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# Newsletter

## Market Comment

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**The International Civil Aviation Organization (ICAO)** proposed new aircraft carbon dioxide standards after six years of talks by a group of international experts from **ICAO** member states, industry and non-governmental organizations. After the governing council approves the standard later in October, they will become mandatory for national aviation authorities around the world. The aviation industry's first emissions-reduction standards will apply to all new aircraft models launched after 2020, the Montreal-based **United Nations** aviation agency said. They will also be phased in for all existing aircraft built after 2022. The **Airbus** A320neo Family, A330neo, A350, **Boeing** 737 MAX, 777X and 787 already exceed the new standards, while production of older model airplanes such as the A320ceo, A330, A380, 737NG, 747 and 777 will need to cease by 2028. **ICAO** may exempt some aircraft types, but those exclusions may not happen until the autumn. The new CO<sub>2</sub> standards are intended to mitigate global climate change. Aviation was not included in the Paris global climate deal signed in December 2015. The **U.S. Government** stated that the new standard would reduce carbon dioxide emissions by 650 million tons between 2020 and 2040, while an environmental group, the **International Council on Clean Transportation**, said the reductions would be half that amount. **ICCT** Executive Director **Drew Kodjak**, said, "The proposal will only require CO<sub>2</sub> reductions from new aircraft of 4 percent over 12 years, when market forces alone are predicted to achieve more than a 10 percent efficiency gain in the same time frame." The standards would not apply to existing aircraft in service but would require future planes to be lighter and more fuel efficient. Commercial passenger jets, weighing 60 tons or more, produce the majority of aviation's carbon dioxide emissions and commercial aircraft account for 11 percent of carbon emissions from transportation worldwide.

Unlike during the Stage III noise controversies of the 1980s, the aircraft manufacturers said they are completely onboard with the new carbon emissions. **Boeing** said its new commercial airplanes "have been designed to meet and even exceed challenging emission requirements." **Airbus** said it was investing heavily to reduce "fuel burn, emissions and noise significantly on current and future aircraft." Basically, the manufacturers offering the latest generation engines will be able to sell more CO<sub>2</sub> compliant aircraft when the older jets need to be grounded. **ICAO** is due to finalize its market-based mechanism for all airlines in October.

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**Boeing** said in a press release that it “commends the **International Civil Aviation Organization (ICAO) Committee on Aviation Environmental Protection (CAEP)** for reaching agreement on the first global standard for aircraft carbon dioxide emissions. **Boeing** is fully committed to meeting the new CO<sub>2</sub> emissions standard announced by **ICAO**. This agreement represents real progress beyond the substantial industry achievements already made to reduce aviation emissions. The new standard is ambitious and will become part of the certification process applied to every airplane before delivery based on the **ICAO** schedule. Environmental goals are aligned with our business goals, as greater fuel efficiency and lower emissions are top priorities for our commercial customers. We believe the **ICAO** standard will have the intended results of ensuring older aircraft are replaced by newer, more efficient aircraft that will further reduce fuel use and carbon emissions.”

**Airbus** said it “welcomes the CO<sub>2</sub> emissions standard for commercial airplanes proposed by the **ICAO Committee on Aviation Environmental Protection** on February 8, 2016 in Montreal, Canada. The agreement on the CO<sub>2</sub> Standard is the result of work by a task force of experts from governments and observers and will be endorsed by the **ICAO Council** later this year. The aim of this certification standard is to reduce CO<sub>2</sub> emissions from aviation by encouraging the integration of fuel efficient technologies into aircraft design and development, ensuring older aircraft are replaced by newer, more efficient designs. This is part of a broader set of actions aimed at tackling aviation’s climate change impact including improvements in flight operations, deployment of sustainable jet fuels and the reduction of noise and other emissions together with the development of a global market-based measure for aviation to be agreed at the **ICAO General Assembly** in October 2016. **Airbus** will continually strive to meet, and exceed ambitious emissions requirements for both current and future aircraft.”

## Airbus Orders

**Airbus Sold 16 Aircraft in January**, and delivered 22, including the first New Engine Option A320neo. An **Unidentified Customer** ordered 14 A330-900neo jetliners, raising total sales of the A330neo aircraft to 186. **China Aircraft Leasing Group Holdings Limited (CALC)** added two more A320ceo (Current Engine Option) jets to its backlog, which now stands at 57 A320ceos and 74 A320neos. **Garuda Indonesia Airways**

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cancelled seven of the 11 A330-300 orders it had on backlog, leaving **Airbus** with a total of nine net orders, as of January 31. The highlight of the month's deliveries was the handover of the first A320neo to launch operator **Luft-hansa**. This was the first of more than 4,500 A320neo Family aircraft that were ordered since the program's launch five years ago. **Airbus** also delivered 16 A320ceo Family aircraft, four A330s and one A380, leaving a backlog of 6,818.

**Airbus** included 44 aircraft to its **Year End 2015 Order Book**, citing "the fulfilment of conditions precedent occurring in January 2016." This apparently means the planes were sold in 2015, but the final contracts were signed in January. The manufacturer adjusted its "2015 Full Year commercial results" to gross orders of 1,190, valued at \$159.9 billion, and total net orders to 1,080, valued at \$141.6 billion. Its end of 2015 backlog now stands at 6,831 aircraft, valued at \$1,000.9 billion at 2015 list prices.

**Iran Air Chairman and CEO, Farhad Parvaresh, Placed a Provisional Order for 118 Airbus Jetliners**, including 12 A380 super-jumbos, 45 Single-Aisle and 61 twin engined wide-body aircraft as Iranian President **Hassan Rouhani** went on a post-sanctions European shopping spree in Paris and Rome. The aircraft are list priced at almost \$27

billion. The signing ceremony was hosted by French President **Francois Hollande** at the **Elysee Palace** on January 28. The Iranian flag carrier is buying 21 current-generation A320 Family and 24 A320neo Family aircraft, 27 A330s, 18 A330-900neos, 16 A350-1000 XWBs, and a dozen A380s. **Iran Air** will retire its entire fleet of planes, which average 26.8 years of age. Deliveries could start as early as this year. The airline has a long experience with **Airbus** aircraft having operated a total of 19 A320ceo,

## Airbus Orders, Deliveries and Backlog January 2016

| JAN<br>ORD        | JAN<br>DEL | JAN<br>CANX | TOTAL<br>ORD     | TOTAL<br>DEL | BACK<br>LOG |
|-------------------|------------|-------------|------------------|--------------|-------------|
| <b>A318</b>       |            |             |                  |              |             |
| -0-               | -0-        | -0-         | 80               | 80           | -0-         |
| <b>A319</b>       |            |             |                  |              |             |
| -0-               | -0-        | -0-         | 1,472            | 1,453        | 19          |
| <b>A319neo</b>    |            |             |                  |              |             |
| -0-               | -0-        | -0-         | 50               | -0-          | 50          |
| <b>A320</b>       |            |             |                  |              |             |
| 2                 | 10         | -0-         | 4,764            | 4,142        | 622         |
| <b>A320neo</b>    |            |             |                  |              |             |
| -0-               | 1          | -0-         | 3,357            | 1            | 3,356       |
| <b>A321</b>       |            |             |                  |              |             |
| -0-               | 6          | -0-         | 1,637            | 1,217        | 420         |
| <b>A321neo</b>    |            |             |                  |              |             |
| -0-               | -0-        | -0-         | 1,101            | -0-          | 1,101       |
| <b>A330</b>       |            |             |                  |              |             |
| -0-               | 4          | -7          | 1,424            | 1,261        | 163         |
| <b>A330neo</b>    |            |             |                  |              |             |
| 14                | -0-        | -0-         | 186              | -0-          | 186         |
| <b>A350</b>       |            |             |                  |              |             |
| -0-               | -0-        | -0-         | 777              | 15           | 762         |
| <b>A380</b>       |            |             |                  |              |             |
| -0-               | 1          | -0-         | 319              | 180          | 139         |
| <b>This Month</b> |            |             | <b>This Year</b> |              | <b>BL</b>   |
| 16                | 22         | -7          | 9                | 22           | 6,818       |

**Airbus sold 16,360 aircraft and delivered 9,542 as of January 31, 2016. Seven orders were cancelled. Total orders, deliveries and backlog include cancellations and order changes.**

A300 and A310 jetliners. **Iran Air** will be supported by the manufacturer's extensive resources in pilot and maintenance training, customer support and services. The Iranian air transportation infrastructure will be enhanced through a separate agreement for development of the country's air navigation services with assistance in airport and aircraft operations, harmonization of its air regulations, training on the technical and academic levels, guidance in maintenance and repair operations, as well as industrial cooperation, **Airbus** said. Iran's other airlines **ATA Airlines**, **Atrak Air**, **Iran Aseman Airlines**, **Mahan Air**, **Meraj Airlines**, **Qeshm Airlines**, **Taban Airline** and **Zagros Airlines**, currently operate 65 **Airbus** jetliners among them.

**All Nippon Airways (ANA)** officially ordered three A380 superjumbos in January. The **Nikkei** stock exchange reported the deal was valued at about 150 billion yen (\$1.25 billion, or \$416.7 million each). **ANA** will take delivery of the first plane in 2019, and will fly all of them on its Tokyo to Hawaii route. The Japanese carrier said the A380 would help to meet increasing traffic demands, and expand its international network, while providing a solution for capacity constraints.

**Airbus' First A321neo Test Aircraft** equipped with **CFM International** LEAP-1A engines completed its maiden flight on February 9 from Hamburg, Germany. The A321-251 (D-AVXB SN 6839) flew for five hours and 29 minutes while the flight crew tested the engine speed variation (low/high), systems behavior and validated the aircraft's flight envelope. The A321neo will join the NEO flight test fleet and perform a partial flight test program to see what the impact on handling qualities, performance and systems will be. The first A321neo will be delivered at the end of 2016.

The airplane suffered a tail strike during landing at Perpignan on February 12, just four days into its flight-test campaign. This will delay the certification campaign by a few weeks, CEO **Fabrice Bregier** said at the **Singapore Airshow**. "It touched the runway, but it's repairable," he said, and it was ferried back to Toulouse for repair. Mr. **Bregier** said there should be no impact on deliveries.

**K5 Aviation GmbH**, Germany, firmed up a previously announced commitment for an ACJ319neo in January, and it will be the first operator of the new type. **K5 Aviation** already manages three ACJ319s that are offered for VVIP charter exclusively through **Vertis Aviation**. The "green" aircraft will be delivered in the second quarter of 2019 and the engines and cabin outfitter have not yet been selected. The aircraft acquisition was managed by **28 East**, which is jointly owned by **K5** and **Vertis Aviation**. More than 170 Airbus Corporate Jets are flying on every continent, including Antarctica.

**BOC Aviation**, Singapore, announced its order for 12 A320ceo Family and 18 A320neo Family aircraft that was placed at the end of December; **Airbus** booked the order in January. The deal was worth over \$3 billion (\$100 million each) at list prices. To date, **BOC** has ordered 306 **Airbus** aircraft, comprising 12 A330s and 294 A320 Family, including 64 NEOs.

**Gulf Air** announced a firm order for 17 A321neos and two A320neos, adding to the 10 A320neos that it ordered in 2012 and reconfirmed in January. The contract was signed at the **Bahrain International Airshow** by CEO **Maher Salman Al Musallam**. **Gulf Air** currently operates 16 A320s, six A321s and six A330-200s. The **Airbus Orders & Deliveries** webpage shows that the Bahraini flag carrier dropped one A319 and six A330-300 orders in the same month. The airline ordered 15 A320s and 20 A330-300s in May 2008, but steadily exchanged its A330s for more A320 Family aircraft.

