, worth \$6.3 billion at list prices. The deal was disclosed in a report to the **Shanghai Stock Exchange**, and it may be conformation of a Memorandum of Understanding for 60 A320neo aircraft from an undisclosed customer that **Airbus** announced at the **Paris Airshow**. The aircraft are scheduled for delivery from 2019 to 2023 and they will more than double **Spring Airline's** capacity. The order is still subject to approval by the Chinese government. No engine selection was specified, but the airline currently operates 52 A320ceos with CFM56 engines, and it will acquire at least eight more by the end of 2016. **Spring** said it will use a combination of internal funds, bank loans and/or financing instruments to finance the purchase. The Chinese low cost-carrier secured regulatory approval to raise as much as 4.5 billion yuan (\$725 million) through the private placement of 3.84 billion Class A shares. The funds will be used to finance the purchase of 21 A320ceos, and other improvements. The number of people travelling within China and internationally is expected to triple over the next two years, so Chinese airlines are rapidly expanding their fleet to meet the demand.

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Airbus Industrie is trying to sell the two-class, 615-seat, high-density A380-800 to **Saudia-Saudi Arabian Airlines**. The European manufacturer is trying to win the first new customer for the twin-deck jumbo-jet in three years. **Fouad Attar**, **Airbus'** Managing Director for the Middle East, said the 615-seat A380 would be ideal for **Saudia**. He said a "handful" of A380s would help alleviate pressure on the kingdom's aviation infrastructure during the annual surges in demand caused by the **Hajj** and **Umrah** pilgrimages. The **Saudi Government** forecasts that traffic will rise by 1,000 percent in the next three years and will reach 60 million people. **Emirates** deployed its first 615-seat A380 on flights to **Copenhagen Kastrup** from its hub in Dubai. The jet features 58 flat-bed Business Class seats, and 557 standard Economy Class seats. In 2009, **Air Austral** ordered two A380s fitted with an all-tourist 840-seat configuration for delivery in 2014, but it has deferred delivery past 2017. It bought two early-model 787-8s at bargain prices from **Boeing** instead, for delivery in 2016.

Airbus Said an Emirates Order is Not Enough to justify the A380neo upgrade in 2022. The manufacturer needs more airlines to buy the re-engined A380neo in order to launch it. **Airbus** started research into upgrading the A380 in December 2014, and **Rolls-Royce** tentatively offered several engine options, including derivatives of the XWB-84/97, and its Advance and UltraFan projects which were unveiled in August 2014. **Emirates** CEO **Tim Clark** said his airline would buy 100 A380neos, list priced at \$43 billion, because the NEO would cut seat-mile costs by a projected 10 to 13 percent. **Airbus'** reluctance to launch put Mr. **Clark** in the awkward position of touting the A380neo to rival airlines. He said the superjumbo is a viable solution for expected capacity constraints at hub airports in the Americas and Europe over the next three-to-seven years. He said, "The NEO is essentially a very good product," and if **Airbus** adequately marketed it, they could "find buyers for this plane post-2020." **Airbus** CEO **Fabrice Bregier** reaffirmed in November that 2022 would be too early for an A380 upgrade, and said again that the company must still justify to other airlines that an upgraded aircraft has merit. Something that no one as addressed, is the potential used market for the A380. The earliest ones were delivered in 2007 and 2008, and **Emirates** received its first **Engine Alliance**-powered A380 in 2009. The airline mentioned it would return its early A380s to **Doric/Amedeo** at the end of their 12-year lease terms. No one knows what the market value of a used A380 will be, since the market for the new airplane is so limited.

Turkish Airlines has firmed options for 20 **Airbus** A321neos and 10 **Boeing** 737 MAX 8s in December. The flag carrier already has 72 A321neos and 13 A321ceos on order, and 55 A321ceos in service. The 20 newest A321neos will be handed over in 2020 and 2021. **Turkish** said it has delayed 17 A321neo deliveries from 2017 and 2018 until 2021 and 2022. The MAX jets are to be delivered in 2021, **Turkish** said in a public disclosure. It now has 20 **Boeing** 737-800 65 MAX 8s and 10 MAX 9s on order. The airline is set to add three A330Fs, five A330-300s and 10 777-300ERs as well. By 2021, the **Turkish** fleet will total more than 430 units, comprised of 350 narrowbodies, 95 passenger widebodies and 10 widebody freighters.

Philippine Airlines (PAL) is negotiating with **Airbus** and **Boeing** to buy up to 12 widebodies before the end of the year. The flag carrier had planned to buy eight airplanes, but it sees growing demand for long-haul flights to Europe and the U.S. **PAL** expects to place six firm orders for the A350 or 787, worth around \$1.0 billion for delivery in 2017 and 2018, and it will option six more scheduled for 2019 and 2020. **PAL** and its subsidiaries operate a relatively new fleet of 29 **Airbus** A320 Family jets, 14 A330s, six **Boeing** 777-300ERs, and nine **Bombardier** Dash 8s. Its six elderly A340-300s will be replaced by the new widebodies.

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Airbus is already having a hard time selling the two A380s it finished for **Skymark** and the first and second **Transaero** jets that are on the assembly line. The leasing company, **Amedeo**, ordered 20 A380s several years ago but has yet to announce a customer for the plane. These facts must surely influence **Airbus'** decision making.

Boeing Orders

Boeing Sold 65 737s and 24 Widebodies in November. EVA Airways purchased 18 787-10 Dreamliners and two additional 777-300ERs, valued at more than \$7 billion at current list prices.

Korean Air finalized its order of 30 737 MAXs and two more 777-300ER jetliners. The deal was valued at nearly \$4 billion at current list prices. The **AirBridge Cargo**, U.K., order for two 747-8F freighters was unveiled when the airline took delivery in mid-November. **BOC Aviation** announced its order for 11 Next-Generation 737-800s and 11 737 MAX 8 airplanes, and it was identified as the customer for one unidentified 737-800 order placed in May 2015. An **Undisclosed Middle Eastern Customer** bought three new **Boeing Business Jet** BBJ MAX 8s at the **National Business Aviation Association Convention and Exhibition** in Las Vegas. Another two 737 MAX were purchased by an **Unidentified Customer**, and two 737 NG orders were dropped. An **Unidentified Customer** ordered eight 737 MAX airplanes, and eight more 737 NGs were cancelled. During the month, **Virgin Australia Airlines** revealed its order for four 737 MAX which were previously listed as unidentified. **Virgin Australia** now has 45 737s on backlog and has ordered a total of 75 737 Next Generation and 40 737 MAX. As of November 30, **Boeing** had 655 new orders, having lost 87 existing orders, including 57 737s, four 747s and 26 787s, resulting in 568 net orders. **Boeing** delivered 43 737NGs, one 747-8I, three 747-8Fs, one 767F, two 777Fs, seven 777-300ERs, five 787-8s and nine 787-9s in November. The 71 deliveries in one month were matched in March and June and fell short of the

Boeing November 2015 Orders, Deliveries					
NOV ORD	NOV DEL	NOV CANX	TOTAL ORD	TOTAL DEL	BACK LOG
737					
11	43	-10	10,083	8,807	1,276
737 MAX					
54	-0-	-0-	2,955	-0-	2,955
747					
2	4	-0-	1,539	1,519	20
767					
-0-	1	-0-	1,162	1,083	79
777					
4	9	-0-	1,579	1,355	224
777X					
-0-	-0-	-0-	306	-0-	306
787					
18	14	-0-	1,142	354	788
This Month			This Year		BL
89	71	-10	568	709	5,648
Boeing sold 26,296 aircraft and delivered 20,648 as of November 30, 2015					
The Current Program includes sales and deliveries of 737s, 747s, 767s, 777s and 787s.					
Sales totals include 87 cancellations.					

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record of 77 deliveries set in September. **Boeing** leads **Airbus** in production of new aircraft, even though it lags behind **Airbus'** sales.

Korean Air finalized its order of 30 737 MAXs and two additional 777-300ERs in November. The deal was valued at nearly \$4 billion at current list prices. The airline also has optioned 20 additional 737 MAXs as part of the contract, which was previously announced as a commitment during the **Paris Airshow** in June. **Korean Air** has become **Boeing's** newest 737 MAX customer, and now it has 62 **Boeing** aircraft orders on backlog. The airline currently operates 91 **Boeing** passenger airplanes, including 40 737NGs, 15 747 and 37 777 models, and an all-**Boeing** cargo fleet of 15 747-400F, six 747-8F and five 777F freighters.

BOC Aviation announced its order for 11 Next-Generation 737-800s and 11 737 MAX 8 airplanes in November. They will be delivered from 2018 to 2021. **BOC Aviation** has ordered 107 737NGs, 61 737 MAXs and 16 777s. The lessor ordered its first 50 737 MAX aircraft in 2014 and the first of that batch will be delivered in 2019. The company is a leading global aircraft leasing company with a portfolio of 253 owned and managed aircraft operated by 59 airlines worldwide in 29 countries. It has with commitments to acquire 203 aircraft, as of September 30, 2015.

EVA Airways purchased 18 787-10 Dreamliners and two additional 777-300ER jetliners, valued at more than \$7 billion at current list prices. This marks the largest single commercial airplane purchase in Taiwan aviation. The carrier is a launch customer for the 787-10 and will be one of the first airlines to operate the newest Dreamliner. **EVA** currently operates 32 **Boeing** widebody airplanes, including three passenger 747-400s and 22 777-300ERs. It now has unfilled orders for three 777-300ERs and five 777F freighters.

Biman Bangladesh Airlines announced the airline's first direct-purchase of a Next-Generation 737-800 in November, as part of the national airline's fleet modernization plan. Two 737-800s were ordered in June 2008, and the order was revealed when the first of them was delivered on November 24. The Dhaka-based airline also operates six 777s and two leased 737-800s, and has one additional 737-800 and four 787-8 Dreamliners on order.

Boeing Orders for December. **Turkish Airlines** confirmed 10 737 MAX 8 options during the last month of the year. They will be delivered in 2021. **Turkish** now has 20 737-800 and 65 MAX 8 and 10

Boeing Completed Detailed Design for the 787-10 Dreamliner in December. This milestone in the development of the newest and longest member of the 787 family was nearly two weeks ahead of schedule. The closure of the design phase is critical to the program because it means the manufacturer can build the parts and tools necessary for fabrication or procurement. Major assembly of the 787-10 will begin in 2016, followed by the first flight in 2017 and first delivery in 2018. **Ken Sanger**, VP of 787 Airplane Development, said, "With the 787-10, we are building upon our experience and the 787-9 design itself. We have optimized the design for the needs of the market and are excited as we look forward to production." The 787-10 is a straightforward stretch of the 787-9, and **Boeing** designed the 787-10 for superior efficiency as well as maximum commonality. Ninety-five percent of the design and build of the 787-10 and 787-9 will be identical, reducing complexity, cost and risk across the production system and providing operational benefits to customers, **Boeing** said. To date, the 787-10 has logged 164 orders from nine customers around the world, accounting for 14 percent of all 787 orders.

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MAX 9 aircraft on order. **FedEx Express** ordered its 101st 767-300ERF freighter. It has 25 in service and 76 in backlog. A **Boeing Business Jet** customer bought two 737s and **Air Lease Corp.** ordered eight 737s. One undisclosed customer dropped four 737 NG orders, and another cancelled eight 737 NGs, raising the number of 737 cancellations and order conversions to 70 and the total cancellations this year to 100. U.K. leisure airline **Jet2.com** finalized an order for three more 737-800s, valued at \$288 million at current list prices. It ordered 27 737-800s in September 2015, and operates an all-**Boeing** fleet of more than 60 airplanes. The 30 737 NGs will be delivered from 2016 through 2018. **Boeing** has a target of around 760 new sales in 2015, so it is 180 short. The manufacturer said its orders will roughly equal the 755-760 new aircraft it expects to deliver to customers this year. As of December 15, it had 577 net orders, which is 55 percent of **Airbus'** 1,007 net new orders. While the Europeans seem certain to win the order race, **Boeing** is likely to again beat **Airbus** in terms of deliveries.

China Southern Airlines announced that it would buy 30 Next-Generation 737s and 50 737 MAX airplanes, valued at \$8.38 billion at current list prices. Its **Xiamen Airlines** subsidiary agreed to purchase 30 737 MAX aircraft. It also converted nine of its 40 firm ordered 737NGs into orders for the MAX. The total value of the orders 65.07 billion yuan (\$10.04 billion), according to a **Shanghai Stock Exchange** filing, which makes each airplane worth \$91.27 million. **China Southern's** aircraft will be delivered from 2017 through to 2021 and the **Xiamen** 737 MAXs will arrive between 2018 and 2020. The orders will be posted on **Boeing's Orders & Deliveries** website once all contingencies are cleared. Chinese President **Xi Jinping** visited **Boeing's** widebody factory in September and Boeing announced orders and commitments for 300 aircraft at that time, as well as a partnership with **COMAC** to open a China completion facility for the delivery of 737 aircraft. It does not bode well for the **COMAC** C919 program if the major Chinese airlines buy hundreds of 737 MAX.

Boeing President and CEO Dennis Muilenburg commented on **Congress'** reauthorization of the U.S. **Export-Import Bank** for five years. "By reopening the **Export-Import Bank** **Congress** has taken strong action enabling American exporters and the skilled workers they employ to compete successfully in tough global markets. We commend the bipartisan majorities in both the **House** and the **Senate** that recognized the **Ex-Im Bank's** value to the U.S. economy by voting several times in recent months to reauthorize. With these votes, **Congress** did the right thing for workers at companies large and small across the nation, including the 1.5 million workers at nearly 15,000 U.S. companies that help **Boeing** design, make and support America's aerospace exports." The **House** voted 359 to 65 to send a \$305 billion bill to the Senate that funds the nation's roads and infrastructure. The **Ex-Im Bank** reauthorization was a rider on that bill. Once it is approved by the **Senate** it will be signed by President **Barack Obama**. The legislation permits **Ex-Im** to function again and its charter will be renewed until September 30, 2019, although the bank was reformed and its lending limits were reduced.

Delta Air Lines announced that it ordered 20 new Boeing 737-900ERs and purchased 20 used **Embraer** E190s from **Boeing** at "more compelling economics" than a similar order it cancelled during the summer. The 737s will be delivered in 2019, and the E190s will replace smaller aircraft that its regional carriers fly in 2016 and 2017. **Delta** retains 10 options for 737s. The recent announcements bring **Boeing** 130 units closer to its goal of 760 new sales in 2015.

Air New Zealand (ANZ) flew the first 777-200ER (Extended Range) service between Auckland, New Zealand and Buenos Aires, Argentina in December. The 12 hour flight was possible through the

approval of 330-minute extended operations (ETOPS) between airports. The flight marks the culmination of stringent airplane configuration and operational requirements set by the U.S. **Federal Aviation Administration** and the **New Zealand Civil Aviation Authority**, **Boeing** said. The 330-minute ETOPS authorization allows **ANZ** to operate its **Rolls-Royce** Trent 800 powered 777-200ERs on more direct flights, which lowers fuel usage and emissions. **Air New Zealand** began 240-minute 777-200ER ETOPS flights in October 2014, and flew long-range routes for approximately one year before being granted 330-minute ETOPS approval in November 2015. The 777 fleet has flown more than 3.3 million ETOPS flights since entering service in June 1995.

Regional Report

Air New Zealand signed a contract for the purchase of 15 additional ATR 72-600s, in a deal valued at \$375 million (\$25 million each) at list price. The airline ordered seven ATR 72-600s in 2011, and has since exercised the five options and converted two purchase rights into firm orders from the 2011 contract. By 2020, **Air New Zealand** will operate 29 ATR 72-600s, which will be the third largest fleet of **ATR** aircraft in the world. The ATR -600s will progressively replace the airline's fleet of ATR 72-500s. The new ATR -600s will be configured with 68 seats and feature the latest standards of passenger comfort, namely the larger overhead bins and the comfortable and lightweight seats of the new **ATR Armonia** cabin. **Air New Zealand** has operated **ATR** aircraft for more than 20 years, and received its first ATR -600s in 2012.

Braathens Aviation will purchase of four additional ATR 72-600s. They optioned the aircraft at the **2015 Paris Airshow**, when **Braathens** ordered five firm ATR 72-600s and took 10 options. The aircraft will be operated by the group's subsidiary airline **Braathens Regional**. The first of the nine ATRs was delivered in November and the other eight will enter service by the end of 2016. The first new ATR 72s will replace some of the airline's 11 aging Saab 2000s, and eventually the five ATR 72-500s.

European Aviation Safety Agency (EASA) certified the ATR 72-600 high-density seating configuration. **ATR** squeezed four more seats into the standard airframe by optimizing seat pitch and adjusting the forward cargo compartment, bringing the maximum capacity to 78 seats. The option will be available as a retrofit. **Cebu Pacific** was the first airline to choose the high-density seating, when it ordered 16 new ATR 72-600s at the **Paris Airshow** earlier this year. The first 78-seat aircraft will enter commercial service in August 2016.

Bombardier executives rolled out a five-year plan that promises to increase revenues by around 40 percent while doubling profit margins by the end of 2020. The plan seeks to lower internal and supplier costs by transferring low-skill work from high-cost centers in Canada and Northern Ireland to cheaper facilities in Mexico, Morocco and India. The company plans to renegotiate long-term agreements

Harbin Aircraft Manufacturing Corporation, a subsidiary of **Avicopter Plc**, has signed a contract for 15 Y-12Es with **Fly-Avia**, Russia. **Fly-Avia** is based in Moscow and registered in the UAE. It specializes in MRO and after-sales aircraft support. The first Y-12E deliveries start in 2017, and the twin turboprop utility aircraft will be used to develop the Russian air cargo market and engage in geological and hydrographic surveys. **Fly-Avia** is now the official dealer of the 19-seater Y12E and Y12F, and it holds all the rights to sell the aircraft in Russia and the CIS countries. The 15 Y12E aircraft were valued at 4.5 to 5.5 billion yuan (\$72 to \$88 million). The **Russian Government** granted its Airworthiness Certificate to the Y-12E in August.

with key suppliers by promising higher volumes in return for price discounts. It will consolidate procurement activity across its programs. **Bombardier** will focus on making a “flawless” CSeries entry into service and production ramp-up, while completing development of the Global 7000 business jet. The CSeries ramp-up to full-rate production of 10 aircraft per month will be stretched from three years to five years, and **Bombardier** now plans to deliver from 255 to 315 CSeries aircraft by 2020. The slower ramp-up will give the company more time to sign up “marquee” airlines, such as **United Airlines**. The manufacturer has 243 firm orders and commitments for 360 aircraft. The plan assumes that **Bombardier** can renegotiate \$3.5 billion in debt that matures between 2018 and 2020, and the company must persuade ratings firms to restore an investment-grade credit rating, which must be demonstrated over the next financial year. The manufacturer must deliver the first CS100s to launch customer **SWISS** on time and the plane will have to perform reliably in service. The plan also requires the company to deliver new CRJs and Dash 8s at, or better than, the current low rate, which will be subject to changes in the market. If everything works, revenues should grow from \$18 billion in 2015 to \$25 billion by 2020, and operating profit margins will rise from 3 to 4 percent to 7 to 8 percent. In two years, the company’s CSeries and Global 7000 production programs will be mature and they will drive sales and profits for the next two decades. The next year will be rough because revenues and profits are expected to dip, but management sees improvement in 2017 with CSeries production ramping up. The Global 7000 flight test program will be well underway, and the type will enter service in mid-2018. If those milestones are completed successfully, **Bombardier** believes it can lower its borrowing costs and refinance its debt by 2020.

Transport Canada Awarded Type Certification to the Bombardier CSeries CS100 on December 18, after a 27-month flight test campaign. The 110-seat CS100 can now enter service with **SWISS International Air Lines** in the first half of 2016. **Bombardier** plans to receive a type certification for the 135-seat CS300 airliner in six months. Due to several firsts in airliner technology, the flight tests were longer and more expensive than **Bombardier** expected. The CSeries introduces fly-by-wire flight controls by **Parker Aerospace’s**, resin-transfer infused composite wing panels and **Constellium’s** aluminium-lithium material for fuselage panels, as well as **Pratt & Whitney’s** geared turbofan engine. The CSeries is the first all-new single-aisle aircraft (over 100 seats) to receive type certification since the **Airbus A320** nearly 30 years ago.

Ethiopian Airlines wants to buy 10 narrow-body aircraft and is considering **Bombardier** and **Embraer** jets among others. It plans to nearly double its fleet between now and 2025. Chief executive **Tewolde Gebremariam**, said at the sidelines of a global aviation forum in Montreal, that he is visiting **Bombardier’s** Mirabel factory to review the 100-seater CS100.

Mesa Airlines added three additional EMBRAER 175s to its agreement with **United Airlines**. **Mesa** will now operate 68 E175s on behalf of **United Express**. The airline will take delivery of 18 aircraft in 2016, adding them to the 30 E175 and 20 **Bombardier** CRJ700 aircraft it currently flies under the **United Express** brand. The E175 features 12 First-Class, 16 Premium Economy and 48 Coach seats. The aircraft has inflight Wi-Fi connectivity, leather seating and electric outlets in First Class.

Order Changes and Cancellations

Airbus Reported the cancellation of 12 A350-800 orders by **TAP Portugal** when the flag carrier ordered 14 smaller A330neos. In November, **Airbus** transferred one A320ceo order each from the

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“undisclosed customer” category to **Air China**, **Juneyao Airlines** and **Spring Airlines**. Each of the orders was filled during the month. A fourth undisclosed A320ceo order disappeared, but it was not listed as cancelled. One A321ceo order each was transferred from the “undisclosed customer” category to **China Eastern Airlines** and **Juneyao Airlines** when the airplanes were delivered. **Airbus** reports orders from undisclosed customers include 11 A319ceos, 12 A319neos, 135 A320ceos, 410 A320neos, 89 A321ceos and 57 A321neos. **Air Lease Corp. (ALC)** switched eight of its 31 A320neo orders to the A321neo type, for a total of 117. **GECAS** exchanged four of its 99 A320neo orders for four more A321neos, for a total of 25.

Boeing Cancellations in November. One **Unidentified Customer** dropped two 737 NG orders when it bought two 737 MAX. Another **Unidentified Customer** ordered eight 737 MAX airplanes, and eight more 737 NGs were cancelled.

Leasing & Finance

Doric Lease concluded junior financing for two **Boeing** 737-8JP/Ws that were finance leased to **Norwegian** in August and September 2015 respectively. The lease terms were 12 years, and the senior lender was **Norddeutsche Landesbank Girozentrale (Nord/LB)**. The loan was valued at \$68 million and the junior loan totaled \$26 million, so **Doric** arranged overall financing of \$94 million for both aircraft.

BOC Aviation will lease eight new 737-800s to **EgyptAir**. The aircraft will replace the flag carrier’s fleet of 11 ageing A320-200s. It already operates a fleet of 20 737-800/Ws and four 737-500s on domestic routes as well as on flights to European, African, and Middle Eastern countries.

AWAS agreed to lease two new A320s to **VietJet Air** in 2016 to meet the airlines’ rapid growth in demand. **AWAS** is providing a financing solution for these two aircraft and then placing them on long-term leases with the airline. This will be the fourth transaction between the parties for a total of eight new A320s and A321s sourced from both **VietJet’s** and **AWAS’** direct order pipeline.

GE Capital Aviation Services (GECAS) will lease 10 new **Airbus** A321neos to **Virgin America**. The first aircraft is scheduled for delivery in the first quarter of 2017 and the remainder will be delivered through the third quarter of 2018. The planes will be powered by **CFM LEAP-1A** engines, and fitted with 185 seats. They will fly from the West Coast to slot-constrained airports such as New York’s **JFK International Airport** and from Los Angeles to Hawaii. The airline currently operates 10 smaller A319s and 47 A320s. **Virgin America** has six more A320ceos and 30 A320neos on order.