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**Comlux – The Aviation Group** placed a firm order for three ACJ320neo aircraft in February, and it is now the largest customer for **Airbus’** corporate jet family. The first aircraft will be delivered at the end of 2018. **Comlux** chose **CFM International** LEAP-1A engines to power the aircraft. Cabin outfitting will be performed by **Comlux America**, Indianapolis, Indiana, which was the first independent authorized **Airbus** corporate jet service center. **Comlux** has bought corporate jet versions of all of the ACJ320 Family, and it was the first to operate the ACJ318 and ACJ321. **Comlux** manages a fleet of 20 VVIP aircraft including: one **Airbus** ACJ318, three ACJ319s, one ACJ330, as well as one **Boeing** 767BBJ, one 777BBJ, and 13 smaller jets.

**Emirates**, the world’s biggest long-haul airline, plans to add 37 new planes to its fleet in the fiscal year beginning April. The airline will acquire 21 **Airbus** A380 superjumbos and 16 **Boeing** 777s in the year ending March 31, 2017, worth \$14.5 billion at list prices. **Emirates** plans to retire 26 airplanes, including some early A330s and its last five A340-300s. The airline is studying an order for A350-900 and -1000 variants and **Boeing’s** 787-9 and -10 models. **Emirates** canceled an order for 70 A350s in 2014, and it is now reevaluating the model. The carrier had 251 aircraft in service as of late February, with 253 on order.

**Airbus** has started the final assembly of the first A350-1041 (SN 059) at the A350 XWB Final Assembly Line (FAL) in Toulouse, France. The first of three A350-1000 flight test aircraft will take to the skies before the end of 2016, and A350-1000 deliveries will start in mid-2017 to launch customer, **Qatar Airways**. **Airbus** added three additional final assembly stations, which can be used for both the -900 and -1000 models. The first A350-1000 is currently at “Station 50” for fuselage join-up and nose landing gear installation, and it will be moved to “Station 40” where the wings, main landing gear, pylons and tail planes will be installed. To optimize the A350 assembly process, **Airbus** starts the cabin furnishing and the first electrical power-on while it performs the structural assembly work. After this stage is completed, the aircraft continues through the assembly process, with final structural construction, ground tests, painting, cabin and cockpit completion and engines installation before it is transferred to the flight test center. The A350-1000 has a very high degree of commonality with the -900.

**Philippine Airlines (PAL)** signed a Memorandum of Understanding (MOU) with **Airbus** to buy six A350-900s, and took another six purchase options. The deal was valued at around \$1.8 billion at list prices, and it was announced at the **Singapore Airshow** in February. The airline is looking at an outright purchase, although other deal structures may be considered, including the lease of the airplanes. The flag carrier will configure its A350-900s with a premium three-class layout and will operate the aircraft on non-stop flights from Manila to the U.S. West Coast and New York. They will be used to launch new services to Europe when the first ones are delivered in 2018. The A350-900 will enable the carrier to operate non-stop service on the 8,000 nautical mile New York – Manila route all year round with a full passenger load. To date, **Airbus** has recorded 777 firm orders for the A350 XWB from 41 customers worldwide. **PAL** operates 50 **Airbus** jets, and six **Boeing** 777-300ERs and its regional subsidiary flies nine **Bombardier** Dash 8s.

**Kish Air**, Iran, signed an agreement to purchase two new A321-200s, according to **Ali Asghar Mounesan**, the CEO of the **Kish Free Zone Organization**. The two aircraft will be delivered in May, and eight more undisclosed aircraft are expected to arrive this year, he said. Several aircraft manufacturers have been courting Iranian carriers in the hopes of securing large orders. Last year,

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Russia attempted to sell the airline 15 Tu-204(SM)s although a firm order was not announced. The airline also considered **Embraer** aircraft. **Kish Air** currently operates three Fokker 100s, four MD-82s, and four MD-83s on domestic flights and to Dubai.

**Airbus Disclosed the Re-Engined A330neo** had “successfully passed” the detailed design review in December, some six months after concept freeze in mid-2015. This came a few weeks after manufacturing of the first parts had begun. The manufacturer said at the **Singapore Airshow**, that the initial assemblies were being produced at facilities including St. Eloi – which specializes in the pylon – as well as Nantes and Broughton. Final assembly of the A330neo is set to begin in the fourth quarter of this year, and the first would be delivered in late 2017, after a 42-month development period. **Airbus** has secured orders for 10 of the re-engined A330-800s and 176 for the larger -900 variant.

**The A330 is Selling Well Enough for Airbus** to reverse its decision to cut the production rate to six per month. The manufacturer announced it will build seven standard A330s per month in 2017, during the transition to the A330neo. **Airbus** had faced lower demand for the baseline twinjet ahead of the A330neo’s entry into service in late 2017. Chief Operating Officer — Customers **John Leahy** said demand had revived, and there was room to raise the rate to seven or eight aircraft per month. CEO **Tom Enders** added that **Airbus** had made a “very prudent decision” to keep the A330 in the market and “rejuvenate” the type.

## Boeing Orders

**Boeing Sold 61 737s, Six 777s and One 787-9 in January.** **Air Lease Corp.** purchased one 787-9, for a total of 16 787-9s and 30 787-10s. **Air China** ordered another six 777-300ERs, raising its fleet to 26. **United Airlines** bought 40 737-700s, while the **United States Navy** contracted for 16 more P-8As (737-800A), and the **Government of Australia** will acquire four more P-8As. One **Business Jet / VIP Customer(s)** purchased one 737 MAX. **Boeing** delivered 35 737NGs, one 747-8, six 777s and seven 787s in January, for a total of 49.

**United Continental Holdings** snubbed **Bombardier’s** offer of the CSeries in favor of 40 737-700s, the smallest of **Boeing’s** jets. The airline already operates 40 -700s that it acquired with **Continental Airlines** in a merger in 2010, along with 130 -800s and 142 -900s. The new 737-700s will enter service in mid-2017 and they will replace **United Express’** smaller and much more cramped regional jets. The sale was list priced at \$3.22 billion (\$80.5 million each), but analysts claim the discounted price is closer to \$1.37 billion (\$34.25 million each). **United’s** chose to forgo the next generation of fuel efficient **CFM LEAP** engines in favor of the 737NG with its previous technology CFM56 engines. The brand-new CSeries is list priced at \$82 million each and seats 130 passengers in dual class configuration. In February, **United** ordered another 25 737-700s, for a fleet total of 65. It seems that **Boeing** was willing to sell their jets at near cost in order to thwart **Bombardier’s** ambitions to be the plane maker for the U.S. major airlines. Airlines typically receive discounts of 40 percent and apparently **Boeing** cut its prices by more than 50 percent to land this deal. The 737NG is being phased out in favor of a newer 737 MAX, and **Boeing** recovered NG development costs long ago, allowing it to grant greater discounts for sales that help fill the production schedule as it shifts to the MAX. **United** also avoids the costs of training hundreds of pilots and stocking up on spare parts, as well as the hassle of matching crews to a new aircraft type. **United’s** acting Chief Financial Officer, **Gerry Laderman**, said, “Our customers have a preference for an improved travel experience, including first class seats, Economy Plus, and Wi-

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Fi. These aircraft are an efficient way to meet those needs while reducing 50-seat flying.” The 737-700 can seat 126 people and will be flown by **United’s** pilots, which will reduce the reliance on its **United Express** contractors which are facing a shortage of regional jet pilots.

**United Airlines** placed a follow up order for 25 current-generation 737-700s in February; the order was booked in March. The deal for the 126-seat 737-700s was valued at just over \$2 billion (\$80 million each) at list prices. The new batch of planes will be delivered from the end of 2017 through 2019. The -700s will replace 50-seat regional jets, leaving **United** with fewer than 100 small aircraft by 2019. The airline accelerated some of its 787 deliveries, so that it can retire its 22 747-400s by the end of 2018. The airline switched five 787-10s to the -9 model and advanced the delivery dates from 2020 to late 2017. Another four 787-10 orders were changed to four 777-300ERs. After the changes, **United** has outstanding orders for 65 737-700s, one 737-800, 14 777-300ERs, seven 787-9s and 14 787-10s.

**Southwest Airlines Ordered 33 Additional Boeing 737-800s** in December 2015, and disclosed the deal in February. The airline also converted its remaining 25 firm 737-700 orders to the -800 variant. **Southwest** has taken delivery of 362 -700s and 101 -800s and now has 87 -800s on order. **Southwest CEO, Gary Kelly**, said, “We have increased our future

aircraft delivery schedule to support our recent decision to accelerate the retirement of our [737] Classic fleet to no later than mid-2018.” The airline still operates 119 737-300s and a dozen 737-500s, which were delivered between 1991 and 1997. The airline had a fleet of 704 aircraft as of New Year’s Day, after taking delivery of 19 new 737-800s, acquiring 24 pre-owned 737-700s and retiring four 737 Classics. **Southwest** previously planned to keep its Classic fleet until 2021, so the accelerated timeline to mid-2018 required replacement capacity. Under the new plan, **Southwest** will receive 36 new 737-800s this year, 35 in 2017, and 18 in 2018. It will acquire 17 used 737-700s this year, 14 737-700s in 2017 and another four in 2018. Its first 737 MAX 8 will be delivered in 2017.

### Boeing January 2016 Orders, Deliveries

| JAN<br>ORD        | JAN<br>DEL | JAN<br>CANX | TOTAL<br>ORD     | TOTAL<br>DEL | BACK<br>LOG |
|-------------------|------------|-------------|------------------|--------------|-------------|
| <b>737</b>        |            |             |                  |              |             |
| 60                | 35         | -0-         | 10,225           | 8,880        | 1,345       |
| <b>737 MAX</b>    |            |             |                  |              |             |
| -0-               | -0-        | -0-         | 3,072            | -0-          | 3,072       |
| <b>747</b>        |            |             |                  |              |             |
| -0-               | 1          | -0-         | 1,539            | 1,520        | 19          |
| <b>767</b>        |            |             |                  |              |             |
| -0-               | -0-        | -0-         | 1,163            | 1,083        | 80          |
| <b>777</b>        |            |             |                  |              |             |
| 6                 | 6          | -0-         | 1,585            | 1,367        | 218         |
| <b>777X</b>       |            |             |                  |              |             |
| -0-               | -0-        | -0-         | 306              | -0-          | 306         |
| <b>787</b>        |            |             |                  |              |             |
| 1                 | 7          | -0-         | 1,143            | 370          | 773         |
| <b>This Month</b> |            |             | <b>This Year</b> |              | <b>BL</b>   |
| 67                | 49         | -0-         | <b>67</b>        | <b>49</b>    | 5,813       |

**Boeing sold 26,563 aircraft and delivered 20,750 as of January 30, 2016**

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

**Sales totals include zero cancellations.**

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**The First Boeing 737 MAX 8** took to the skies on January 29, and the manufacturer said the program was on schedule. The MAX is equipped with the latest technology **CFM International LEAP-1B** engines and **Boeing-designed Advanced Technology** winglets, and it completed a two-hour, 47-minute flight, from **Renton Field** to **Boeing Field**, near Seattle. “Today’s first flight of the 737 MAX carries us across the threshold of a new century of innovation – one driven by the same passion and ingenuity that have made this company great for 100 years,” said **Boeing Commercial Airplanes** President and CEO **Ray Conner**. During the flight, the 737 MAX reached a maximum altitude of 25,000 feet (7,620 meters), and an airspeed of 250 knots, or about 288 miles (463 kilometers) per hour – typical of a first flight experience. The airplane’s onboard equipment transmitted real-time data to a flight-test team on the ground in Seattle. Another three members of the 737 MAX 8 flight-test fleet are currently in different stages of final assembly, and the 737 MAX remains on track for first delivery to **Southwest Airlines** in the third quarter of 2017. The 737 MAX family has 3,072 orders from 62 customers worldwide.