Engines

The A320neo with Pratt & Whitney PurePower Engines received joint Type Certification from the **Federal Aviation Administration (FAA)** and

Air Lease Corporation will long-term lease two new **Boeing** 787-9 Dreamliners to **EL AL Israel Airlines**. Both aircraft will come from **ALC’s** order book and they are scheduled for delivery to the flag carrier in the third and fourth quarter of 2017. These Dreamliners will replace older 747-400s in **EL AL’s** fleet and they will be the airline’s first two 787s. **EVA Air** will long-term lease four new 787-9s and two new 787-10s from **ALC**. These aircraft enter service from mid-2018 through early 2020, and come from **ALC’s** Dreamliner order book. **EVA Air** will now lease 10 new wide-bodies from **ALC**, including four 777-300ERs.

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from the **European Aviation Safety Agency (EASA)**. **Greg Gernhardt**, President of **Pratt & Whitney Commercial Engines** said, “Today’s announcement marks a significant milestone for the **Airbus** and **Pratt & Whitney** team. We initiated our partnership on the A320neo in December 2010 with the goal of helping our mutual airline customers continuously improve aircraft performance and operating economics. [We are] proud that the **PurePower** engine is the launch engine on the A320neo and will contribute to more than 16 percent fuel burn savings when the airliners enter into service. We continue to work closely together to support aircraft deliveries to customers as they embark on a new age in aviation.” **P&W** said the **PurePower Geared Turbofan (GTF)** engine’s ground-breaking technology will meet or exceed commitments on fuel burn, noise and emissions. The three A320neo flight test aircraft with PW1100G-JM engines successfully completed more than 1,070 flight hours in some 350 flights, and the GTF engine family has accumulated more than 26,000 hours of testing, including 42,000 cycles, on more than 80 test engines.

United Technologies expects to solve its issues with the **Pratt & Whitney** PW1100G engines by February. After the engine has been shut down for 1.5 to 2 hours, “the top of the engine actually cools more slowly” than the rest of the engine, P&W CEO **Gregory Hayes** said. The uneven cooling bends the engine shaft, which can be mitigated by “windmilling” air through the engine for three minutes to cool the entire hot section and even out the temperature before restarting the engine. “You don’t want to start that jet engine up with a shaft that’s bent, even if we’re talking about 5/10,000 of an inch,” Mr. **Hayes** said. If the engine has been idle for less than an hour, or for three hours, the temperature gradient is not a problem, he said. **Pratt & Whitney** developed software to solve the problem through windmilling, and it will introduce a hardware fix on new production engines in February. Existing engines will be retrofitted.

Turkish Airlines chose the **Pratt & Whitney** PurePower PW1100G-JM engine for its 92 firm A321neo orders. The deal was announced during the **2015 Paris Airshow** as a Memorandum of Understanding for 72 firm and 20 optioned aircraft, with deliveries scheduled to begin in 2018. The deal was the largest engine order for **P&W** in 2015 and the largest engine order in **Turkish’s** history.

CFM International won joint certification from the **EASA** and the **FAA** for the LEAP-1A engine. The LEAP-1A will power the **Airbus** A319neo, A320neo, and the A321neo aircraft, and it features some of the industry’s most advanced technology, including 3-D woven carbon fiber composite fan blades and fan case; a unique debris rejection system, fourth generation three dimensional aero-dynamic designs; the Twin-Annular, Pre-Swirl (TAPS) combustor featuring additively manufactured fuel nozzles, ceramics matrix composite shrouds in the high-pressure turbine; and titanium aluminide (Ti-Al) blades in the low-pressure turbine, **CFM** said. The LEAP-1A first flew on the A320neo on May 19, 2015. A second aircraft was added to the test program in September and the two airplanes have logged a combined total of more than 140 flights and 360 hours of flight testing. The LEAP development and certification effort was the most extensive in **CFM** history. Thirty-four engines have been tested and they logged more than 6,500 hours and 13,450 cycles.

GE Aviation GE9X Engine. Testing is underway on the first GE9X engine demonstration core. It successfully operated at maximum speeds over the entire GE9X flight envelope. The GE9X offers a compressor pressure ratio of 27:1, which is the highest pressure ratio of any commercial engine in aviation service. All results are within design limits and predictions. The core testing followed a series of tests of various engine systems, including the fan, HPC, combustor and low pressure turbine. **GE** will

spend more than \$1 billion on technology maturation and product development for the 100,000-pound thrust class GE9X engine this year, **GE Aviation** said. The first completed engine will be tested in the first half of 2016, and the engine is set for flight-testing on **GE's** 747 flying testbed in 2017. Engine certification is scheduled for 2018, and the GE9X will power the **Boeing** 777X aircraft.

Airbus Flight-Testing Higher-Thrust Rolls-Royce Trent XWB-97 Engine. The power-plant for the A350-1000 was installed on the inboard left-hand pylon of the **Airbus** A380 "Flying Test Bed", and the first flight from Toulouse lasted 4 hours 14 minutes. The engine's performance was measured across a "wide range" of thrust settings, the airframer states. The aircraft was flown at altitudes up to 35,000 feet and the engine was tested at speeds up to 0.87 mach. The engine flight-test program will include hot weather and icing conditions testing. The Trent XWB engine produces 97,000 pounds of thrust on take-off, and it is the most powerful engine ever developed for an **Airbus** aircraft. **Airbus** said the first A350-1000 will fly in nine months.

Airline News

Delta Air Lines plans to acquire another 32 percent of **AeroMéxico** stock via a cash offer of 43.59 peso (\$2.60) per share. This will raise its share to the maximum of 49 percent. The U.S. carrier currently owns 4.17 percent of Mexico's premier carrier, and it has the option to acquire an additional 8.1 percent. The **Delta** pension trust fund will acquire approximately 4.6 percent. Once the tender offer is complete, **Delta** and its pension trust would collectively own and/or have options to acquire a total of 49 percent of the outstanding shares of **Grupo AeroMéxico**. **Delta** President, **Ed Bastian**, said, "This new investment demonstrates **Delta's** confidence in Mexico's future and deepens our relationship with **AeroMéxico**, cementing **Delta's** long-term commitment to the customers we serve to, from and through Latin America." Once regulatory authorization by the governments of Mexico and the U.S. are given, and the deal is approved by the boards of directors of **Delta** and **AeroMéxico**, the U.S. airline will start buying shares. The offer will be subject to terms not yet disclosed and to customary closing conditions, including the acquisition by **Delta** of a minimum number of shares. **AeroMéxico's** board of directors said it would study the offer "at the right time in light of applicable regulations," it said in a statement. The proposed purchase follows a recent request by the two airlines for immunity from U.S. antitrust law to allow the two companies to coordinate schedules and prices, making connections more attractive for customers.

Hawaiian Airlines wants to launch daily nonstop service between **Narita International Airport** and Honolulu on July 22, 2016. **Hawaiian** will operate a 294-passenger A330-200 on this new route, which complements its existing daily service to **Tokyo Haneda Airport**.

Latvia's Parliament backed an €80 million (\$85 million) cash injection into **AirBaltic**, which helps

International Air Transport Association (IATA) Posts December 2015 Jet Fuel Prices. The association updates the world's average jet fuel prices each week. On December 4, the world's average price of fuel was \$1.324 per gallon, 3.5 percent lower than the October 2015 price of \$1.356. Fuel was also 35.8 percent less than it was in December 2014. The price of fuel is affected by location. It was only \$1.223 in the Middle East region and was \$1.353 per gallon in Latin America. In Asia, fuel cost \$1.282 per gallon. Fuel dropped to \$1.276 in Europe, and rose slightly to \$1.398 in North America, which was the highest priced region. Since last year, fuel costs in those regions dropped by 38.1 and 32.7 percent respectively. **IATA** estimated that the global airline industry's aggregate fuel bill will total \$67.8 billion in 2015, a savings of \$89.2 billion from the previous year.

the state-owned flag carrier to purchase its 13 **Bombardier** CSeries aircraft when they are delivered in 2016 and 2017. The CSeries 300s will replace seven 737-300s and five 737-500s. The state infusion is part of a refinancing and expansion plan, in which German banker **Ralf-Dieter Montag-Girmes** will invest €52 million in return for a 20 percent stake in carrier. Under E.U. rules, the state can only inject new funds needed to pay for new aircraft if there is also a private investor.

The Aeroflot Group plans to consolidate its regional carriers **Rossiya**, **Donavia** and **Orenair** under the **Rossiya** brand. The new **Rossiya** will operate domestic and some international routes using hubs in Moscow and St. Petersburg. It will focus on the medium-price market. The three carriers currently serve a combined 48 domestic and 42 international destinations. **Rossiya** will get some of **Transaero Airlines'** international routes, out of the 56 that were transferred to **Aeroflot** by Russia's **Federal Air Transport Agency (Rosaviatsia)**. These include new markets such as Kazakhstan and more frequencies to European and Asian airports. **Rossiya** will lease up to 24 ex-**Transaero** widebodies, including five 777-200/300s, five 767-200/300s, and 14 747-400s. The leases are still subject to confirmation. The **Aeroflot Group** previously agreed to lease 10 ex-**Transaero** 737-800s and four 747-400s from **Sberbank**, and negotiations with other lessors are ongoing. **Rossiya** will also acquire the four ex-**Transaero Airlines** Tu-204s. The Group said the newly consolidated carrier would generate synergies worth several billion roubles.

SpiceJet, India, is negotiating with **Airbus** and **Boeing** about buying more than 150 single-aisle airplanes. A firm order is expected by March 2016. The airline has seen a remarkable improvement in its fortunes because the country's second-biggest budget airline was close to collapse late last year. Co-founder **Ajay Singh** bought back a controlling stake of **SpiceJet** and turned it around. The airline has reported profits in the last three quarters, an improvement from the losses in the five preceding quarters. Mr. **Singh** said, "We're looking at both **Airbus** and **Boeing** – the MAX aircraft as well as the NEO. We have received offers from both of them." He said the airline would buy a single aircraft type. The airline may have to use "various forms of credit financing" as well as cash it generates from ticket sales. He said he would not dilute the airline's equity to buy the planes. The airline is also talking with **ATR**, **Bombardier** and **Embraer** to buy up to 50 regional aircraft to service India's smaller cities. **SpiceJet** operates 27 jets and 14 **Bombardier** Dash 8s, and it still has firm orders for 42 737 MAX aircraft that it placed in October 2013.

HNA Group, China, will buy 23.7 percent of **AZUL Linhas Aereas Brasileiras** for \$450 million. This will be **HNA's** first foray into Latin America. The group is an aviation, tourism and logistics conglomerate that recently acquired air cargo handlers **Swissport** and the Irish aircraft leasing company **Avolon**. The purchase of preferred stock will not dilute founder **David Neeleman's** two-thirds of voting shares and it will improve **AZUL's** cash position. The airline postponed its planned Initial Public Offering in New York and Sao Paulo several times since 2013, in the face of an uncertain financial market, a weakened Brazilian economy and fierce competition from market leaders **GOL** and **TAM**. **AZUL** is no longer pressured to do an IPO, and the stock sale was driven by possible cost savings with **HNA** on leasing, maintenance, insurance, and aircraft orders. The airline is **Embraer's** biggest Latin American customer, while **HNA** is the manufacturer's biggest client in China. **AZUL** operates seven A330s, 86 E-Jets and 57 **ATR** turboprops. It plans to retire 10 to 15 airplanes in 2016 in order to trim its capacity by up to 4 percent. Those planes could be taken up by the **HNA's** airlines in China. **United**

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Airlines bought 5 percent of **AZUL's** stock for \$100 million in June. Both outside investors have the right to name a board member.

Jiangxi Airlines should win its Air Operators Certificate (AOC) from the **Civil Aviation Administration of China (CAAC)** by December 31, and will launch operations in early 2016 with five 737-800s acquired from **Xiamen Airlines**, including -85C/W (SN 37576) which was handed over in December. The start-up airline is based at Nanchang and is 60 percent owned by **Xiamen**. The **Jiangxi Airlines Investment Co.** holds the remaining 40 percent. **Jiangxi** plans to add two more 737s by the end of 2016 and wants a fleet of 20 jets by 2020.

The Government of Saudi Arabia delayed the launch of two start-ups, **Al Maha Airways** and **SaudiGulf Airlines**, because the **Saudi General Authority of Civil Aviation (GACA)** still had lingering concerns about several undisclosed "technical issues". The airlines started the certification process in 2012 and are supposed to bring more competition to the Saudi domestic market. State-owned **Saudi Arabian Airlines** and the private low-cost carrier **flynas** dominate the market. Both new carriers recently took delivery of their first A320-200s in hopes of starting daily services between Dammam, Jeddah and the capital, Riyadh.