**Boeing Now Aims to Deliver the First 737 MAX** up to six months ahead of the original delivery schedule. If the test program goes smoothly, the first MAX could be delivered to **Southwest Airlines** in first quarter of fiscal 2017. Some industry officials hinted the company is promising early delivery to its customers, which might not be that easy for **Boeing**. The manufacturer previously faced serious technical issues in its 787 Dreamliner and 747-8 programs that led to several years delays in deliveries. However, **Boeing** is now confident that it might not experience any technical issues and that it could deliver the jet ahead of schedule. The early deliveries would increase **Boeing’s** operational revenues while the company expands its 737 production capacity to 57 jets by end of 2019. The manufacturer hopes to get more orders by building down its backlog more quickly, which will free production slots.

**The Boeing 737 MAX Test Aircraft** featured 58 customer logos along its fuselage, and only 47 of them are formally listed in **Boeing’s** official order book for the type. **Royal Air Maroc (RAM)**, along with Chinese operators, **Kunming Airlines**, **Okay Airways** and **Xiamen Airlines**, have declared intentions to acquire the type. In July 2015, the press said **RAM** would buy seven MAX 8s and eight 787-8s, but in August it flatly denied to that it chose the 737 MAX.

**Travel Service**, Czech Republic, said it had signed contracts to buy 16 737 MAX in January and the jets would be delivered between 2018 and 2021. **Travel Service** operates scheduled flights under the **SmartWings** brand, as well as charter flights, and it will acquire a total of 25 new **Boeing**s. The airline ordered three 737 MAX in August 2013, and it secured leases for 10 737 MAX 8s from Dutch lessor **AerCap**, starting in 2019. The ACMI/charter specialist airline is the biggest in the Czech Republic and currently operates two 737-700s, 18 737-800s, two 737-900ERs and two A320-200s. It flew 5.7 million passengers in 2015.

**Boeing Reported Only Two Orders in February.** **United Airlines** bought one 737-800 and one **Unidentified Customer** purchased a 737-800. **Boeing** reported the loss of two 737 orders during the first part of the month.

**Okay Airways** announced its commitment to buy eight MAX 8s, three 737 MAX 9s and one Next-Generation 737-900ER at the **Singapore Airshow** on February 16, 2016. The agreement was valued at \$1.3 billion at current list prices, and it is subject to the approval of the **Chinese Government**. The

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sale will be posted to **Boeing's Orders & Deliveries** website once all contingencies are cleared. **Okay** has the right to exercise options for eight additional 737 MAX 8 airplanes. This commitment marks the first 737 MAX 9 order by a Chinese airline and it bolsters **Okay Airways'** 737 MAX portfolio to 17 airplanes (the first six are so far listed as **Unidentified**). **Okay** was the first privately owned airline in China, and it is headquartered in Beijing with its main hub at **Tianjin Binhai International Airport**. The airline operates 14 737-800s, three 737-900ERs and one 737-300SF Freighter to more than 100 domestic and international cities. The order was not part of China's 2015 order for 300 aircraft worth \$38 billion at list prices, the company said.

**Air Niugini**, Papua New Guinea, announced an order for four 737 MAX 8 airplanes at the **Singapore Airshow** in February. They will be delivered in 2020. The order was previously unidentified and the planes will be added to the national carrier's current fleet of three Next-Generation 737s and two 767-300ERs. **Air Niugini** operates a domestic network of more than 25 destinations from its Port Moresby hub, as well as international routes across the Asia-Pacific region, including Australia, Fiji, Hong Kong, Indonesia, Japan, Philippines, Singapore, Solomon Islands, Vanuatu, and China in the near future.

**Sun Express**, Turkey, firmed up 10 options for 737 MAX 8 aircraft. It placed the options when it ordered 25 737-800s and 25 737 MAX 8s in February 2014. **SunExpress** Managing Director **Jaan Albrecht** said, "We are pleased to confirm these 10 optional **Boeing** 737 MAX 8s as a firm order that will support our growth strategy, one that the airline has been successfully implementing for four years. Last year we took delivery of five brand new Next Generation 737-800s, and this year we will receive seven new aircraft." The airline is a joint-venture between **Turkish Airlines** and **Lufthansa**; **Sun Express** operates 52 737-800s on flights from northern Europe to leisure destinations in Turkey. It serves domestic routes under its own brand name and on a wet-lease basis for **Turkish Airlines** low cost unit, **AnadoluJet**.

**Boeing Received Permission to Sell New Airplanes to Iran.** The United States issued a license allowing **Boeing** to hold talks with Iranian airlines, but it needs additional approval to actually make sales. **Boeing** said, "We have applied for and received a license to assess the current commercial passenger airplane needs of U.S. Government-approved Iranian airlines. The license permits us to engage approved airlines to determine their actual fleet requirements." This came nearly a month after Iran agreed to buy 118 **Airbus** jets worth \$27 billion at list prices, after the lifting of sanctions. Iranian airlines operate 94 **Boeing** and **McDonnell Douglas** aircraft, nearly equal to the 96 **Airbus** planes they fly. **Boeing** commented that, "Our European competitor, **Airbus**, is advancing its interests in the market, and Canada recently indicated that it will permit **Bombardier** access to the Iranian market as well. We understand that the situation in the region is complicated and ever changing and we will continue to follow the **U.S. Government's** guidance as it relates to conducting business with Iran." **Boeing** needs to ensure that the airline buyers are not linked to arms dealers or other entities that remain off limits. The U.S. trade embargo on Iran remains in place, and in most cases, U.S. citizens and firms are still broadly prohibited from engaging in transactions or dealings with Iran or its government. Iranian carriers are currently talking to **ATR**, **Bombardier**, **Embraer**, **Mitsubishi Aircraft Corporation** and **Sukhoi Civil Aircraft**.

**The Boeing Company** will lower the 747-8 production rate due to the paucity near-term demand for freighters in the cargo market. To account for the market and production impacts, the company will

recognize a \$569 million after-tax charge when it announces financial results for the fourth quarter of 2015. CEO of **Boeing Commercial Airplanes**, **Ray Conner**, said, “Global air passenger traffic growth and airplane demand remain strong, but the air cargo market recovery that began in late 2013 has stalled in recent months and slowed demand for the 747-8 Freighter. While we remain confident in the 747-8’s unique value-proposition and an upcoming replacement cycle for late-model 747-400 Freighters, we’re taking the prudent step to further align production with current market requirements.” **Boeing** will start building one 747-8 every two months in September 2016, more than halving the current rate of 1.3 airplane per month. On a pre-tax basis, **Boeing Commercial Airplanes** will report a charge of \$885 million. The earnings charge will not affect the company’s 2015 revenue or cash flow. The company said it was closely monitoring the air cargo market and it was working to win additional orders to support ongoing future production, while aggressively driving down costs across its production system to offset the current market challenges. Air freight contracted in November, it was down by 1.2 percent compared to November 2014, while global passenger demand rose by 5.9 percent, according to the **International Air Transport Association (IATA)**. **Boeing** expects to double the 747-8’s production rate back to one per month in 2019, according to its newly-released annual report. **Boeing** forecasts that more than 200 747-400Fs will begin to reach retirement age, which will fuel a replacement market. Some analysts are pessimistic and think that **Boeing** will shut down the line in the near future. **Boeing** admits to having “a number of completed aircraft in inventory as well as unsold production positions. If we are unable to obtain sufficient orders in 2016 and/or market, production and other risks cannot be mitigated, the program could face an additional reach-forward loss that may be material.”

**Boeing Will Replace the 747-200-Based “Air Force One” Fleet** with three modified 747-8 widebodies. The **U.S. Air Force** and **Boeing** signed the first of many contracts under the **Presidential Aircraft Recapitalisation (PAR)** program in January. The \$25.8 million contract aims to reduce risk before the program launches an engineering and manufacturing development phase in 2017. **PAR** program chief **Col. Amy McCain** said, “This initial effort is about reducing risk, really understanding where the tough work will be, finding affordability opportunities, and getting the best value for the taxpayer, while continuing to meet the needs of our commander in chief.” The contract constitutes Phase 1 of “pre-milestone B” efforts, running through April 2017, when the **Air Force** intends to transition to development. They will purchase two 747-8s and optioned to buy a third aircraft, which will replace three ageing VC-25A presidential aircraft. The **USAF** attempts to keep two aircraft on standby at all times to support the president while the third undergoes depot maintenance. Delaying replacement by one year could add \$255 million in otherwise unnecessary maintenance and modification costs, or \$510 million for a two-year delay, the **Air Force** said. The VC-25As were ordered during the **Regan Administration** and delivered in 1990. The budget for the new presidential jets is \$1.65 billion for the first two aircraft.

## Regional Report

**Air Canada Executed a Letter of Intent to Buy 45 Bombardier CS300 Aircraft** and optioned 30 more CS300s, in February. The flag carrier became the first North American mainline, and international network carrier to choose the CSeries aircraft. The contract includes conversion rights to CS100 aircraft. Based on the list prices a firm order for the first 45 would be valued at approximately \$3.8 billion (\$84.4 million each). **Bombardier Commercial Aircraft** said the deal opens a new chapter in the partnership

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between the two companies. **Air Canada's** President and Chief Executive Officer, **Calin Rovinescu**, said, "We've been carefully assessing the capabilities of **Bombardier's** CSeries aircraft and its progress for some time. The CSeries will be a key element of our ongoing fleet renewal, which will result in **Air Canada** operating one of the world's youngest and most fuel efficient airline fleets. With its optimal mainline performance range, superior economics, and greater seating capacity, the Canadian-built CS300 aircraft will allow us to compete more effectively, providing increased point-to-point service to domestic and trans-border markets further afield, as well as feeding our network." **Bombardier** said, "The CSeries aircraft has proven and exceeded its performance targets and can readily be used as a coast-to-coast mainline connector or to open direct flights to under-served destinations. Performance and exceptionally low operating costs are ultimately what make this plane a success and **Air Canada** is recognizing that the CSeries aircraft was designed in line with evolving market requirements." Montreal-based **Bombardier** now has 678 total orders and commitments for the CSeries, including 243 firm orders. The company is ramping up hiring to support production of its struggling CSeries commercial jet program, while it will cut approximately 7,000 of its 64,000 employees. The job cuts will come mainly in the company's aero structures, engineering services and transportation divisions, in Canada and Europe, and notices are expected in the coming weeks. **Bombardier** said about 3,450 people work on the CSeries program and employment will grow over the next few years at its plant in Mirabel, Quebec. The first CS100 will be delivered to launch customer **SWISS** in the second quarter of this year.

| <b>Bombardier December 31, 2015</b>                                    |                     |                         |                        |
|------------------------------------------------------------------------|---------------------|-------------------------|------------------------|
| <b>Orders &amp; Deliveries</b>                                         |                     |                         |                        |
| <b>CRJ</b>                                                             | <b>Total Orders</b> | <b>Total Deliveries</b> | <b>Current Backlog</b> |
| Challenger                                                             | 33                  | 33                      | -0-                    |
| CRJ1/2/440                                                             | 1,021               | 1,021                   | -0-                    |
| CRJ700                                                                 | 336                 | 326                     | 10                     |
| CRJ900                                                                 | 409                 | 365                     | 44                     |
| CRJ1000                                                                | 68                  | 43                      | 25                     |
| <b>Total</b>                                                           | <b>1,883</b>        | <b>1,804</b>            | <b>79</b>              |
| <b>CSeries</b>                                                         | <b>Total Orders</b> | <b>Total Deliveries</b> | <b>Current Backlog</b> |
| CS100                                                                  | 53                  | -0-                     | 53                     |
| CS300                                                                  | 190                 | -0-                     | 190                    |
| <b>Total</b>                                                           | <b>243</b>          | <b>-0-</b>              | <b>243</b>             |
| <b>Dash 8</b>                                                          | <b>Total Orders</b> | <b>Total Deliveries</b> | <b>Current Backlog</b> |
| Q1/2/300                                                               | 671                 | 671                     | -0-                    |
| Q400                                                                   | 547                 | 508                     | 39                     |
| <b>Total</b>                                                           | <b>1,218</b>        | <b>1,179</b>            | <b>39</b>              |
| <b>Bombardier</b> delivered nine CRJs and 10 Dash 8-400s this quarter. |                     |                         |                        |

**Delta Air Lines** CEO **Richard Anderson** said the airline was taking a "serious look" at the **Bombardier** CSeries. "We actually think at the right price it's quite a competitive airplane given the engine technology," he said, following a tour of the CS100 and meeting with **Bombardier Commercial Aircraft** president **Fred Cromer** in December 2015 at **Delta's** headquarters. "The geared turbofan engine is the biggest innovation since the 787," he commented, but **Bombardier** should not be too encouraged because **Delta** deferred its 18 787-8 deliveries until 2020. Mr. **Anderson's** previous comments about new aircraft types did not cause new orders. He repeatedly praised the **Boeing** 787-9, but ultimately **Delta** ordered **Airbus** A350-900s because of more attractive pricing and delivery positions. The airline may want the CSeries to replace its less-than 100-seat regional aircraft now that it acquired almost all the used **Boeing** 717-200s in the world, and it bought 20 used **Embraer** E190s from

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**Boeing Capital.** Mr. **Anderson** seems fixated on cost and is willing to acquire used aircraft at knock-down prices rather than buy the latest technologies, and then have to wait for delivery.

**Bombardier Announced a New 90-Seat Q400 at the Singapore Airshow** that will enter service in 2018. The airframer will move the rear bulkhead back and reconfigure the front right-hand door to accommodate an extra row of seats. The seat pitch will however remain at 28 inches. They have not announced a launch customer yet. "We're creating a new market segment, and we are alone in that market segment – nobody else has got a turboprop between 80 and 100 seats," **Patrick Baudis**, VP of Marketing said. Initially the 90-seat option will be offered on new planes, but **Bombardier** is studying the option to retrofit existing Q400s. **Bombardier** launched the its 86-seat high-density variant at the **2013 Dubai Airshow**, and the first customer was **Nok Air**, Thailand. The manufacturer announced a 2,000 pound increase in payload for the Q400, and it will decrease A-check intervals from 600 to 800 hours, and C-checks from 6,000 to 8,000 hours. Those changes will come into effect in 2018.

**ATR Reported Record Income of \$2 Billion in 2015**, and the aircraft manufacturer delivered a record number of 88 aircraft. In 2014, it delivered 83 aircraft and its income was \$1.8 billion. Customers on the five continents ordered 76 aircraft and took 81 options (157 in total) in 2015. Since 2010, the type has been the bestselling aircraft in the 90 seats or less market worldwide. They represent 37 percent of all aircraft sales in this category and 77 percent of all turboprop planes. **ATR** welcomed a dozen new operators last year, raising its total to more than 200 operators of all models, from nearly 100 countries. To date, **ATR** has sold 1,538 aircraft and it currently has a backlog of 260 aircraft, valued at approximately \$6.6 billion, which equals almost three years of production. In 2015, **ATR** received certification for the "High Density" ATR 72-600 cabin, which has a maximum capacity of 78 seats, and the "Cargo Flex" cabin, which allows for 44 passenger seats and cargo capacity of nearly 20 cubic meters (80 cubic feet).

| CUSTOMER        | 42-600    | 72-600    | OPTION    | TOTAL      |
|-----------------|-----------|-----------|-----------|------------|
| Cebu Pacific    |           | 16        | 10        | 26         |
| Air New Zealand |           | 16        | 30        | 46         |
| Braathens       |           | 9         | 6         | 15         |
| Japan Airlines  | 8         |           | 15        | 23         |
| Binter Canarias |           | 6         |           | 6          |
| Air Madagascar  |           | 3         |           | 3          |
| Bahamas Air     | 3         | 2         |           | 5          |
| Undisclosed     |           | 13        | 20        | 33         |
| <b>TOTAL</b>    | <b>11</b> | <b>65</b> | <b>81</b> | <b>157</b> |

### **Avions de Transport Régional (ATR)**

and **Iran Air** signed a contract for 40 of the newest generation ATR 72-600s in Teheran, on February 1. The agreement includes firm orders for 20 aircraft plus 20 options, and was valued at €1 billion (\$25 million each) at list price. The deal follows the commercial discussions held in Rome and Paris during state visits by the President of Iran, **Hassan Rohani**, and the Minister of Transportation **Abbas Ahmad Akhoundi**. The Italian and French states played an important role through the participation of their export credit agencies, **Sace** and **Coface**, respectively. This newly opened market provides a strong potential for the development and expansion of domestic traffic and routes. **ATR** turboprops have operated in Iran since 1992. **Iran Air** will take delivery of its first ATR 72-600s in November 2016, and deliveries will run through the end of 2018. **Iran Air** recently alluded to plans to set up a new regional air service to cater to the country's smaller cities. **ATR** said it is also talking with **Iran Aseman Airlines** which currently operates four aging ATR 72-200s and two -500s.

**ATR**, a joint venture between **Airbus Group** and Italy's **Finmeccanica**, sold five ATR 72-600s to Singapore-based lessor **Avation PLC**, at the **Singapore Airshow** in February. The deal was valued at about \$130 million (\$26 million each) at list price. Now **Avation** has firm orders for 35 ATR 72s, after placing its first one in 2011. The lessor has taken delivery of more than 20 ATR 72-500s and -600s, and it has leased them to **Air India**, **Fiji Airways**, **Flybe** (for **Scandinavian Airlines**), **UNI Air** (Taiwan), and **Virgin Australia**. Deliveries of the remaining ATR 72-600s extend through 2018.

**Alaska Airlines** is planning to order 30 EMBRAER 175s and to option an additional 30 of the same type. Late last month, **Alaska** Chief Financial Officer **Brandon Pedersen** said his airline wanted to replace 15 Dash 8-400s coming off lease from its **Horizon Air** subsidiary in 2018. The first of the 30 regional jets will arrive in 2017. The order is contingent on **Horizon's** pilot and cabin crew unions approving modification of their union work rules. The unions are voting now and an order could be placed this month. The new E175s would be similar to the five EMBRAER 175s that its regional partner **SkyWest Airlines** operates for **Alaska**, and they would be fitted with economy, premium economy seats and first class cabins. The large regional aircraft will operate on new medium-range routes. The airline said they are not seriously considering 100-seat aircraft, such as **Bombardier's** CS100. **SkyWest** said it will retire the eight CRJ700s that it flies for **Alaska** in 2016 and replace them with eight new E175s that were ordered in June 2015. The E175s were valued at \$355 million (\$44.375 million each) at list prices and will be delivered this year.

**Egyptian Leisure Airlines**, a new privately owned carrier, signed a Memorandum of Understanding to buy four **Sukhoi Civil Aircraft** Sukhoi Superjet 100s and it will option six more. The deal may include the founding of a joint venture with a Russian third party that would see **Egyptian Leisure** acquire another 35 Sukhoi SSJ-100s over three years. They will transport Russian tourists to Egypt and restore a vital source of revenue to the economy. The 45 SSJ 100s were list priced at \$2 billion (\$44.44 million each). **Sukhoi Civil Aircraft's** Senior VP, **Evgeny Andrachnikov**, said he expected the airline to buy all 10 planes in a first phase. The first batch of jets would initially be used domestically before being used to carry Russian tourists. The Egyptian Minister of Transportation expects that the resumption of Russian flights will take place in the first half of this year. Russian President **Vladimir Putin** has said his country would remove all restrictions on flights to Egypt once reliable anti-terrorist measures were implemented. The Egyptian-Russian joint venture could provide the Russians with more control and reassurance than they can now expect. The first planes could be delivered as soon as April, and the rest by 2018. **Sukhoi** is slated to operate a maintenance facility in Egypt and arrange training for 150 pilots in the first two years. The joint venture forecasts 1.5 million Russian visitors per year starting in May, and with flights from three Russian airports to Red Sea resorts.

**Embraer Rolled Out the First E190-E2** on February 25, in a ceremony held at the company's plant at São José dos Campos. This is the first of **Embraer's** second generation of the E-Jets family. The airplane is scheduled to fly in the second half of 2016, and it should enter service in 2018. The company invested \$1.7 billion in the E-2 Jet program since June 2013, and the plane helps **Embraer** maintain its market leadership in the 70- to 130-seat segment. The aircraft will have state-of-the-art PW1900G engines, new aerodynamically advanced wings, full fly-by-wire flight controls, and other improvements to other systems. The program has reached 267 firm orders and 373 options and purchase rights, from both airlines and leasing companies. The manufacturer will build four E190-E2 prototypes as well as

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two E195-E2 test planes. The type will enter service in 2019, and three E175-E2 test aircraft will be built before that model enters service in 2020.

**Viking Air Limited** of Victoria, British Columbia, will launch the Viking Twin Otter 400S Seaplane to tap the under-served seaplane market in the 15- to 19-passenger category. **Viking** developed the new 400S variant of the Series 400 as an economical seaplane for commercial operation on short to medium flight segments. It will be offered at a list price of less than \$6.0 Million. The 400S is designed for quick turn-around between cycles, and it should achieve a breakeven load factor at around eight passengers under typical operating conditions. The Viking 400S will feature an avionics-dedicated battery to allow the cockpit screens to remain live during short loading intervals. Double swing-out aft passenger doors and internal access to the rear baggage compartment will further increase loading efficiency. The 400S comes equipped with 17-passenger seating configuration, new generation composite floats, and **Pratt & Whitney** PT6A-27 engines that incorporate platinum coated CT blades. Nineteen-passenger seating or a combination 15-passenger/cargo configuration are available as options for the 400S. **Viking** expects to deliver the first 400S in the first quarter of 2017.

## Order Changes and Cancellations

**Airbus Officially Reported** that **Garuda Indonesia Airways** cancelled seven A330-300s in January. **Airbus** was not very forthcoming with information about the 44 new orders placed in December and revealed in January, but an inspection of its **Order & Deliveries** webpage shows that 30 more A320neos, 12 A321ceos, seven A321neos and two A330-900 orders were added to the totals and one A319ceo order was dropped. **Gulf Air** ordered two A320neos and 17 A321neos and let go of its only A319ceo and its last six A330-300 orders. **BOC Aviation** ordered five more A320ceos, 28 A320neos, seven A321ceos and it cancelled 10

**Mitsubishi Aircraft Corporation** and **Aerolease Aviation** signed a Letter of Intent (LOI) to order 10 firm MRJ90 regional aircraft with an option to buy another 10 MRJ90s. The deal was valued at about \$940 million (\$47 million each) at list prices. **Aerolease** is the first lessor to choose the MRJ, and deliveries will commence in 2018. **Aerolease** is based in Miami, Florida, and it is opening a new market with the MRJ as a partner. The lessor said it was extremely impressed with the MRJ's state-of-the-art aerodynamic design, **Pratt & Whitney's** game-changing GTF engine and the state of the art avionics suite from **Rockwell Collins**, which will make the MRJ a superior aircraft to its competitors. To date, 407 MRJ aircraft are on order and the latest 20 will be added when a definitive agreement is signed in April. At that time, the MRJ will have 233 firm orders, 170 options and 24 purchase agreements. **Mitsubishi Aircraft** forecasts demand of 5,000 aircraft in the regional jet market over the next 20 years.

**The MRJ Regional Jet Test Aircraft FTA 1** carried out its first flight off the Pacific Coast since it was grounded in November 2015. **Mitsubishi Aircraft** said it was able to "confirm the upgrades" including structural reinforcements and system software upgrades. After the third test flight on November 27, the manufacturer identified the need to strengthen the aircraft's wing roots and fuselage frame above the center wing. It has since applied a "temporary treatment", strengthening the sections with "additional plates". They will redesign these parts for the production aircraft to increase the thickness and also the empty weight by a few kilograms. **Mitsubishi** will use five aircraft for the test flight campaign, and they will fly for approximately 2,500 hours over the next two years. The first production aircraft will be delivered in mid-2018.