AirAsia X, the Malaysian long-haul budget airline, reported its eighth consecutive quarterly net loss of 288.2 million ringgit (\$68.42 million) for July-September. This was worse than the 210.85 million ringgit loss in the same quarter a year earlier. Revenue rose 13.5 percent to 793 million ringgit. The airline suspended its acquisition of new A330s to improve its profitability. Part of its financial woes stem from the nearly 20 percent depreciation of the Malaysian currency because a large portion of **AirAsia's X** borrowings and operating costs are in U.S. dollars. **AirAsia** also reported a third-quarter net loss of 406 million ringgit (\$96 million), having made a net profit of 5.4 million ringgit in the same period last year. It suffered foreign exchange losses, and the airline's affiliates, **Indonesia AirAsia** and **Philippines AirAsia**, also posted losses. **AirAsia** said quarterly results from both associates missed their forecasts, and **Indonesia AirAsia** lost \$19.9 million after taxes and **Philippines AirAsia** made an after tax loss of \$29.1 million. Some of the losses were due to one-off costs related to the sale and lease-back of aircraft. CEO **Tony Fernandes** was still upbeat. "We see a great end to the year and a light at the end of the tunnel for the Malaysian operations after a series of head-winds that affected our operations," he said.

Air Canada offered three tranches of enhanced equipment trust certificates worth a total of \$537.1 million to acquire three new **Boeing** 787-9 and two new 777-300ER aircraft. The jets are currently scheduled for delivery in April and May 2016.

Malaysia Airlines signed a code-share deal with **Emirates Airline**, and it will drop some loss-making European routes as part of its turnaround plan under new Chief Executive **Christoph Mueller**. The code share will allow **Malaysia** customers to book routes to Europe with **Emirates**, while that airline's passengers can connect on **Malaysian** routes within the Asia/ Pacific region. The flag carrier will stop flying to Amsterdam and Paris by the end of January. The airline recently returned eight 777-200ERs to the leasing companies that were surplus to its requirements. **Malaysia Airlines** will now focus on regional Asian operations using smaller aircraft. The A380-800s used on its London route will be replaced with A350-900s by the end of 2017.

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The United States and Cuba will restore scheduled commercial airline service. This should improve U.S.-Cuba relations and will increase tourism and business in Cuba. U.S. airlines will be able to sell tickets to the island on their websites, but it does not lift the U.S. ban on general tourism. U.S. travelers still must meet at least one of 12 criteria to visit. **American, JetBlue** and **United** intend to start scheduled flights in 2016.

Bankruptcy of the Month

Bankers, Led by State Bank of India, were finally able to auction off some of **Kingfisher Airlines'** assets to recover their 70 billion rupee loans (\$1.05 billion). Lenders called for bids for the movable assets, such as vehicles and the remnants of the airline business, and set the reserve price at Rs6.5 million (\$97,500), less than 0.01 percent of the outstanding loan. This comes three years after the airlines' licence was suspended by aviation regulators. In the following year, most banks wrote off their loans. Lenders took possession of the **Kingfisher House**, near the **Mumbai Airport**, but they have not been able to auction off the property. Lenders also have not yet taken possession of **Vijay** palatial villa in Goa, due to litigation between the **Kingfisher** founder and the lenders. The **State Bank of India** declared **Kingfisher Airlines** and **Mr. Mallya's United Breweries Holdings** as wilful defaulters which will prevent them from taking out new bank loans.

Technical

Richard Branson's Virgin Galactic commercial space company plans to acquire ex-**Virgin Atlantic Boeing 747-41R** (SN 32745) from **Boeing Commercial**. The 747 will be named "Cosmic Girl" and it will be modified to launch small rockets into space. Like in the **James Bond** movie "Moonraker", the rocket will be launched in flight and the payload will be boosted into orbit. The 747 can fly near where the satellite is supposed to be and it will not be limited by the geography of ground launch sites. **George Whitesides, Virgin Galactic's** CEO, said, "Air launch enables us to provide rapid, responsive service to our satellite customers on a schedule set by their business and operational needs, rather than the constraints of national launch ranges." The 747 temporarily replaces **Virgin Galactic's WhiteKnight-**

PIA - Pakistan International Airlines will be privatized. The legislature passed a law that ended the original **PIA Act of 1956** which had required the airline's shares to remain in government hands. Pakistan accepted a \$6.67 billion **Extended Fund Facility (EFF)** from the **International Monetary Fund (IMF)** in 2013, and the sale of at least 26 percent of the state airline was one of the conditions. The shares will be sold by March 2016, and the government said prospective investors include a Punjabi business consortium as well as an undisclosed Gulf state-backed entity. The proposals will be submitted in December. Once a suitable investor is found, **PIA's** liabilities of 297 billion rupees (\$2.81 billion) will be transferred to a holding company, and the "**new PIA**" will have zero debt. The government will then sell off **PIA's** core business while maintaining control of its ground handling and hotels. These will then be sold off over time. Some **PIA** employees walked off their jobs to protest the planned sale and disrupted flights. Airline offices were closed and pilots joined the strike. The workers are demanding that the ordinance be retracted, and political opponents accuse the government of bypassing parliament by opting for a decree over an amendment that would require a vote. The government promised that "no employee will be laid off during privatization," but nothing was said about after the sale. Local economists say at least two-thirds of the airline's staff are surplus to requirements. The airline was a source of pride for Pakistan, but **PIA** flights are now regularly cancelled and some of its aircraft have been cannibalized to keep others flying.

Two, a special-purpose, twin-hulled jet that will still be used to launch the **SpaceShipOne** tourist craft into a short jaunt to the edge of space. The first **SpaceShipOne** crashed last year and killed a test pilot. A replacement is being built and flight tests will resume in early 2016. **Virgin Galactic** expects to begin test flights of its **LauncherOne** rocket in 2017. It will be mounted under the 747's left wing and be attached to the place where 747s carry a fifth engine. The modification of the 747 should be fairly straight forward and cheap. The **LauncherOne** should be able to launch a 200-kilogram (440-pound) payload into orbit for less than \$10 million, a fraction of the cost of using a ground launched rocket. This is not a new idea. The **U.S. Air Force** launched its famous X-plane rockets from motherships starting in 1947. The first plane to intentionally exceed Mach 1, the X-1, was launched from a B-29 and the Mach 6-capable X-15 flew to the edge of space after being dropping from a B-52 in 1963.

Cargo Pallet

The 747-8's Future Rests in the Hands of the Russians. **AirBridgeCargo Airlines**, a subsidiary of **Volga-Dnepr Group**, pledged to buy 18 more 747-8Fs by 2022. It leased two from **Boeing Capital** in November and intends to lease another three from **Boeing** in 2016. The airline will then acquire two or three more annually until 2022. The airline is having a hard time financing the jets due to the 60 percent drop in the rouble's value, but it hopes that the revival of the U.S. **Ex-Im Bank** will help. **AirBridge-Cargo's** soft order for 18 jets almost doubles the 747's backlog. At the planned production rate of one per month, **Boeing** will build down its firm backlog by mid-2017. The manufacturer is striving to sell six 'white tail' jumbos worth \$2.21 billion (\$368 million each) at the list price. Two passenger jets were built for the bankrupt **Transaero Airlines**, Russia, and a third was built for **Lufthansa**. These three are enough to fill a potential 'Air Force One' Presidential aircraft order from the **U.S. Government**, but that possible order is blocked by Congressional inaction. The other three are freighters and they may now be earmarked for **AirBridgeCargo**. It is obvious that the future of the 747-8 lies in the air cargo market, which has suffered an eight-year slump since the start of the "Great Recession" and so far shows modest growth. Cargo airlines like the 747-8F, which is one-third larger than its closest rival, the 777F, and it can load oversized cargo through its hinged nose. If **Boeing** ceased 747 production, it could cause an accounting loss of some of the \$1.89 billion in deferred costs. **Randy Tinseth**, **Boeing** VP Marketing, said "It continues to be a tough market. We have some near-term opportunities. We also have airplanes we need to sell." Mr. **Tinseth** said sales would pick up if the air-cargo business returns to its historic 4 percent to 5 percent growth rate, which is double the current pace. "The long-term future of this airplane is tightly tied to what we see in the cargo market." **Boeing** forecasts that more than 250 cargo aircraft will need to be replaced over the next five to 10 years. "As long as demand is there, and demand makes sense from a production point of view, we'll keep building the airplane," Mr. **Tinseth** said.

China Postal Airlines will buy 10 Next-Generation 737 Boeing Converted Freighters (BCFs) from **Boeing**, joining Hangzhou-based **YTO Airlines** as a launch customer for the **Boeing 737 BCF** program. **China Postal's** agreement with **Boeing** also includes the purchase of seven 757-200s that the airline will convert into freighters. This was the largest purchase order in the airline's history, and it operates 14 737-300(F)s and eight -400(F)s. The

IATA said global demand for air freight has flat lined with cargo volumes rising just 0.5 percent in October. Despite this, cargo carriers are still adding capacity, driving load factors down to approximately 44 percent, which is the lowest since 2009, **IATA** said in its monthly air freight figures. **Tony Tyler**, head of **IATA** said, "Early signs of improvement in export orders may bode well for trade and air cargo, but this is unlikely to prevent air cargo finishing 2015 on a low note."

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aerospace firm has not yet launched the 737-800 conversion program, but it now has 25 orders for the -800 conversions from the first two customers, making the launch more likely. The 737-800 is the first Next-Generation 737 to be offered for conversion, although **Israel Aerospace Industries' (IAI) Bedek Aviation Group** has announced its own Next-Generation 737 BDSF conversion program. The first -800s were delivered in 1998, and the type is being replaced by the 737 MAX, starting in 2017, so there will be plenty of cheap, surplus airplanes around to feed the conversion program. The China air express market is forecast to be among the fastest growing segments of the world air cargo market. According to the **Boeing World Air Cargo Forecast**, worldwide air cargo traffic will grow 4.7 percent per year over the next 20 years, with domestic China and intra-Asia markets expanding 6.7 percent and 6.5 percent per year, respectively. Its express market is growing at double-digit rates and is fueled by e-commerce. China has surpassed the United States to become the number one e-commerce market in the world, **Boeing** said.

Airbus Scheduled A330 Beluga XL Center Wing-Box manufacture to start early next year. They have already started cutting fuselage frames of the A330-300-based Beluga XL out-sized transport. Various factories in Saint Nazaire, Nantes and Hamburg have produced manufacturing drawings. Many of the components will be adapted from those developed for its A330-200 freighter. Nantes started machining the initial fuselage frame 40, which is located near the leading edge of the wing root. The parts are being built for the initial non-flying test aircraft. Final assembly of the aircraft is scheduled to begin in early 2017 and the plane will enter service in 2019. The Beluga XL will replace the A300-600ST Beluga as the core of **Airbus'** airborne production logistics operation.

PEMCO World Air Services (PEMCO) redelivered a third 737-300F (SN 27459) to **Kahala Aviation**, Ireland. The freighter was converted at **PEMCO's** headquarters in Tampa, Florida. The airline's fourth 737-300 (SN 27460) is scheduled for redelivery during December 2015.

Kalitta Air bought two 767-341ERs (SN 24752 & 24753) from **Business Air**, Thailand, and will have them converted into freighters by **IAI's Bedek Aviation**. The U.S. cargo airline also bought two ex-**Japan Airlines** 767 airframes which will be used for spare parts. The 767Fs will be operated for **DHL** and other freight companies. **Kalitta Air** currently operates five 747-200(F)s and 10 747-400(F)s on scheduled and cargo charter flights.

SF Airlines took delivery of its first 767-300 Boeing Converted Freightier (BCF) from ST Aerospace Services Co., Singapore, which performed the conversion work. It is the first of five 767-338BCFs (SN 28153, 28154, 28724, 29717 & 29718) the airline will receive during the next year. **SF Airlines** is based in Shenzhen, and operates fleet of eight 737-300(F)s, three 737-400(F)s and 14 757(F)s. It signed a letter of intent to purchase 737-800BCFs when the program is launched.