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A321neo orders. **Juneyao Airlines** bought its 17th A320neo in January. The number of **Undisclosed** A320ceo orders fell from 128 to 120, while the number of **Undisclosed** A321ceo orders rose by five, from 88 to 93 as of January 2016. Sixteen A330-900neo orders were added to the **Undisclosed** category, and three A380 orders were transferred to **All Nippon** during the month.

**Airbus is Renegotiating Delivery Schedules** for its A320neo jet and it told some airlines that there will be two month delays. The first Geared Turbo-fan engined A320 was supposed to be delivered in December 2015, but it was handed over to **Lufthansa** on February 12. The delays are due to glitches in the **Pratt & Whitney** GTF engines. An **Airbus** spokeswoman said, “We are in talks with our customers on deliveries and once these talks will have concluded, then we’ll finalize the aircraft and deliver to our customers as agreed.” **Airbus** is doing a lot better than **Boeing** when the A320neo is compared to the 747-8 and 787, but the delays are still embarrassing and could be costly, in that **Qatar Airways** has threatened to switch to the **CFM International** LEAP-1A engine. The first LEAP-engined A320 is due in July, and it will take a lot longer than that for **Airbus** to retrofit **Qatar’s** NEOs with **CFM** engines. Another launch customer, **IndiGo** was to receive its first A320neo in December or January and it reported that its first NEO will arrive in March, 2016. The airline will take delivery of 24 A320neos by the end of March 2017. This is two fewer than originally scheduled. **Airbus** said deliveries of the A320neo will be tilted toward the second half of the year.

**Thai Airways International** will postpone delivery of 12 **Airbus** A350-900s and two **Boeing** 787-9s that were originally scheduled to join the fleet between 2016 and 2018. Two A350s were due in 2016, five in 2017, and five in 2018, and the two 787-9s were to be delivered in 2017. The carrier will still retire ageing aircraft on schedule. **Thai** will retire its 10 747-400s, which have an average age of 17.4 years and it is grounding its older 777-200s, which were delivered in the mid-1990s. The airline has already parked 10 A330-300s, four A340-500s, six A340-600s, and four 747-400s. The loss-making Thai flag carrier is undergoing a major restructuring that calls for the cutting of routes, employee numbers and debt, as well as the retirement of old aircraft. A spokesperson said, “the company will avoid additional costs that will be incurred from delivery of new aircraft during 2016-2018, the details of which are pending negotiation.”

**American Airlines** will defer two of the six A350-900s that were scheduled for delivery in 2017. The two A350s will now be delivered in 2020. The airline’s Chief Financial Officer **Derek Kerr** said the deferrals would allow the airline to better match capacity to international network demand. **American Airlines** ordered 22 A350-900s, and it is the type’s North American launch customer.

**There Were No Boeing Cancellations in January**, but the manufacturer lost two 737NG orders in early February. **Southwest Airlines** converted its remaining 25 737-700 orders to the larger -800 variant. The airline took delivery of the last of 362 -700s in December 2011, and it now has 87 -800s on order.

**Gulf Air** converted its 16 787-8 Dreamliners on order to 787-9s in January, as part of its long-term, long-haul fleet strategy and expansion. The airplanes were valued at \$4.2 billion (\$262.5 million each) at current list prices, and were originally ordered in January 2008. **Gulf Air** will chose between **General Electric** GEnx and **Rolls-Royce** Trent 1000 engines shortly. The airline also cancelled its last six A350-900 orders at the same time. The order modification was announced on the opening day of the **Bahrain International Air Show**. The local carrier said there were “extensive negotiations with the aircraft

manufacturer”. Dreamliner deliveries will begin in April 2018, and the switch did not affect the airline’s earlier schedule for introducing of the type. The airline will use the 280-seat 787s to replace its six **Airbus** A330-200s, which are between 15 and 16 years old. More than 60 customers have ordered more than 1,100 787s, making the Dreamliner family the fastest selling twin-aisle airplane in **Boeing** history.

**WestJet** CEO **Gregg Saretsky** is talking with **Boeing** and **Bombardier** about revising their delivery schedule of new aircraft. The Alberta economy is in a slump due to falling oil prices. A quarter of the airline’s business comes from its home province and the airline was hit hard in the fourth quarter. Negotiations with **Bombardier** are focused on delaying some of the Dash 8-400 turboprops destined to its **WestJet Encore** regional subsidiary. The airline was scheduled to take 10 Q400s this year and another two in 2017. **WestJet** wants to defer three of its six 737-800s on backlog. The carrier has 65 737 MAX on order as well. The airline also plans to return nine leased aircraft to their owners by 2017. This would be the first time the airline has not renewed its leases. The low-cost carrier currently operates 13 737-600s, 59 737-700s, 32 737-800s, four 767-300ERs, and **WestJet Encore** flies 23 Q400s.

## Leasing & Finance

**Finnair** Will Lease two new **Airbus** A321-200s from **BOC Aviation** for eight years. They are scheduled for delivery during the winter season 2017/2018. The planes were reserved under a Letter of Intent signed in December 2015.

**Air Algérie** is planning to lease two 787-9s and two 777-300ERs to expand its long-haul fleet. The flag carrier is talking with several lessors. The airline currently operates eight A330-200s

**Boeing’s Eighth Annual Current Aircraft Finance Market Outlook** said that airlines and lessors will continue to have access to efficient funding at attractive pricing throughout 2016 as new companies enter the aircraft financing industry and current participants innovate and provide more options. The company forecasts the industry’s overall delivery financing requirements for the next five years and the sources of financing for new commercial airplane deliveries in the coming year. **Tim Myers**, President of **Boeing Capital Corporation**, said, “The sustained strength of the aircraft finance markets is being driven largely by healthy aviation industry fundamentals and balanced supply and demand for commercial aircraft. Passenger traffic is growing above long-term trends, airplane utilization and load factors continue to rise, replacement demand remains strong and global airlines are producing record operating results and profits. With these conditions prevailing, financiers continue to see commercial aircraft as a good investment and that’s resulting in good access to efficient funding for our customers.” **Boeing** forecast approximately \$127 billion in total aircraft deliveries, and strong demand for new commercial airplanes this year. Mr. **Myers** said, “We’ve seen a number of new entrants in the aircraft financing industry over the past few years and we expect to see more this year as commercial aircraft continue to be seen as attractive, stable assets. The report said it expects to see some lessors to sell all or part of their portfolios to participants in the capital markets which will create capacity for new acquisitions and opportunities for future growth. Lessors should acquire about 40 percent of all deliveries, and will secure most of their leverage through the capital markets. Capital markets and banks should account for approximately two-thirds of delivery funding. In spite of tighter global regulations and U.S. dollar pressures which constrain the sector’s volume, commercial bank debt will play a vital role in aircraft finance. Finally, export credit usage should continue at historically low levels, reflecting the current strength of commercial markets.

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and three 767-300ERs on high-density short-haul routes as well as its international flights. **Air Algérie** plans to launch its first flights to **New York JFK** this summer.

**Air Berlin** has signed a firm lease agreement with **GE Capital Aviation Services (GECAS)** for three **Bombardier** Dash 8-400s. The turboprops will be delivered in September, October and November 2016. The aircraft are part of **GECAS'** existing order book with **Bombardier**, and were ordered in December 2014. **Air Berlin** currently wet-leases 17 Q400s from **LGW - Luftfahrtgesellschaft Walter**.

**Aircastle** formed a joint aircraft leasing venture with **IBJ Leasing (IBJL)**, a Japanese general leasing company which is part of **Mizuho Financial Group**. The joint venture will be 25 percent owned by **Aircastle**, and will purchase its first two aircraft from the lessor. Under **Aircastle** management, the JV will buy newer narrow-body aircraft and lease them premier airlines.

**Intrepid Aviation**, a privately held commercial aircraft lessor, will long-term lease seven **Rolls-Royce** powered A330-300 aircraft to **Turkish Airlines**. The twinjets were originally built for **Skymark Airlines**, Japan, and they will join the **Turkish** fleet of 26 A330-300s later this year. **Intrepid Aviation** focuses primarily on the **Airbus** A321 and A330 and the **Boeing** 777 and 787 families of aircraft.

## Airline News

**RwandAir**, the state-run flag airline, plans to fly to Europe this year and carry a record 1 million passengers by 2017, as it boosts the size of its fleet. The carrier plans to fly to London, Paris or Frankfurt by the end of the year. It handled 600,000 passengers in 2015, up from 500,000 in the previous year. It will take delivery of an A330 in September and another in December, which were financed with a \$160 million loan from the **Eastern and Southern African Trade and Development Bank**. It also plans to lease two **Boeing** planes this year. It recently formed a partnership with **Ethiopian Airlines Enterprise**, to reach more customers.

**The Cathay Pacific Group** plans to rebrand its regional subsidiary, **Dragonair**, as **Cathay Dragon**, in order to capture more traffic from the mainland China market. The group said that closer alignment of the two brands will "capitalise" on **Cathay's** international brand recognition while leveraging the regional subsidiary's connections into Mainland China. **Cathay Dragon** will adopt a new livery, which combines **Dragon's** distinctive red with a **Cathay**-style brushwing logo. The livery will be painted on a **Cathay Dragon Airbus** A330-300 in April, and the rest of the fleet will follow as the planes come in for maintenance. The rebranding will provide passengers with a more seamless brand experience for those connecting between the two carriers' networks. **Cathay Pacific** and **Cathay Dragon** will continue to be two separate airlines and operate under their own licences.

### International Air Transport Association (IATA) Posts February 2016 Jet Fuel Prices.

The association updates the world's average jet fuel prices each week. On February 5, the world's average price of fuel was \$1.021 per gallon, 9 percent lower than the December 2015 price of \$1.130. Fuel was also 40.5 percent less than it was in February 2015. The price of fuel is affected by location. It was only \$0.95 in the Middle East region and was \$1.105 per gallon in Latin America, which was the highest priced region. In Asia, fuel cost \$0.984 per gallon. Fuel dropped to \$1.022 in Europe, and fell slightly to \$1.045 in North America. Since last year, fuel costs in those regions dropped by 42.2 and 38.9 percent respectively.

**British Airways** threatened to pull out of **London City Airport** if a new owner raises landing fees to pay for the £2 billion airport. This has given pause to three groups, including **Cheung Kong Infrastructure**, **Atlantia Spa** and a consortia led by **Macquarie Infrastructure**, which expressed interest in buying the property. **Willie Walsh**, CEO of **IAG**, said, “We will not stay in **London City** if these charges increase. Quite honestly the margins we make at **London City** would not support any increase in charges. We cannot see how a buyer will be able to recover or make any return on that investment unless they make a significant increase in airport charges.” The airport is majority-owned by **Global Infrastructure Partners (GIP)**, an investment fund that also backs Gatwick and Edinburgh airports. The airport is popular with business flyers and is located about three miles from the **Canary Wharf** financial district. It served about 3.6 million passengers in 2014, and aims to serve 6 million a year by 2023.

**The New Socialist Portuguese Government** will buy back 16 percent of the flag carrier **TAP** from a private consortium led by **Humberto Pedrosa** of Portugal and **David Neeleman**, an American-Brazilian aviation tycoon. The state will pay €1.9 million to raise its stake to 50 percent. Mr. **Pedrosa** said, “This is a 50-50 deal, under which the company will be privately managed.” Prime Minister **Antonio Costa** said the state had to ensure that it retains a strategic vision for the carrier while respecting the rights of private investors. Mr. **Neeleman** said the government would not interfere with the company’s executive management, but “there is still a lot to be negotiated”, such as interest rates on bank loans. The consortium will formally hold 45 percent of the airline and the other 5 percent is reserved for employees. The government and consortium will have the same number of board members. Since it was purchased in November, **TAP** ordered 53 new Airbus jets and 17 regional aircraft worth \$9 billion.