Military Market

The U.K. Released its 2015 Strategic Defense and Security Review (SDSR), and it calls for the purchase of nine new maritime patrol aircraft (MPA). The nine new **Boeing** 737-800ERX-based P-8 Poseidon MPAs, for the **Royal Air Force (RAF)**, are part of a pledged £178 billion (\$269 billion) investment in defense equipment and support over the next decade. The first three aircraft are expected by 2020 and will be based at **RAF Lossiemouth** in Scotland. The **RAF** will retain its seven **Boeing E-**

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3D Sentry airborne warning and control system aircraft and three **Boeing** RC-135W Rivet Joint planes in service until 2035, which means they will need an upgrade to extend their lifespans. The E-3As were built before 1985 and the newest RC-135 was built in 1965. The **RAF** will convert one of its **AirTanker Airbus** A330 Voyager multi-roll, refueling aircraft into a VIP transport. The **SDSR** document said, "We will adapt one of our existing Voyager aircraft so that it can transport senior ministers securely, [and] delivering better value for money than the current use of charter aircraft. The aircraft would also be available to the **Royal Family**." All 14 Voyager air tankers will be in service in 2016. The **RAF** will operate 22 **Airbus Defense & Space** A400M Atlas transports, eight **Boeing** C-17 transports and 14 stretched-fuselage C-130J-30s.

The **French Government** signed a firm order for eight more **Airbus Defence & Space** A330 Multi-Role Tanker Transports (MRTT). It ordered its first one in June and has an eventual requirement for 12 MRTTs worth a total €3 billion (\$3.3 billion). The other three will be purchased by 2018. The **French Air Force** will take delivery of the first tanker in 2018, and will accept one or two per year until 2025. The A330 MRTTs will be powered by **Rolls-Royce** Trent 700 engines, and fitted with a refueling boom system and underwing hose-and-drogue refueling pods. They can be fitted with 271 seats and the aircraft can be equipped with the **MORPHEE** intensive care module, which can carry 10 patients and 88 passengers in a medical evacuation role.

The **Final Boeing C-17 Globemaster III** military airlifter left the company's Long Beach plant on Sunday, November 29, marking the official end of aircraft production after 74 years. The C-17 was flown to **Boeing's** San Antonio facility where it will be completed before delivery to the **Qatar Emiri Air Force** in early 2016. **Boeing** will continue to provide support, maintenance and up-grades to the worldwide C-17 fleet under the **C-17 Globemaster III Integrated Sustainment Program (GISP) Performance-Based Logistics** agreement. The first C-17 flew on September 15, 1991, and 279 have been built since then. **Boeing** decided to end C-17 production in 2013 after the **U.S. Air Force** ceased buying new aircraft in 2011. **Boeing** and its legacy companies **Douglas Aircraft Company**, **McDonnell Douglas**, and **North American Aviation** were a part of California's rich aerospace legacy for more than 90 years, and they built more than 45,000 military and

Boeing Delivers Fourth Turkish AEW&C.

The fourth and final Peace Eagle Airborne Early Warning & Control (AEW&C) aircraft was handed over to the **Turkish Air Force** at **Konya Air Base** on December 9. The 737 AEW&C is based on the 737-700 commercial airplane, and features advanced radar and 10 state-of-the-art mission crew consoles that can track airborne and maritime targets simultaneously. The battle management capabilities allow mission crew to direct offensive and defensive forces while maintaining continuous surveillance of the operational area, **Boeing** said. This final aircraft includes upgraded software for the platform and the final element of the ground support segment, the Software Support Center (SSC). Previously delivered Peace Eagles will receive the upgraded software soon. **Boeing** worked with its Turkish industry partners, **Turkish Aerospace Industries**, **Turkish Airlines**, **HAVELSAN** and **ASELSAN**, to complete the delivery as well as establish technology capabilities like the Software Support Center, updated mission simulator software and mission support center software. **Aysem Sargin Isil**, managing director, **Boeing Turkey**, said, "Turkey is currently the only nation in this region with the AEW&C capability. By combining **Boeing's** innovative engineering with the expertise provided by local Turkish industry partners, we've delivered an advanced world-class airborne surveillance system to our customer." Australia, South Korea and Turkey operate the 737 AEW&C platforms.

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commercial airplanes. Even though it shut down production, **Boeing** still employs 16,000 people in California in commercial aviation; satellite manufacturing and in new markets such as cyber security.

Airbus Defense & Space A400M Atlas the only game in town now that the C-17 is out of production. Air forces which need to carry outsized cargo and heavy armored vehicles can turn to **Airbus**. Germany and Spain have told the manufacturer that they cannot afford to buy 26 yet-to-be-built A400Ms, and are each offering 13 of them for sale, pending agreement of all seven partner nations. The Atlas costs less than its larger rival, the C-17.

Lockheed Martin delivered the 2,500th C-130 Hercules in December. That Hercules was an HC-130J Combat King II personnel recovery aircraft assigned to the **U.S. Air Force's** 71st Rescue Squadron, which is part of the 347th Rescue Group. It will be stationed at the **Moody Air Force Base**, Valdosta, Georgia. The **U.S.A.F.** accepted the first C-130A on December 9, 1956, and it is still the world's largest Hercules operator, and flies legacy C-130 and C-130J Super Hercules fleets. C-130s are currently operated from 68 nations and the global fleet has logged more than 22 million flight hours. The C-130J Super Hercules is flown by 19 different operators in 16 nations.

The German Armed Forces took delivery of its second A400M Atlas military transport (SN 030) in early December and may receive its third (SN 029) later that month. The **Luftwaffe** was scheduled to have five A400Ms in service by the end of 2015, but deliveries were delayed as **Airbus** dealt with production problems and a fatal crash earlier this year. Germany originally ordered 73 airplanes, but cancelled 20 in 2011. The country now wants to cut its order by 13 units for a total of 40.

The Spanish Air Force will acquire its first 14 A400M tactical transports and it hopes to find a way to fund the remaining 13 of the type. The 14 A400Ms will be delivered to Spain from 2016 to 2022, and if the other 13 are not sold to other governments, they will be delivered by 2024. Spain's sale of the last 13 aircraft to other customers will have to be approved by the manufacturer. Spain also plans to acquire three A330 Multi-Role Tanker Transports. A contract is likely to be signed next year, after the general election on December 20.

AIRCRAFT DELIVERIES & SALES

Airbus

Airbus A319. No **Airbus** A319s were delivered in November. Only 20 A319ceos and 49 A319neos are in backlog. **SMBC Aviation Capital** sold two of its -111s to a finance company based in Australia. **SMBC** said, "Aircraft leasing is an attractive investment and we actively trade aircraft. We offer aircraft (with or without lease attached) for sale to investors and, if required, offer the full services of our platform as lease manager. In addition to our current fleet we have acquired and sold over 230 aircraft with leases attached with a value of over \$6 billion from aircraft investors and lessors worldwide."

Airbus A320. **Airbus** delivered 29 A320s during November, including four -200/Ws to **BOC Aviation**. **BOC** leased a second -214/W (SN 6838) to **Frontier**, two -232/Ws (SN 6820 & 6851) to **Tianjin Airlines**, and the ninth -232/W (SN 6865) to **Vistara**, India. **China Aircraft Leasing Co.**

(CALC) leased one -214/W (SN 6721) to **Shenzhen Airlines**, and two -232/Ws (SN 6792 & 6854) to **China Eastern Airlines**. **VivaAerobus** acquired two -232/Ws (SN 6857 & 6875) and sold one of them to **SMBC Aviation Capital** and the other to **AWAS** for lease back. **AWAS** will buy another three -232/Ws from the airline in 2016. **Avolon Capital Partners**, **Avolon's** joint-venture aircraft leasing business with **Wells Fargo**, bought the other of the -232/Ws from **VivaAerobus** and leased it to the airline. It was the ninth aircraft purchased by **Avolon Capital Partners**. **EasyJet** accepted its 95th and 96th of 143 -214/Ws (SN 6834 & 6837). **Avianca Brasil** leased two -214/Ws (SN 6806 & 6813) from **Synergy Aerospace**. **GECAS** leased -214/W (SN 6784) to **Qingdao Airlines**, now known as **Newloong Air**. **Tianjin FAL** delivered -232/W (SN 6752) to **China Eastern**, and -214/W (SN 6743) to **Air China**. **Chengdu Airlines** accepted -214/W (SN 6830), **Spring Airlines** obtained one -214/W (SN 6846), and **Juneyao Airlines** received -214/W (SN 6843), all from Europe. **Airberlin** leased -214/W (SN 6856) from **GECAS** and -214/W (SN 6877) from **ICBC**. **Thai Airways International** transferred a third new -232/W (SN 6795) to **Thai Smile**, and **Lion Air** transferred a fourth -214/W (SN 6823) to its leasing subsidiary, **Transportation Partners**, for lease to **Batik Air**, Indonesia. **AWAS** leased -232/W (SN 6816) to **Royal Brunei Airlines**. **Qatar Airways** leased -214/W (SN 6811) to its Saudi Arabian subsidiary, **Al Maha Airways**, and **Saudi Gulf Airlines** accepted its first -232/W (SN 6455), which had been stored since January. The airline will receive another three -232/Ws (SN 6474, 6583 & 6733) soon. Those planes were built between February and August 2015. **Aegean Airlines**, Greece, obtained -232/W (SN 6832), and sold it to **AWAS** for lease back. It was the third A320 to be leased from **AWAS** this year. **Virgin American** received its 13th of 19 -214/Ws (SN 6835). **SMBC Aviation Capital** delivered one new -214/W (SN 6824) on lease to **Peach Aviation**, Japan. The aircraft came from **SMBC's** direct order book. **SMBC** sold one leased -200 aircraft to a leasing company based in China.

IndiGo will receive its first A320neo (-271N, SN 6720) by the end of December, and the airline will take delivery of 34 A320neos by March 2017. The low-cost carrier has taken delivery of all 100 A320neos it ordered and currently operates 98 of them. **IndiGo** ordered 180 A320neos several years ago and another 250 in August, worth \$26.55 billion. When the NEOS are delivered, it will start new international flights from Kolkata to Bangkok, Dhaka, and Singapore. The airline reported that its market is growing at 21 percent per year and it does not have enough capacity coming in. It also has a robust cadet pilot program that graduates 25 new junior first officers and 15 new captains every month.

BOC Aviation delivered its ninth new A320-232/W (SN 6865) to **Vistara**. The plane was part of the airline's contract to lease 20 A320s from the lessor, and they come from **BOC's** existing order book. **Vistara** said it completed its planned acquisitions for 2015, and its A320s are fitted with 148 seats in a three class configuration of 16 seats in business class, 36 seats in premium economy, and 96 seats in economy. The airline is a 51:49 joint venture between India's **Tata Sons** and **Singapore Airlines**, and it commenced services in January this year, and carried its 100,000th passenger in October. The Delhi-based, full-service, airline currently operates 297 weekly frequencies from 12 domestic airports, including Delhi, Mumbai, Hyderabad, Guwahati and Goa.

Airbus A321. **Airbus** delivered 18 A321s in November, including two each to two airlines in the Americas. **American Airlines** bought two -231/Ws (SN 6828 & 6840), and **CIT Aerospace** leased two -211/Ws (SN 6844 & 6873) to **Air Canada Rouge**. **Frontier Airlines** accepted its third of 19 -211/Ws (SN 6845), which was sold to **GECAS** and leased back. **JetBlue Airways** obtained its 24th of 46

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-231/Ws (SN 6859), and **Spirit Airlines** acquired the fifth of 30 new -231/Ws (SN 6867). **Avianca Central America (TACA International)** obtained -231/W (SN 6861). It was sold to **SMBC** and leased back. In Asia, **China Eastern Airlines** acquired one -231/W (SN 6850) and one -211/W (SN 6872). **Juneyao Airlines** took delivery of one -231/W (SN 6879) and leased one -211/W (SN 6855) from **GECAS**. **AWAS** leased one -231/W (SN 6818) to **Beijing Capital Airlines**. It will lease three -231/Ws (SN 6763, 6853 & 6863) from **BOC Leasing** shortly. **Airbus** delivered one -211/W (SN 6852) to **VietJet Air** and one -231 (SN 6810) to **Vietnam Airlines**. **Etihad Airways** acquired its seventh and last -231/W (SN 6842), and **Turkish Airlines (THY)** obtained its 53rd of 65 -231/Ws (SN 6869). **Wizz Air** took delivery of its first of 27 -231/Ws (SN 6848) on order. A second -231/W (SN 6910) is due in December, and the two aircraft will be leased from **CDB Leasing**, as part of six aircraft deal.

The Aeroflot Group will sell or transfer six nine-year old A321-211s (SN 2342, 2903, 2912, 2957, 2965 & 3191) to **AviaAM Leasing AB**, Lithuania, as part of its fleet renewal program. The airline owns two -211s (SN 2342 & 3191) and leases the other four from **SMBC**. The aircraft will be replaced with four newer A321s which will be acquired from the first quarter of 2016 through to third quarter of 2017. The source of the jets was not announced. Four ex-**Transaero**-leased -211/Ws (SN 6678, 6726, 6756 & 6817) are currently stored in Teruel, Spain, and are owned by **ICBC**.

Airbus A330. **Airbus** delivered two -200s and eight -300s during November. **International Air-Finance Corporation (IAFC)** leased the fifth and final -243 (SN 1681) to **Kuwait Airways**. **Alpha Star**, Saudi Arabia, took delivery of its first VVIP -243 Prestige (SN 1676). It was flown to Basil, Switzerland, for cabin outfitting. **Air China** acquired its third 242-ton Maximum Take-Off Weight A330-343 (SN 1685), and **Delta Air Lines** accepted its fourth high-gross weight -302 (SN 1679). Indonesia's **Lion Air** took delivery of its second of three -343s (SN 1680), and the third (SN 1683) will be delivered in December. **Hong Kong Airlines** received its eighth of nine ordered -343s (SN 1668), and **Hainan Airlines** acquired its sixth of seven -343s (SN 1677). **SriLankan Airlines** took delivery of its fourth -343 (SN 1669), and has one more on order. **Intrepid Aviation** delivered one new -302 (SN 1684) to **EVA Airways**. A second -302 (SN 1690) will be leased from **Intrepid** in December. **Intrepid Aviation** financed the new A330 with funds from **DVB Bank**. **Intrepid** also took delivery of -343 (SN 1691) and financed it with **Erste Bank**. The aircraft is intended for lease with **Evelop Air**, a Spanish charter airline based in Palma de Mallorca.

GE Capital Aviation Services (GECAS) leased the second of seven used A330-203s (SN 684) to **Deutsche Lufthansa's Eurowings** low-cost subsidiary. The other five -203s are currently leased to other airlines and they will be handed over to **Eurowings** when those lease terms expire.

Airbus A350. **Qatar Airways** acquired its seventh -941s (SN 013) in November. **Airbus** has delivered 10 A350s this year and will strive to deliver another five in December. **Vietnam Airlines** received its fourth -941 (SN 017) on December 2. The airplane was the second one leased from

TAM Linhas Aéreas' first A350-941 (SN 024) was delivered on December 17. **TAM** is the first to operate the A350 in the Americas, and has 26 more orders for the XWB. Six of the -900 orders were converted to the larger A350-1000 earlier this year. Once crew-training flights have been completed, the Brazilian carrier will begin operating the aircraft between Sao Paulo and Manaus on January 25, followed by international flights from Sao Paulo to Miami, Madrid and Orlando in April. **TAM's** aircraft is configured in a premium two-class layout, with 348 seats, comprising of 30 Premium Business Class and 318 Economy. **Airbus** has delivered 13 A350 -941s to four customers in four continents so far in 2015

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CIT Aerospace, and the other two are leased from **AerCap**. **Finnair's** second **GECAS**-leased -941 (SN 019) was delivered on December 14. **GECAS** bought the A350s from **Finnair** and leased them back.

Airbus A380. **Emirates** accepted its first 615-seat, two-class -861 (SN 200) at the **Dubai Airshow** on November 4. It was the Dubai carrier's 68th A380. It entered service to Copenhagen on December 1. The two-class configured A380 features 58 flatbed seats in business class and 557 seats in economy, plus an onboard lounge. The airline received another -861 (SN 201) at the end of the month. **British Airways** took delivery of its 10th -841 (SN 192), and it has two more (SN 194 & 215) on order for delivery in 2016. **Airbus** delivered 24 of its flagship airliners this year and it has 142 on backlog.

Boeing

Boeing 737 NG. **Boeing** delivered 43 737s in November, including five -900ERs. **Alaska Airlines** bought its 33rd -990ER/W (SN 44109), and it has 32 on order. **Delta Air Lines** acquired its 48th and 49th of 100 ordered -932ER/Ws (SN 31959 & 31960). **Oman Air (SAOC)** leased its third -91MER/W (SN 40071) from **Oman Brunei Aviation Leasing Company (OBALC)**. The first two were delivered in May. **OBALC** is owned by Oman's **State General Reserve Fund**, the **Brunei Investment Agency** and 10 percent is held by other investors. **Boeing** delivered its first BBJ3 business jet (-97YER, SN 62515) to **Global Jet Luxembourg**. The plane will enter service after its VIP cabin is fitted. The largest version of the 737 based BBJ is a slow seller as most customers prefer the smaller BBJ1 and BBJ2 based on the -700 and -800 respectively. **Global Jet's** plane is being fitted with extra-long range fuel tanks.

Boeing delivered 38 737-800s during the month, including 13 to customers in the Americas. Four -8CT/Ws (SN 40336, 40835, 40836 & 40838) were handed over to **WestJet Airlines**, and it has seven more on order. **Southwest Airlines** accepted three -8H4/Ws (SN 36715, 36734 & 36940), and **American Airlines** received its 262nd and 263rd of 305 -823/Ws (SN 31229 & 31230). The **United States Navy** acquired two more P-8A Poseidon aircraft (-8FV/Ws, SN 44938 & 44942). They will enter service once the electronic equipment is installed. **Copa Airlines** took delivery of its 100th airplane in November, a -8V3/W (SN 39968) which sported a special decal celebrating this important milestone. This was also the third -800 to be leased from **SMBC Aviation Capital**. **Copa** now has 77 Next-Generation 737s in its fleet and 61 737 MAX airplanes on order. **GECAS** leased its fifth -86N/W (SN 43408) to **Kenya Airways**. The airplane was the 500th new **Boeing** jet for **GE Capital Aviation Services** and it was the 401st 737 delivered to the leasing company. **Air Lease Corp. (ALC)** leased a second -8LY/W (SN 41337) to **Kunming Airlines**. In Europe, **Ryanair** bought three -8AS/Ws (SN 44708, 44709 & 44710) and has 154 more on order. **Ryanair's** 375th Next Generation -8AS (SN 44709) was delivered on November 10. **Ryanair** is the largest 737-800NG customer in the world with 531-800s on order or delivered. The airline became the launch customer of the 200-seat 737 MAX 200 when it ordered 100 airplanes in 2014. **Aeroflot** leased -8LJ/W (SN 41213) from **Avia Capital Leasing (ACS)**. **TimAero Ireland Limited** took delivery of two -84P/Ws (SN 61322 & 61323) and transferred them to **VEB Leasing**, Russia, which leased the first to **Fuzhou Airlines**, and the second to **Urumqi Air**, both airlines are in China. In October, **TimAero** transferred its first -84P/W (SN

Hawaiian Airlines' CEO Mark Dunkerley said the airline is in the market for additional 717-200s. It currently operates 18 717s on inter-island flights throughout Hawaii. Although he did not say where the 717s will come from, **Volotea**, Spain, recently announced its plans to retire its fleet of 19 717s and acquire a fleet of A320 Family jets.

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61321) to **Bank of Communications (BoCom) Leasing**, China, which leased it to **Fuzhou. AerCap** leased -81B/W (SN 41614) to **China Southern Airlines**, and one -89P/W (SN 41814) to **China Eastern Airlines**. In Asia, **Boeing** delivered nine -800s to Chinese airlines, including two -89L/Ws (SN 44926 & 44927) to **Air China**. **China Eastern Airlines** bought three -89P/Ws (SN 39748, 41479 & 41489), and transferred the latter airplane to **Shanghai Airlines**. **BoCom Leasing** leased a third -8LY/W (SN 44383) to **Kunming Airlines**, and **Xiamen Airlines** received another -8MB/W (SN 43914) that was listed by **Boeing** as delivered to an unidentified customer. It was leased from **ICBC**. **Shandong Airlines** acquired its 48th -85N/W (SN 41629), and **Donghai Airlines** purchased -83Z/W (SN 61270). **Lion Air** took delivery of two -8GP/Ws (SN 39870 & 39871). The second was transferred to **Malindo Air**. **BOC Aviation** bought the first of four -88L/W (SN 61294) from **Nok Air**, a new customer. **Biman Bangladesh Airlines** received the airline's first direct-purchased -8E9/W (SN 40334), as part of the national airline's fleet modernization plan. The airline will add a second -8E9/W (SN 40335) shortly. **All Nippon Airways** obtained its 32nd of 36 -881/Ws (SN 62637). It was sold to **SMBC Aviation Capital** and leased back. In Oceania, **Virgin Australia Airlines** accepted the 68th of 80 -8FE/Ws (SN 41030).

JTA - Japan Transocean Air will take delivery of its first of 12 737-8Q3/Ws (SN 61475) early next year. The **Japan Airlines** subsidiary will use its -800 on twice-daily flights from **Okinawa Naha** to Fukuoka and Miyakojima, with flights starting on February 10, 2016. JTA ordered 12 737-800s to replace its ageing fleet of 12 737-400s.

Tigerair Australia added the first of three 737-8FE/Ws (SN 34013) in December. The budget operator has acquired them from its parent **Virgin Australia** to operate international flights from Perth, Melbourne and Adelaide to Denpasar, Indonesia, beginning in late March 2016. Before adding the **Boeing** equipment, **Tigerair** was an all-**Airbus** operator, with 14 A320-200s in its fleet. They are used on flights to 11 cities across Australia from bases at Brisbane, Melbourne, and **Sydney Kingsford Smith Airport**.

Air Lease Corporation (ALC) will lease one used 737-800 to **Far Eastern Air Transport (FEAT)**, after it comes off lease with a European carrier in June 2016. **ALC** is leasing a new 737-800 to **FEAT** in the second quarter of 2016.

China Southern will trade in three 737-300s and 13 757s and spare engines to **Boeing**, as part of its 737 MAX order.

Boeing 747. Korean Air received its fourth of 10 -8B5 Intercontinentals (SN 40908) in November. Another -8B5 (SN 60407) will be delivered shortly. **AirBridgeCargo Airlines (ABC)**, part of **Volga-Dnepr Group**, Russia, took delivery of two -83QF Freighters (SN 60117 & 60118), in November. One of the two new 747-8Fs was the 100th

Delta Air Lines recently acquired five ex-**Shanghai Airlines** 757-26Ds (SN 33959, 33960, 33961, 33966 & 33967) from **Boeing Capital Corporation** and it is performing pre-delivery maintenance checks on the planes. The airline currently operates 111 757-200s. It decided to retain 14 of them past a scheduled retirement date of 2017 since its talks with its pilot union failed. The two were negotiating a **Collective Labor Agreement (CLA)** that was tied to the order of 20 **Embraer E-190s** and 40 737-900(ER)s to replace their 757s. The older jets will now be refurbished instead. A spokesman said, "These 14 757s still have plenty of useful life and will receive similar nose-to-tail cabin upgrades as we've done on other domestic aircraft." The 757-200s are used on domestic services, and flights to Canada, the Caribbean, Central and South America, as well as to Europe.

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747-8 that **Boeing** has delivered. The -8Fs were originally built for **Silk Way Airlines** in May and November 2014, respectively, and stored in Everett, Washington, until delivery. Another **Silk Way** -83QF (SN 60119) is still parked at Everett and painted in the **Seahawks** football team colors. **Atlas Air** received its 10th -87UF (SN 62441). The airplane was originally allocated to **Cathay Pacific**. **Cathay** ordered its 14th -867F in December 2013, and it was scheduled for delivery in 2014, while **Atlas** ordered this aircraft in June 2015. One of the early model -87UFs (SN 37564) that **Atlas** cancelled several years ago still languishes at Everett along with a four-year old -830 Intercontinental (SN 37826) that **Lufthansa** cancelled. **Boeing** completed and parked two **Transaero** -85M Intercontinentals (SN 42416 & 42417) in November.