**The United States and Cuba** signed an aviation pact that restores scheduled airline service between the two countries on February 16. U.S. airlines still must apply for permission from U.S. regulators to fly specific routes before they sell tickets to Cuba. Charter flights already connect the countries, but U.S. carriers are scrambling to offer new scheduled services. **American Airlines**, **JetBlue Airways** and **United Airlines** are vying for some of the 20 daily round-trip flights between U.S. cities and Havana. The service agreement permits up to 10 daily round-trips to each of nine other airports in Cuba. The routes will be awarded this summer. The U.S. still forbids tourist travel to Cuba, due to a trade embargo put in place in 1962. The Republican Congressional majority needs to rescind the embargo, which may or may not happen after the November 2016 election. Americans are already defying the embargo because they face little risk of being prosecuted by the **Treasury Department’s Office of Foreign Assets Control**.

## Bankruptcy of the Month

**Republic Airways Holdings** filed for Chapter 11 bankruptcy protection in February, due to several quarters of falling revenue, caused by a pilot shortage which forced the airline to ground aircraft. It listed assets of \$3.6 billion and \$3.0 billion in liabilities, in the court documents. The regional carrier said it had sufficient assets and liquidity to meet its working capital and operating expenses during the restructuring process and it will continue to deliver safe services and pay its employees, providers and vendors. The contract carrier offers approximately 1,000 daily flights to more than 100 cities in the United States, Canada, the Caribbean, and the Bahamas and it feeds **American**, **Delta** and **United**. A handful of U.S. airlines have filed for bankruptcy since **American Airlines** did in 2011. **United** said it does not expect to change its flight schedules while **American** said it is too early to assess an impact on

scheduling, and **Delta** did not comment. Analysts say the small regional jet sector is atrophying and that most 50-seat jets will be parked in the next three years. **United** said it intends to halve the fleet of 50-seater that are flown for **United Express** by 2019 and reduce its reliance on contractors, by buying more 100+ seat aircraft which will be flown by mainline pilots.

## Engines

**Rolls-Royce** won a \$2.7 billion order for Trent 1000 engines from **Norwegian**. The contract covers the 19 new **Boeing 787 Dreamliners** the airline ordered in October 2015. The order also includes **TotalCare** long-term service support for 11 leased 787s yet to be delivered and the eight 787s already in **Norwegian** service.

**Rolls-Royce** Launched an Enhanced Version of its Trent XWB Engine, with an order from **Singapore Airlines (SIA)**. The Trent XWB-84 Enhanced Performance (EP) engine will offer a 1 percent improvement in fuel consumption, due to improved turbine cooling, aerodynamics, secondary air system and interstage sealing. The first ones will be delivered to **SIA** in the fourth quarter of 2019. The EP engine will be available to other customers after that date. **SIA** took delivery of its first of 67 A350-900s in March. All A350s are powered by the Trent XWB.

**VietJet Air** bought **Pratt & Whitney Geared Turbofan (GTF)** engines for 63 A320neo and A321neo airplanes. The deal was valued at \$3.04 billion and was signed at the **Singapore Airshow**. Their first NEO will be delivered in 2017. The airline already operates a fleet of 34 A320s and A321s, and it plans to buy or lease a total of 107 aircraft over the next decade. The budget carrier will receive from 10 to 12 new jets per year. In 2014 and 2015, it signed two contracts with **CFM International** for 30 engines and for engine maintenance, which were valued at a \$1 billion.

**Qatar Airways** threatened to cancel its order for **Pratt & Whitney Geared Turbofan** engines to be fitted to 50 A320neo Family aircraft, because the newly developed power-plants had "a lot of problems". The first one was due to take the first delivery in December, but **Qatar** rejected the aircraft due to its engine problems. The first NEO went to **Lufthansa** in January instead. **Qatar Airways** CEO **Akbar Al Baker** said, "There are a lot of things wrong with A320neo, with the engines. So we have refused to accept those airplanes. Let me be very clear: it is not the fault of **Airbus**. **Airbus** has delivered all their part, and as you know, no airplane can fly without an engine. And they have huge issues with the engine," he said at **Singapore Airshow**. "Qatar Airways will not accept an aircraft with those engines unless they are very much corrected. Otherwise we have no alternative but to look at an alternate engine supply. We could cancel the entire **Pratt & Whitney** order," but not the A320neo, Mr. **Al Baker** said. **Qatar Airways** has given **P&W** a deadline to solve the problems. **Pratt & Whitney** said it is installing fixes on the A320neo engines. A **Pratt & Whitney** spokesman said, "We have met with Mr. **Al Baker** previously and explained that we have fixes for the issues he identified. They are being installed in engines being built today and they will be in place prior to him receiving his engines." Later, **Pratt & Whitney's** President **Robert Leduc** said the technical problems should be solved in the coming weeks. "By April, most of that will be solved," he said at a ceremony when **Lufthansa** took delivery of its first A320neo. **Lufthansa** CEO **Carsten Spohr** said that its engineers were working with **Pratt & Whitney** to overcome any teething problems as quickly as possible. Mr. **Leduc** said that 60-65 percent of the 200 Geared Turbofan engines that **Pratt** intends to build in 2016 would be delivered in the second half of the year to ensure a smooth production ramp-up.

**China Aircraft Leasing Group Holdings Limited (CALC)** chose the **International Aero Engines** V.2500 engine to power eight firm plus 15 optioned A320ceo Family aircraft that **CALC** has on order. This deal was originally announced as a Memorandum of Understanding at the **2015 Paris Airshow**. The airplanes will be delivered in 2016 and 2017. **CALC** has a portfolio of 65 current generation **Airbus** and **Boeing** aircraft with an average age of less than 4 years. The lessor ordered 100 A320 aircraft in December 2014 and recently purchased four more A320s, for an order book of 144 A320 Family aircraft. Nearly 7,000 V2500 engines have been delivered to nearly 190 customers in 80 countries, as of mid-February.

**CFM International's** order backlog rose to \$180 billion in 2015. The manufacturer is a joint venture of **General Electric** and **Safran**, France, and it said its backlog rose to 13,400 engines. It sold 2,154 engines, valued at \$27 billion in 2015. The backlog of LEAP engines, which power **Airbus** A320neo and **Boeing** 737 MAX aircraft, rose by 1,418 last year to total more than 10,000 units valued at \$140 billion, the company said. Last year's sales were about half the number booked in 2014, but **CFM** said demand is holding up even though the rationale for fuel savings is undercut by low oil prices and signs that the aircraft business cycle is peaking. **CFM** said it expects to build about 1,700 CFM56 engines and more than 140 of the latest technology LEAP engines this year. It plans to produce more than 2,000 LEAP engines by 2020.

**Perm Engine Co.**, Russia, has assembled three PD-14 engines (100-07, 100-08 and 100-09) for the **Irkut** MC-21 aircraft in 2015. This year, the company will assemble four more PD-14s. The company has begun testing its engine on an **Ilyushin** Il-76LL flying test bed. The airplane operated 12 test flights by the beginning of 2016. The PD-14-equipped MC-21 should make its maiden flight in 2018. The MC-21 can also be fitted with **Pratt & Whitney** PW1400G Geared Turbofan engine. The Russian trunkliner is being developed to compete with the **Airbus** A320neo and **Boeing** 737 MAX. **Perm** has also assembled 23 PS-90As engines for the **Tupolev** Tu-204 and **Ilyushin** Il-96 aircraft in 2015, two more engines than in 2014. Three **Perm**-equipped Tu-214s and eight Il-96s were delivered last year. This year, the company plans to manufacture 25 PS-90As.

## Technical

**Associated Air Center (AAC)**, a U.S. VIP completions and engineering company, delivered its first **Boeing** BBJ 787-8 to be configured for head-of-state operations. It was registered TP-01 and is the eighth widebody airliner completion for the **StandardAero** subsidiary. The airplane was handed over to the **Mexican Air Force** for the President's transport. It was the second VVIP that **AAC** finished for Mexico; the first was a head-of-state-configured **Boeing** 757-200 in 1989. **AAC** said the BBJ 787's cabin accommodates 82 passengers across three zones and has a fourth, "presidential" zone comprising an office, bedroom and an en-suite bathroom, within the 223 square meter (2,400 square feet) cabin. The plane was handed over on February 2, at **AAC's** facility at Dallas, Texas. Each VIP passenger seat is equipped with a portable electronic device outlet and a high definition, in-arm, 11 inch LCD touchscreen monitor to supplement seven 42 inch LCD bulkhead-mounted monitors. Each of these is connected to a variety of in-flight entertainment sources, including six global and local Blu-ray players, audio video on-demand servers and passenger flight information systems. The presidential bedroom boasts an "unprecedented" 44dB sound intensity level, for added comfort. The interior is also 20 percent lighter than initially projected, allowing the aircraft to carry extra fuel and fly longer nonstop missions. The company is poised to deliver its first BBJ 747-8, and it is outfitting an **Airbus** ACJ320 in Dallas.

## Cargo Pallet

**Boeing Launched the Next-Generation 737-800 Boeing Converted Freighter (BCF)** in February, with 55 orders and commitments for conversions from seven customers. **Stan Deal**, Senior VP, **Commercial Aviation Services, Boeing Commercial Airplanes**, said, "While the recovery of the global cargo market has been slow, we see demand for freighters, such as the 737-800BCF, that will carry express cargo on domestic routes. Over the next 20 years, **Boeing** forecasts customers will need more than 1,000 converted freighters the size of the 737, with China's domestic air freight carriers accounting for nearly one-third of the total market." **Boeing** won a total of 30 firm orders and 25 commitments for the 737-800BCF. **China Postal Airlines**, Beijing, ordered 10 conversions, and **YTO Airlines**, Hangzhou, ordered 10 conversions and optioned 10 additional conversions. An unannounced customer ordered five conversions and took two options. U.S.-based, **GE Capital Aviation (GECAS)** has ordered five conversions. **SF Airlines**, Shenzhen, **Cargo Air**, Sofia, Bulgaria, and an unannounced customer committed for a total of 13 conversions. The first 737-800BCF is expected to be re-delivered to **GECAS** in the fourth quarter of 2017. By converting 737-800s into freighters, **Boeing** extends the economic life of the airplane type. The 737-800BCF will primarily be used to carry express cargo on domestic routes. It is capable of hauling up to 52,800 pounds (23.9 metric tons) of cargo, for nearly 2,000 nautical miles (3,690 kilometers). It will be fitted with positions for 11 standard pallets and one half-pallet, and offers 5,000 cubic feet (141.5 cubic meters) of cargo space on the main deck. This will be supplemented by two lower-lobe compartments, combined providing more than 1,540 cubic feet (43.7 cubic meters) of space for revenue-generating cargo. The planes will feature a large main-deck cargo door, a cargo-handling system and accommodations for up to four non-flying crew members or passengers. **Boeing** will modify passenger airplanes into freighters at select facilities located near the client airlines, including **Boeing Shanghai**.

**European Union Regulators Required Federal Express Corporation to Sell TNT Express'** airline operations. **ASL Aviation** will buy **TNT Airways** and **Pan Air Lineas Aereas** so that **FedEx** complies with **European Union** rules. Foreign investors cannot own more than 49 percent of a European airline and control of the company must remain in EU hands. Ireland-based **ASL** is a global cargo, passenger and leasing company, and it will continue to operate flights for **TNT** under a multi-year service agreement, following its acquisition by **FedEx**. **ASL** will grow the fleet from 90 to 130 aircraft. **FedEx-TNT** will become Europe's second-biggest delivery services business and will control 17 percent of European market share. **Deutsche Post's DHL** is the largest and **UPS** is in third place. The deal also strengthens **FedEx's** position as the world's number one express carrier. **ASL** intends to maintain **TNT Airways'** headquarters will remain at Liège Belgium, but **TNT's Eurohub** is not part of the sale. Once the sale is completed, the **ASL Aviation Group** will include **Pan Air**, **TNT Airways**, **ASL Airlines** in Ireland, France, Hungary, and Switzerland, as well as 25 percent of **Safair**, South Africa, 73 percent of **Quikjet Airlines**, India, and 45 percent of **K-Mile Air**, Thailand. Dublin-based **ASL Aviation** is 51 percent owned by Belgian ship-owner **Compagnie Maritime Belge** and 49 percent by **3P Air Freighters**, a private equity fund.