Red Wings, Russia, is negotiating the acquisition of three ex-**Transaero Airlines** Tu-214s (SN 42305009, 42305013 & 42305018) from **Ilyushin Finance Corporation (IFC)**. The planes have been parked at **Moscow Domodedovo** since **Transaero's** collapse in October. The state-owned carrier's CEO **Evgeny Klyucharev** told the press that the Tu-214s would potentially increase **Red Wings'** route network because of the type's longer range than airline's nine Tu-204s. **Red Wings** also operates five **Sukhoi** Superjet 100-95s, and it plans to add five more airplanes next year. All of **Red Wings'** aircraft are leased from **IFC**.

Boeing 767. **Federal Express** took delivery of its 25th new -3S2F (SN 43548) in November. The cargo airline has 76 more 767Fs on order.

Boeing 777. **Boeing** delivered two 777Fs and seven 777-300ERs in November. **Saudi Arabian Airlines** accepted its third and fourth -FFG freighters (SN 60339 & 60340), and its 19th and penultimate passenger -368ER (SN 42267). **Emirates Airlines** took delivery of 77th and 78th of 120 ordered -31HERs (SN 42324 & 42325), and **Qatar Airways** received -3DZER (SN 60332). **EVA Air**, Taiwan, acquired its 22nd -35EER (SN 44554) in the airline's new livery on November 11. The 777 was the first of four to be leased from **Air Lease Corporation (ALC)**. **China Eastern Airlines** obtained -39PER (SN 43276), and **Singapore Airlines** took delivery of its 27th and final GE90-engined -312ER (SN 42242). The flag carrier also ordered and received 46 -212ERs and 12 -312s, both types were powered by **Rolls-Royce** Trent engines.

Boeing 787. **Boeing** delivered five 787-8s and nine 787-9s in November, including the 24th and 25th -8 Dreamliners (SN 38342 & 38343) to **Qatar Airways**. **Oman Air** took delivery of its second of six -8s (SN 42379), and **American Airlines** received the 12th of 20 ordered -8s (SN 40629). **CIT Leasing Corporation** leased its second -8 (SN 37167) to **Aeromexico**. **All Nippon Airways** acquired -8 (SN 34503) and it has one more on order. The airline also accepted its ninth -9 (SN 34531) and has 35 outstanding orders. **United Airlines** bought three -9s (SN 36408, 35880 & 37811) for a total of 13. **British Airways** acquired its fourth and fifth of 22 -9s (SN 38618 & 38620), and **Air Canada** added its third -9 (SN 35267) to its fleet. **KLM Royal Dutch Airlines** acquired its first -9 Dreamliner (SN 38760) on November 13. The airplane was leased from **AerCap**, and **KLM** will lease another 11 787s from the company. The **Air France-KLM Group** has 19 787-9s and six 787-10s on order as well. To date, **Boeing** has delivered 354 Dreamliners and has another 788 on backlog.

Regional Jet

Bombardier delivered three CRJ900NGs (SN 15380, 15381 & 15382) to **PSA Airlines** in November, and they will be operated for **American Airlines** under the **American Eagle** brand.

Nordic Aviation Capital (NAC) leased the 11th of 12 new CRJ1000s (SN 19043) to **PT Garuda Indonesia** from a lease deal signed in 2012. **NAC's** current fleet of over 240 aircraft includes ATR 42, ATR 72, **Bombardier** Dash 8, CRJ900 and CRJ1000 aircraft, and **NAC** is the largest owner and lessor of both **ATR** and **Bombardier** aircraft in the world.

COMAC delivered the first ARJ21-700 (SN 106) to its launch customer, the domestic low-cost carrier **Chengdu Airlines**, and called it a big breakthrough for China's effort to develop its domestic jet aircraft industry. The ARJ21 was certificated in December 2014, after a 12-year development program, that suffered eight years of delays. **COMAC** wanted to develop a commercial aircraft to compete with **Airbus** and **Boeing** so it started with a locally built regional jet to gain experience and develop its indigenous aero-space design and engineering talent. The 90-seat ARJ21 competes with the Russian **Sukhoi** Superjet 100 and the **Mitsubishi** MRJ90 in a market dominated by **Bombardier** and **Embraer**. The ARJ21 has won 162 firm orders, mostly from Chinese carriers and leasing companies, for delivery to the domestic market. In September, **ICBC Leasing** signed a Memorandum of Understanding to supply 10 ARJ21s and 10 C919s to **City Airways**, Thailand. The **Republic of the Congo Government** ordered three ARJ21s last year, and it may be the first foreign carrier to operate the aircraft. **Chengdu Airlines** expects to launch services with the ARJ21 between Beijing, Xian, Wuhan, Shenzhen and Shanghai in February. It has 29 more regional jets on order, and will receive another four ARJ21-

Austrian Airlines will sell its entire fleet of 21 **Fokker** aircraft to Australia's **Alliance Aviation Services**. The Austrian flag carrier operates six Fokker 70 and 15 Fokker 100 aircraft, and it will replace the jets with nearly-new **Embraer** E195 regional jets from **Lufthansa CityLine**, starting in January 2016. **Alliance** will pay \$9.5 million in cash for the 21 **Fokker** aircraft and issuing of new shares to **Austrian** worth \$5.5 million and giving it 12 percent of the company. The first **Fokker** was retired in December 2015 and the last will leave **Austrian** in December 2017, as the E195s are handed over. The **Embraer** jets were built between 2009 and 2012, while the average ages of the F.70s and F.100s are about 21 years. **Austrian** CEO **Kay Kratky** said, "The replacement of the **Fokker** fleet with **Embraer** aircraft will serve to significantly rejuvenate our fleet and offer **Austrian Airlines** better unit costs." **Alliance** currently operates eight Fokker 70s and 15 Fokker 100s, and it is the largest operator of these types in the world. The company operates from bases in Brisbane, Townsville, Cairns, Melbourne, Adelaide, Perth and Auckland, and flies workers to remote mines in Australia's interior. It plans to continue operating **Fokker** aircraft in Australia for the next eight to 10 years. **Alliance** will place the **Austrian** aircraft with its wholly-owned subsidiary **Alliance Aviation Services Slovakia**. They will be offered for wet and dry leasing, or for onward sale, or they will be broken up into spare parts for reconditioning and resale by **Austrian Technik Bratislava**. **Alliance** said the purchase provides it with the opportunity to expand its revenue stream into new areas and geographies and also provides a cost-effective long-term supply of parts to our existing **Fokker** fleet. The office in Europe will allow the airline to generate new income streams that are not directly related to the Australian fly-in/fly-out resources sector, which is in a sustained slump. **Alliance** posted a \$36.6 million net loss in the year 2014/15 due to fleet write downs and other one-off charges. **Alliance** ended an eight year-long affiliation with **Qantas** on December 1. The airline sold the five Fokker 50s that it operated on the services for the flag carrier.

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700s in 2016. The ARJ21 was certificated by the **Civil Aviation Administration of China** and **COMAC** will seek U.S. **Federal Aviation Administration** certification later. The type completed 5,258 hours of flight tests over the past seven years.

Embraer. Embraer delivered four more EMBRAER 170-200 LR (E175) (SN 17000515, 17000519, 17000522 & 17000523) to **American Airlines** in November, for a total of 21 of the 60 ordered E175s. **Compass Airlines** will operate **American's** first 20 E175s under the **American Eagle** brand. **Republic Airlines** bought two E175s (17000512 & 17000518) for operation for **United Express**. **Alaska Airlines** acquired its fourth of 15 E175s (SN 17000517). The first nine E175s will be operated by **SkyWest Airlines**. **AZUL Linhas Aereas Brasileiras** accepted its 81st EMBRAER 190-200 (E195) (SN 19000697) in November. It was the 1,200th aircraft of the E-Jets family to be delivered by **Embraer**. **AZUL**, Brazil, operates the largest fleet of this type. The first E-Jet was delivered to **AZUL** in December 2008, from an order for five E190s and 31 E195s. In May 2015, **AZUL** signed a purchase agreement for 50 E195-E2 jets, with 30 firm orders and 20 additional purchase rights. The first is scheduled for delivery in the second quarter of 2020.

Sukhoi. **Aeroflot** took delivery of its 32nd Sukhoi Superjet 100-95B (SN 95091) in November. The airline still operates 22, having retired its 10 oldest SSJ100s. **Interjet**, Mexico, acquired its 17th Superjet 100-95B (SN 95071) from **Superjet International** in Venice, Italy.

Yamal Airlines, Tyumen, Russia, delayed delivery of its first SSJ100-95 (SN 95062) until the first quarter of 2016, due to funding problems. The Ural-based carrier signed a lease for 25 Superjets from the **State Transport Leasing Company (GTLK)**, Russia, at the **MAKS 2015 Airshow** – the first two aircraft were scheduled for delivery in November. The airline blamed the lessor for failing to increase its registered capital which was needed to buy the jets, thus leading to delays in their hand over. The delivery schedule calls for up to 17 Superjets in 2016 and eight in 2017. The SSJ100s will be used to replace **Yamal's** Western-built fleet of seven A320-200s, two A321-200s, four 737 Classics and 11 CRJ-200s.

Colorful Guizhou Airlines has taken delivery of its first of seven E190s (SN 19000701) on order from **Embraer** in December. A joint-venture between **Guizhou Industrial Investment Group** (95 percent) and **Weining County Construction Investment Group** (5 percent), **Colorful Guizhou** intends to begin flying by year end.

Turboprop Aircraft

ATR. **SATENA**, Colombia, leased its third ATR 42-600 (SN 1203) from **Nordic Aviation Capital (NAC)** in November and took delivery of -600 (SN 1204) in December. The state-owned regional airline now operates four new ATR 42s. **Travira Air**, Indonesia, has taken delivery of its first ATR 42-600 (SN 1017) in December. The charter airline operates one 737-500, and two Dash 8-300s, as well as smaller aircraft and helicopters. **Travira Air** specializes in contracts for multinational oil and gas, mining, and medical corporations. **Avions de Transport Régional** completed and flew ATR 72-600 (SN 1273) in November, but did not deliver it to a customer. **Braathens Aviation**, Sweden, took delivery of its first of five ATR 72-600s (SN 1276). The airplane was originally destined for **MASwings**, Malaysia. **KalStar Aviation**, Indonesia, accepted its third -600 (SN 1268), and **Stobart Air**, Ireland, received its ninth -600 (SN 1295), which will be operated for **Aer Lingus Regional**. **HOP! Air France** took delivery of its fifth -600, registered F-HOPN (SN 1288), and **Bahamasair**, the national flag carrier of the Bahamas, took delivery of its first -600. The airline ordered two ATR 72-600s and three

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ATR 42-600s at the 2015 **Paris Airshow**. With the arrival of this new aircraft, **Bahamasair** became a new operator of ATR. The airline will replace its five **Bombardier** Dash 8-300s with ATR -600s. **AZUL Linhas Aereas Brasileiras** acquired its 27th -600 (SN 1292), and **Wings**, Indonesia, also received its 27th ATR 72-600 (SN 1290). **Wings** will add two more -600s (SN 1291 & 1298) in December.

Oman Air retired its fourth and last ATR 42-500 A4O-AT (SN 576) on November 30, 2015, when the plane flew its last commercial service between Muscat and Khasab. On December 1, the ATR flights were taken over by the airline's four **Embraer** E175s which will also be retired in the near future. The Omani flag carrier will replace its E-Jets with new and larger 737-800s in order to rationalize its fleet with the A330, 737 and 787 types.

Bombardier delivered two new Q400 NextGens (SN 4509 & 4510) to **Air Canada Express** in November.

Amakusa Airlines will retire its Dash 8-100Q (SN 537) when it puts Japan's first ATR 42-600 (SN 1202) into service on February 20. The Japanese domestic operator will deploy the -600 on revenue services between Amakusa, Fukuoka, Osaka and Kumamoto.

Viking Air. Skydive Dubai took delivery of its maiden **Viking** DHC-6-400 Twin Otter (SN 920) in November. The plane was flown from McMinnville, Oregon, to Dubai in time for the **World Air Games** being hosted by **Skydive Dubai**.