**Aeronautical Engineers (AEI)** has signed a deal with **ASL Aviation Group** to provide three 11 pallet-position 737-400SF freighter conversions. The aircraft (SN 25177, 24917 & 26065) will be redelivered to **ASL** in May, June and July, 2016, respectively. The aircraft are being converted at **Commercial Jet's** Miami, Florida facility.

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**Aeronautical Engineers** also signed a contract with San Francisco-based **World Star Aviation** to convert 1990-built, standard gross weight, 737-400 (SN 24796) into an 11 pallet position -400SF freighter. The aircraft is being modified at **Commercial Jet's** Dothan, Alabama, facility, and it will be redelivered to **World Star** in June, 2016.

**PEMCO World Air Services (PEMCO)** will convert 737-400 (SN 25113) from passenger configuration to full freighter for **Salam Aviation**. Work has started on the aircraft at **PEMCO's** headquarters at **Tampa International Airport** and the plane is scheduled for redelivery in April or May 2016. The 737-400F will be fitted with 11 pallet positions, and 4,600 cubic feet of total volume and it will carry up to 48,000 pounds of payload.

**The PACAVI Group** and **GAMECO (Guangzhou Aircraft Maintenance Engineering)** reported that they are on track to deliver the first **Airbus A320/A321** Passenger-to-Freighter conversion in 2017. **GAMECO** will convert **PACAVI's** A321 Freighter LITE prototype in Guangzhou. The conversion of the prototype A320 Freighter LITE, started in January 2015, and work is progressing on schedule at the **HAITEC** facility in Frankfurt/Hahn, Germany.

**Modern Logistics**, Brazil, has taken delivery of its maiden 737-400(F) (SN 24125). The former **Mistral Air** passenger jet turned freighter was ferried from Lakeland to Iguazu Falls. A second 737-400(F) (SN 24683) is being converted and will be re-delivered shortly. Both planes are leased from **Jetran LLC**. The start-up plans to develop a freight network connecting Brazil's major hubs using a fleet of 737 and ATR 72 freighters, from their key hub at Campinas Viracopos.



**Aeronautica Militare Italiana** took delivery of a VIP A340-541 for use by the **Italian Government**. The 10-year old aircraft (I-TALY, SN 748) arrived at Rome on February 1 after maintenance and the cabin conversion was performed at **Abu Dhabi International**. The ex-**Etihad Airways** A340 is leased from **Alitalia**, which is responsible for its maintenance. The **Ministry of Defense** operates three A319ACJ VIP-configured aircraft.

**Airbus Defence and Space** won its first mid-sized twin-engined C295W transport and mission aircraft order in 2016 from **Mali**. It is the 23rd nation to order the C295. It will be delivered to the **Mali Air Force** in the second half of this year, in the standard transport configuration, and fitted with winglets. The C295W will replace or supplement **Mali's** single **Basler BT-67** (turboprop C-47 conversion).

**Boeing Sold 16 P-8A Poseidons to the U.S. Navy and Four More to the Royal Australian Air Force (RAAF)**, worth \$2.5 billion (\$125 million each). The **RAAF** bought its first four maritime patrol aircraft in August 2015. This latest deal contracts **Boeing** to build 78 P-8As for the **Navy** and eight for the Australians. The manufacturer has delivered 33 Poseidons to the **U.S. Navy** to date. The Lot 7 aircraft will begin delivery in late 2017. The **Navy** has deployed four P-8A patrol squadrons since operations began in 2013. Australia's government signed the first in a series of memoranda of understanding to work with the **U.S. Navy** on system design and development in 2009. The **U.S. Navy** and the **RAAF** also established a joint program office that operates at **Naval Air Station Patuxent River**, Maryland. The first Australian P-8A will be delivered to the **RAAF** in late 2016.

# AIRCRAFT DELIVERIES & SALES

## Airbus

**Airbus A319.** No Airbus A319s were delivered in January. **AviaAM Leasing**, listed on the **Warsaw Stock Exchange**, leased a third -111 (SN 2072) to the Russian regional carrier **Aurora Airlines**. Prior to the delivery to the carrier at **Vladivostok International Airport**, the aircraft was fully refurbished and customized in accordance with new operator's requirements, **AviaAM Leasing** said. The airline returned one of two leased 737-500s to **AviaAM** which sold it to **Dart**, Ukraine.

**Airbus A320.** Airbus delivered only 10 A320s during January, including two -214/Ws (SN 6925 & 6929) to **CEBU Pacific Air**, Philippines, and two -214/Ws (SN 6815 & 6826) to **Spring Airlines**, China. **Spring** took delivery of two -214/Ws (SN 6874 & 68881) in December. The four A320s and another -214/W (SN 6846) are still in storage and have not entered service. **ICBC** leased a third -232/W (SN 6943) to **Tigerair Taiwan**, and **China Aircraft Leasing (CALC)** leased -232/W (SN 6934) to **Air Macau**. **Juneyao Airlines** accepted -214/W (SN 6944). **GECAS** leased -214/W (SN 6927) to **airberlin**. **Air Arabia** received -214/W (SN 6942) and **Volaris** bought -233/W (SN 6948) and sold it to **SMBC** for lease back.

**Qeshm Airlines**, Iran, will add three more leased A320-200s to its fleet of five A300-600s, three A320-200s, five **AVRO** RJs, four Fokker 100s, and four **Fokker** F.50s in March. A further four Airbus aircraft are expected to join the Iranian carrier this summer.

**GE Capital Aviation Services (GECAS)** leased two used -232s (SN 2029 & 2077) to **AtlasGlobal** in November and December, to expand the Turkish carrier's fleet. **AtlasGlobal** operates scheduled and charter services from its base in Istanbul with a fleet of some 20 aircraft. The two V.2500-engined A320s were previously leased to **Metrojet**, Russia.

**Airbus A321.** Airbus delivered six A321s in January. **American Airlines** bought two -231/Ws (SN 6928 & 6940), and **JetBlue Airways** obtained its 26th of 46 -231/Ws (SN 6930). **BOC Aviation**

**Lufthansa, Airbus and Pratt & Whitney** celebrated the delivery of the world's first **Airbus A320neo** at a ceremony on February 12. The first A320-271n (D-AINA, SN 6801) was actually delivered on January 20 and it had already flown scheduled services since then. The second -271n (D-AINB, SN 6864) is expected to join the **Lufthansa** fleet soon. **Airbus** said the A320neo slightly exceeded the 15 percent lower fuel consumption mark that was promised. The significantly quieter engines also increase customer comfort and provide relief to residents near airports by reducing noise emissions. The **Lufthansa A320neo** was fitted with a special logo, "First to fly A320neo - Less noise. Less fuel. Less CO<sub>2</sub>", on the rear fuselage. **Airbus** and the airline also celebrated its 40-year partnership. On February 9, 1976, **Lufthansa** received its first **Airbus A300** at **Hamburg-Finkenwerder**. The airlines within the **Lufthansa Group** have ordered a total of 582 **Airbus** aircraft in the past 40 years and it is the airframer's largest customer. It has taken delivery of 392 aircraft from the European manufacturer, including 284 aircraft from the A320 family and 14 A380s. The **Lufthansa Group** has ordered a total of 116 A320neos and A321neos, including 60 aircraft fitted with the new PW1100G-JM engine from **Pratt & Whitney**.

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leased -211/W (SN 6935) to **EVA Air**, and **China Aircraft Leasing (CALC)** leased a third -231/W (SN 6938) to **Air Macau**. **VietJet Air** took delivery of one -211/W (SN 6936).

**Airbus A330.** Airbus delivered four -300s during January. **Scandinavian Airlines – SAS** leased -343 (SN 1697) from **BoComm Leasing**, which purchased it after delivery to **SAS**. **Avolon** bought -343 (SN 1698) from **Garuda Indonesia**, and leased it back. This was **Avolon's** sixth aircraft to be leased to **Garuda**. **Hainan Airlines** leased -343 (SN 1703) from **Hong Kong Airlines**. **Delta Air Lines** acquired its fifth 242-ton Maximum Take-Off Weight -302 (SN 1701).

**Brussels Airlines** will lease one ex-**Singapore Airlines** -343 (SN 1085) from **AWAS**, in the spring. It will use the plane on its five-times weekly flights from Brussels to Toronto in April.

**SATA Internacional**, Portugal, leased its first A330-223 (SN 970) from **Amentum Aircraft Leasing**, in January, after maintenance work at **Madrid Barajas**. The airline will acquire three A330s to replace the airline's current three long-haul A310-300s. The A330 was previously leased to **Royal Jordanian** and it will fly its inaugural commercial service from Lisbon to Boston on March 27, concurrent to **SATA's** rebranding as **Azores Airlines**.

**Airbus A350.** No A350s were delivered in January. **Cathay Pacific Airways** said the delivery of its first A350-900 will be delayed several months. The airline expected to receive 12 A350s this year. It was supposed to accept its first jet in February, but will now receive it in the second quarter because the business-class seats are not ready for installation. **Zodiac Aerospace** makes A350 business berths, but it has been struggling to meet delivery schedules. **Airbus**, CEO **Fabrice Bregier** called out **Zodiac** for causing difficulties for the A350, and said the seat maker would not be invited to bid on the re-engined A330neo. He said the first **Cathay** plane "is at an advanced stage of production" and that it was negotiating to "finalize the delivery time-line." **Cathay Pacific** says the delivery of its first A350-900 will be delayed until late April, because of a "cabin product issue. The **Cathay** team is working closely with **Airbus** and the product supplier to minimize the risk of any further delays," the airline said. **Cathay's** -900s will have 38 seats in business class, 28 in premium economy and 214 in economy. The jets will feature the next generation of business and economy seats, as well as inflight entertainment products, **Cathay** said. Its 20-ordered A350-900s, and two leased ones will arrive by the end of 2018, followed by 26 A350-1000s from 2018 through 2020.

**Airbus A380.** **Emirates** accepted its 73rd -861 (SN 205). The A380 is fitted with 519 seats in three classes. **Airbus** has 139 of its flagship airliners on backlog.

**IAG CEO Willie Walsh** suggested that **British Airways** would like to add "five or six" second-hand, **Rolls-Royce** Trent 900-powered A380s to its fleet of 12 new superjumbos. Another **IAG**-owned airline, **Iberia**, could also add some used A380s, which Mr. **Walsh** described as a "fantastic" but

**The First A350-941 (SN 026) for Singapore Airlines (SIA)** completed its maiden flight on February 2, and it was delivered to the airline on March 2. The aircraft features the airline's iconic livery and the type will form the backbone of the airlines' future mid-size wide-body fleet. **SIA** ordered 67 A350-900s which will be operated on long range flights, as well as on selected regional services. Seven of the aircraft will be delivered with an ultra-long range capability for flights of up to 19 hours, allowing the carrier to resume non-stop flights to the U.S. **SIA** is already retiring the first of its A330-300s that were delivered in 2010. They will be replaced with the new A350s.

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“inflexible” aircraft. The CEO said that new A380s were “too expensive” and that the airline group would not firm up its seven options. Since it only wants A380-841s, it will be looking at the A380s that are expected to be retired by **Malaysia Airlines** and **Singapore Airlines** over the next three years. The first A380s were delivered to **Singapore** in 2007 and were leased from **Doric Leasing (Amedeo)** for 12 years. Mr. **Walsh** said **British** was not in a hurry to replace its 747-400s with used A380s. The 747-400s are still efficient in the current oil-pricing environment, he said. **British** ordered a dozen A380-841s in 2007 and it will take delivery of the final two by June this year. Normally acquiring one or two A380s by **Iberia** would not make sense because operating small numbers of superjumbos would not be economically viable, but **Iberia** would take advantage of its association with **British** and could utilize its economies of scale. Mr. **Walsh** said the aircraft are used on “routes where there is a high volume demand but frequency is not critical.” **British Airways** has replaced three 747-400s with two A380s on its Los Angeles route. “We are filling them, and the added benefit – which we didn’t factor into our original calculations – is that you get back a slot at an over-capacity **Heathrow**,” he said. He added that the superjumbo is “an inflexible aircraft that works well [only] on certain parts of the network.”