Antiques and Other Junque

Emirates is scheduled to take delivery of 20 **Airbus** A380s and 16 **Boeing** 777-300ERs in 2016 as part of its fleet modernization program. It will retire more than 50 older jets in the next three years, including 12 A330-243s, its four A340-313s and one A340-541, six 777-21HERs, two -31Hs and one -31HER in 2016. The 26 jets have an average age of nearly 16 years. Deliveries of the new A380s and 777-300ERs will lower **Emirates'** average fleet age to less than six years, the airline said. The Dubai flag carrier will withdraw another 26 aircraft from service from 2017 through 2018. By the end of this year, **Emirates** will have received 26 new jets including 15 A380s and 11 777s. It has 262 widebody jets on order, including 150 777Xs. **Emirates** president **Tim Clark** said, "With the retirement of older aircraft and the introduction of new, more fuel efficient aircraft in 2016, **Emirates** will continue to lead the industry in reducing the age of our fleet."

AerFin Ltd, U.K., purchased ex-**Monarch Airlines** A320-214 (SN 1081) from **Aircastle**. The airplane is being parted out at Kemble. The airframe will be used to support parts inventory programs. **AerFin** has established its components operation at **London Gatwick**. This agreement brings the total number of aircraft that **AerFin** has under contract to 15 in 2015. **AerFin** acquired the trade and assets of **Airline Services Components Ltd** in September, to expand its portfolio of aircraft component solutions, the company said. It bought 11 A340-313s from **Cathay Pacific** in June and it has started to disassemble three of them (SN 137, 220 & 228). **AerFin** purchased A340-313 (SN 483) from **Iberia** in December. **Bob James**, **AerFin's** Managing Director, said, "The aircraft will continue in operational service following reconfiguration, increasing our commitment to A340 customers, and supporting our belief that continued operation of the A340 under **AerFin's Beyond Fleet Services** program, offers significant reduced maintenance costs to A340 operators."

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Kuala Lumpur International Airport (KLIA)'s general manager, **Zainol Mohd Isa**, placed a bizarre advertisement in a Malaysian newspaper, *The Star*, seeking the owners of three 747-200s that were apparently abandoned there. The notice said, "If you fail to collect the aircraft within 14 days of the date of this notice, we reserve the right to sell or otherwise dispose of the aircraft" under Malaysian regulations. The notice was addressed to the "untraceable owner" of the planes, although **AVMARK** was able to quickly identify the last operator as **Air Atlanta Icelandic**, based in Keflavik, Iceland. Mr. **Zainol** said, "I don't know why they are not responding. There could be many reasons. Sometimes it could be because they have no money to continue operations." Not only does he want the airplanes gone, but the airport is seeking payment from the owners for landing, parking and other charges. If no payment is received by December 21, the three planes (TF-ARM, TF-ARN and TF-ARH, SN 22363, 22382 & 22669 respectively) will be auctioned or sold for scrap to recoup the outstanding charges. Mr. **Zainol** said several smaller aircraft were abandoned at the airport and one was eventually bought and turned into a restaurant in a Kuala Lumpur suburb. Apparently **Air Atlanta** sold the jets to new Malaysian air cargo company, **Swift Air Cargo** in June. The airline's lawyer said the company was "dumbfounded and perplexed" by the airport's action.

Accidents and Safety

From Aviation Safety Foundation

SpiceJet Bombardier DHC-8-402Q (VT-SUC, SN 4377) was substantially damaged in a landing accident at **Jabalpur Airport**, India, on December 4, 2015. The aircraft hit a herd of wild boars on the runway and then rolled off on to the grass. It came to rest with the left wing down, indicating the landing gear collapsed. There were no reported injuries among the 53 passengers and crew.

Magnicharters Boeing 737-322 (XA-UNM, 24248) suffered a landing accident at **Benito Juárez International Airport**, Mexico City, Mexico, on November 26, 2015. The left hand main landing gear collapsed while the aircraft touched down. The 144 passengers and crew escaped injury. The 737 was 27 years old and may be scrapped rather than repaired.

Avia Traffic Company Boeing 737-3Y0 (EX-37005, SN 24681) sustained substantial damage in a runway excursion accident at **Osh Airport**, Kyrgyzstan, on November 22. Upon landing, the aircraft left the runway and the left hand main landing gear and number 1 engine were broken off. None of the five crew members nor 148 passengers were seriously injured. The 25 year-old airplane was written off.

AVMARK CAPABILITIES

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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Aircraft appraisal, inspection and technical monitoring; analysis of market conditions and forecast of values; assistance with aircraft acquisitions and placement; valuation of facilities, equipment and other assets.

AIRLINE IMPROVEMENT PROGRAMS

Our staff undertakes corporate reviews of entire airlines or specific aspects of airline operations, advising airline executive management, government and international organizations (i.e. World Bank), on various aspects of airline restructuring and/or privatization. Specific issues addressed include airline valuation, strategic planning, scheduling and fleet planning, market development, revenue management, operations and maintenance efficiency. We also provide a full range of services for start-up carriers.

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We prepare traffic/operation forecasts and financial analysis for airport and other facilities planning; competitive evaluation of performance/design characteristics and market potential for new aircraft; critical assessment of capability, marketing strategy and opportunities for suppliers of products and services; and air service needs related to tourism development.

PUBLICATIONS

We publish the *AVMARK Newsletter* monthly; containing market information, various analyses and commentary; also reports all orders, purchase sales and leases of new and used transport aircraft. We also publish several other statistical compilations from our extensive database on aircraft, carriers, traffic, costs and operations.

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.

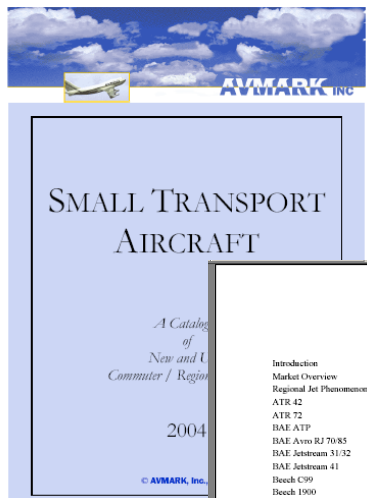
AVMARK's Historic Jet and Turboprop Values; summary of the then current fair market values as published in the AVMARK Newsletter for all jets and turboprops in service.

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
 © AVMARK, Inc.

MARKET OVERVIEW

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

Airline Association (RAA):

Source:

Ref:

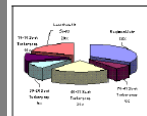


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Dornier 228	70
Dornier 328	74
Dornier 328JET	78
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de Havilland DHC-7	90
de Havilland DHC-8 100/200	93
de Havilland DHC-8 300	100
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Embraer 170	121
Metrol	124
Fokker 50	128
Fokker 70	132
Let 410/420	136
Saab 340	140
Saab 2000	144
Shorts 330	148
Shorts 360	152

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
Dimensions	
Length	74 ft 5 in
Wingspan	80 ft 7 in
Height	24 ft 11 in
Weight	
Empty	48,815 lb
Max Ramp	58,155 lb
Max Takeoff	53,510 lb
Max Landing	22,875 lb
Max Ramp	10,325 lb
Max Takeoff	9,920 lb
Max Landing	62.53 lb / sq ft
Max Ramp	10.23 lb / cu ft

ATR 42-300

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

Optional Equipment: KLN 500 GPS/W, FME, Area Navigation (RNAV), Microwave Landing System, VLF/OMG 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 Altitude and Heading Reference Systems (AHRS), Dual Autopilots, Dual Flight Computers (ADC), 1 DFZ 600 Automatic Flight Control System, Dual King Gold Crown VHF Nav, Radios, DME, Radio Altimeter, Honeywell P-800 Weather Radar.

Price List	
Years Built	Base (\$ mil)
ATR 42-300	85-99 3.0

Direct Operating Costs (\$ per block hour)	
Utilization (Block Hours / Year)	2
Average Stage Length (nm)	100 300
Flying Operations	
Flight Crew, Salaries / Expenses	\$198 \$168
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	\$906 \$833
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

THE AVIONS 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 PW127x engines and Hamilton six-bladed propellers. This 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.

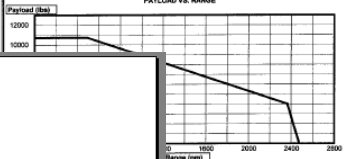
The ATR 42 and ATR 72 have a very high degree of commonality, allowing for cross-crew qualification, and a common spare parts holding.

TYPICAL CABIN CONFIGURATION

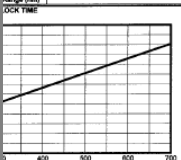
48-seats in a four-abreast layout with a center aisle. Access to the cabin is by an air stair at the rear passenger door, and a modular galley in the rear of the aircraft is serviced through the same door. A standard toilet is located in the rear of the aircraft behind the passenger door. Baggage is 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.

ATR 42-300

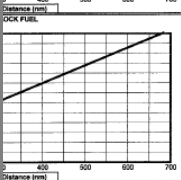
PAYLOAD VS. RANGE



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Select Aircraft Type

Available Aircraft

- Airbus A300B4-600R
- Airbus A300B4-600RF
- Airbus A310-200
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- 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

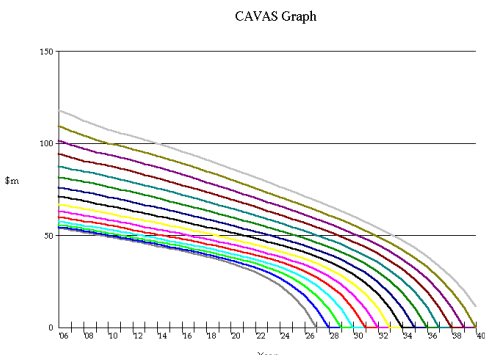
Manufactured: 1992 To 2006

Values: \$54.00m \$118.00m

Estimated Life: 35 years File No. 013

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CAVAS Figures

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
2006	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
2007	52.85	53.49	54.73	56.56	58.99	62.01	65.62	69.85	74.66	80.17	85.92	92.18	99.12	106.73	115.25
2008	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

Profit & Loss Report

Aircraft Type: Airbus A340-300

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	49,037,226
Freight & Mail	8,879,176	8,868,733	8,858,261	8,847,758	8,837,226	8,826,714
Other Revenue	986,575	985,415	984,251	983,084	981,914	980,744
TOTAL OPERATING REVENUE	59,194,505	59,124,887	59,055,070	58,985,055	58,914,841	58,844,684
VARIABLE EXPENSES						
Fuel	6,918,975	6,917,743	6,916,510	6,915,277	6,914,044	6,912,811
Landing Fees	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
Pax Commissions	7,399,313	7,399,313	7,399,313	7,399,313	7,399,313	7,399,313
Food & Supplies	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
TOTAL VARIABLE COST	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
Maintenance & Engineering	587,650	587,650	587,650	587,650	587,650	587,650

Profit & Loss Report

Aircraft Type: Airbus A340-300

Period	1	2	3	4	5	6
FIXED EXPENSES						
Station Overhead	346,597	345,923	345,249	344,575	343,901	343,226
Maintenance Burden	176,295	176,295	176,295	176,295	176,295	176,295
Other Overhead	0	0	0	0	0	0
TOTAL FIXED COST	522,892	522,218	521,544	520,870	520,196	519,522
TOTAL OPERATING COST	31,464,497	31,464,497	31,464,497	31,464,497	31,464,497	31,464,497
General and Admin. Allocation	1,573,225	1,573,225	1,573,225	1,573,225	1,573,225	1,573,225
TOTAL COST	33,037,722	33,037,722	33,037,722	33,037,722	33,037,722	33,037,722
OPERATING PROFIT OR LOSS	26,156,782	26,156,782	26,156,782	26,156,782	26,156,782	26,156,782
D-CHECK ADJUSTMENT						
Cumulative Hours	4,830	9,650	14,459	19,257	24,045	28,833
Cumulative Dollars	315,000	0	0	0	0	0
ADJUSTED CASH FLOW	25,841,782	25,841,782	25,841,782	25,841,782	25,841,782	25,841,782
AIRCRAFT LIFE ADJ. CASH FLOW	25,841,782	25,841,782	25,841,782	25,841,782	25,841,782	25,841,782

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