**Malaysia Airlines** delayed plans to sell some of its **Airbus A380s** and will now keep all six of them at least until 2018. Instead it will retire its fleet of **Boeing 777s**. The flag carrier tried to sell the planes during the past year to cut costs, after it dropped several long-haul European routes. It will keep its A380s in service until the airline gets the first of its four new **Airbus A350s** in late 2017 and 2018. **Malaysian** said, “We need them [A380s] for the long haul market,” which it flies to London. **Malaysia** signed a lease for four A350-900s from **Air Lease Corporation** in October 2015 and it holds lease options for two A350-900s as well as for two A330-900neo aircraft.



**Boeing 737 NG.** **Boeing** delivered 35 737s in January, including six -8AS/Ws (SN 44712, 44713, 44714, 44715, 44716 & 44717) to **Ryanair**, and three -85C/Ws (SN 40958, 40690 & 41394) to **Xiamen Airlines**. **American Airlines** received its 266th and 267th of 305 -823/Ws (SN 31233 & 31234), and **Lion Air** took delivery of two -8GP/Ws (SN 39876 & 39877). The second was sold to **SMBC Aviation Capital** and leased back. **Southwest Airlines** accepted two -8H4/Ws (SN 36650 & 36735), and the U.S. Navy acquired two more -8FVs (P-8As, SN 44940 & 44941). **Air Lease Corp. (ALC)** leased one -8SH/W (SN 41338) to **Aerolineas Argentinas**, and -8SH/W (SN 42052) to **Air Vanuatu**. The airline flies to Australia, New Zealand and destinations in the South Pacific. **ALC** has ordered 253 **Boeing** airplanes and has taken delivery of 65 of them. **GECAS** leased another -86N/W (SN 60688) to **Hainan Airlines**, and one -89L/W (SN 43410) to **Air China**. **Air China** accepted -89L/W (SN 44911) from its outstanding backlog. **BOC Aviation** delivered the third of three -8H6/Ws (SN 41769) to **Pegasus Airlines**. The aircraft came from **BOC**’s existing order book and all three were originally allocated to **Malaysia Airlines**. **China Eastern Airlines** acquired its 51st -89P/W (SN 41482) from a total order of 90. **JTA - Japan Transocean Air** took delivery of its first of 12 -8Q3/Ws (SN 61475) in January, and rival **All Nippon Airways** obtained its 34th of 36 -881/Ws (SN 62639). In Europe, **Aeroflot** leased its 15th -8LJ/W (SN 41215) from **Avia Capital Leasing (ACS)**. **Norwegian Air International** acquired its 66th -8JP/W (SN 41143), and it has 34 more on order. **Transavia France** accepted -8K2/W (SN 62158), and **Turkish Airlines** received -8F2/W (SN 60012). In the Americas, **GOL Airlines** accepted -8EH/W (SN 41467) and sold it to **Jackson Square Aviation (JSA)** for lease back. Four -900ERs were delivered to airlines in the United States. **Delta Air Lines** acquired its 51st

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and 52nd of 100 ordered -932ER/Ws (SN 31962 & 31963). **Alaska Airlines** bought -990ER/W (SN 41727), and it has 30 on order. **United Airlines** obtained the last of 130 -924ER/Ws (SN 42197). The airline has 65 737-700s and 100 737 MAX on order.

**Tigerair Australia** has unveiled the first **Boeing** 737-8FE/W (SN 34013) painted in its livery, ahead of the airline starting international services on March 23. **Tigerair's** three 737s will be configured in an all-economy, 180-seat layout, and will operate from a base at **Melbourne Tullamarine International Airport**. The aircraft will be operated by **Virgin Australia International** on behalf of the budget carrier, which is taking over **Virgin's** services to Denpasar from Perth, Melbourne and Adelaide. **Tigerair Australia** currently operates 14 **Airbus** A320s on domestic routes, and it is a wholly-owned subsidiary of **Virgin Australia Holdings**.

**China Development Bank Financial Leasing (CDB Leasing)** celebrated the delivery of the first of 20 Next-Generation 737s in February. The 737-89P/W (SN 60162) was leased to **China Eastern Airlines**. "We are delighted to take delivery of **CDB Leasing's** first directly purchased **Boeing** airplane," **Wang Xuedong**, Chairman, **CDB Leasing**, said. "Our commitment to our customers is to provide them with the most efficient and reliable products and the 737 family of airplanes clearly delivers on that promise." **CDB Leasing** is based in Shenzhen, and operates as a subsidiary of **China Development Bank**. With registered capital of 9.5 billion yuan and a fleet of 191 aircraft at the end of 2015, **CDB Leasing** is one of the largest and most influential financial leasing companies in China with more than 30 years of experience in the business.

**AWAS** leased 737-8BK/W (SN 29676) to **Sriwijaya Air**, a privately held scheduled service and charter airline serving Indonesia, Malaysia, China and the Philippines. The aircraft was returned to **AWAS** by **Virgin Australia** in November 2015.

**Boeing 747**. One passenger 747-8B5 (SN 60407) was delivered to **Korean Air** in January. **Med-View Airline**, Nigeria, acquired one 747-400 from **Air Atlanta Icelandic** for use on its routes to **London Gatwick** and Jeddah, Saudi Arabia. In the past, the Icelandic firm wet-leased 747s to **Med-View** for use on Hajj charters. **Med-View** currently operates four 737 Classics, one 737-800 and one 767-300ER, which is being acquired from **AerCap** under a lease-purchase agreement.

**Boeing 767**. No 767s were delivered in January, for the second month in a row. **Boeing** flew the second KC-46A (767-2LKER, SN 42174) test plane in March. **Boeing** won a contract in 2011 to design and develop the **U.S. Air Force's** next-generation tanker aircraft and it is building four test aircraft. EMD-1 (SN 42173) was the first 767-2C test aircraft, which has completed more than 260 flight test hours since its first flight in December 2014. EMD-2 (SN 42175) is the program's first KC-46A tanker, and it first flew in September 25, 2015, and it has now completed more than 180 flight test hours. EMD-3 (SN 34054) is the second 767-2C, and it will begin flight testing later this year. The 767-2Cs are not yet fitted with refueling equipment.

**Boeing 777**. **Boeing** delivered six 777-300ERs in January. **Emirates Airlines** took delivery of its 81st of 120 ordered -31HERs (SN 42328), and **China Airlines** obtained -309ER (SN 43981). **Turkish Airlines** accepted its 24th -3F2ER (SN 44126), and **Garuda Indonesia** acquired its 10th and final -3U3ER (SN 40073). **Air Lease Corp. (ALC)** leased one -35EER (SN 44552) to **EVA Airways**.

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**Turkish Airlines** reportedly will acquire **Kenya Airways'** three unwanted 777-300ERs. Two -36NERS, (SN 41818 & 41819) were ferried to **KLM Engineering & Maintenance** for refurbishment and -3U8ER (SN 42097) will follow shortly. **Kenya** leased all three 777s from **GECAS** and the planes were grounded at Nairobi in October and November. The jets will be used on **Turkish Airlines'** routes to Mumbai and Delhi. The flag carrier may also be looking for 777-200LRs for potential ultra-long-haul routes. **Kenya Airways** announced it would sell two of its four 777-2U8ERs (one is SN 36124) to **Omni Air International**, a U.S. ACMI/charter specialist. The other two -2U8ERs are stored as well.

**Boeing 787.** **Boeing** delivered one 787-8 and six 787-9s in January, including one -8 (SN 34859) to **Japan Airlines**, and one -9 (SN 37812) to **United Airlines**. **British Airways** acquired its sixth of 21 -9s (SN 38622), and **LATAM Airlines Group (LAN Airlines)** received its fourth of 12 -9s (SN 38459). **AerCap** leased its second -9 (SN 38762) to **Vietnam Airlines**. The manufacturer handed over the first two -9s (SN 41544 & 41545) to **Saudi Arabian Airlines** at a ceremony held at Everett in late January. The flag carrier received its third -9 (SN 41546) and its 20th 777-367ER (SN 42268) in early February. **Saudia** ordered a total of eight 787-9s and it will receive its fourth one this year, and the rest are due in 2017. The order slots were originally reserved by the Kuwait-based lessor, **ALAFCO**, before being shifted to **Saudia** in November 2010.

**Swiss International Air Lines (SWISS)** celebrated the delivery of its first 777-3DEER (SN 44582). The 777 touched down in Zurich after a non-stop 4,545 nautical mile (8,418 kilometer) delivery flight from **Boeing's Everett Delivery Center** in Washington State. The -300ER is the new flagship of **SWISS'** long-haul fleet and is configured with 340 seats, eight in First Class, 62 in Business Class and 270 in Economy, with wireless internet connectivity throughout. The 777 is wet-leased from sister firm **Swiss Global Air Lines** and it will be deployed on the airline's Zurich-New York route. **SWISS** is part of the **Lufthansa Group**, and it serves 104 destinations in 48 countries from Zurich and Geneva. It carries more than 16 million passengers a year with a fleet of 92 airplanes. The airline has eight more -300ERs on order. Another five will be delivered this year and the last three will arrive in February and April of 2017 and March of 2018. They will replace **SWISS** A340s on a tail-for-tail basis as the A340-300s are transferred to its leisure subsidiary **Edelweiss Air**.

**Boeing South Carolina** delivered the 100th 787 built at the North Charleston site. The 787-8 (SN 40631) was delivered to **American Airlines** in front of hundreds of **Boeing South Carolina** employees on February 16. The delivery marked **American's** first 787 from **Boeing South Carolina** and 14th overall. The airline has six more -8s order. This autumn, the airline will take delivery of its first 787-9, and it has ordered 22 of that model. **Boeing** is ramping up production of the 787 from 10 to 12 per month. South Carolina currently assembles about three 787s a month, and the plant will be the sole builder of the stretched 787-10. Design work for the 787-10 is complete, and the first flight will take place in 2017 and the first deliveries will follow a year later.

**MG Aviation Ltd and Norwegian Long Haul** took delivery of the Scandinavian low-cost carrier's first 787-9 Dreamliner (SN 37307) in February. **Norwegian** leased the airplane from **MG Aviation**, and the lessor has three more 787s on order. Apparently all four **MG** 787-9s will be leased to **Norwegian**. The airline currently operates eight 787-8s and will use its 787-9s to open up new routes to North and South America and to Southeast Asia. **Norwegian** serves more than 130 destinations across Europe, North

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Africa, the Middle East, Southeast Asia and the United States. Its fleet also includes 90 Next-Generation 737-800s.

## Regional Jet

**Bombardier.** No CRJ900s were delivered in January, but **PSA Airlines** received three CRJ900NGs (SN 15386, 15387 & 15388) in February, and they will be operated for **American Airlines** under the **American Eagle** brand. **China Express Airlines** accepted CRJ900LR (SN 15395).

**Sukhoi.** **Aeroflot** took delivery of two Sukhoi Superjet 100-95Bs (SN 95094 & 95099) in January, through a financial leasing agreement between **Sberbank Leasing** and **Aeroflot**. The Russian national carrier's Superjets are fitted with 12 business and 75 economy seats. The airline operates 26 SSJs, and has returned its 10 oldest SSJ100s to **Sukhoi**. Seven of the ex-**Aeroflot** SSJs have been placed with Russian airlines and the other three (SN 95013, 95014 & 95017) are still stored.

**Embraer.** **Embraer** delivered one more EMBRAER 170-200 LR (E175) (SN 17000534) to **Republic Airlines** for operation for **United Express** in January. **Alaska Airlines** acquired its sixth and seventh of 15 E175s (SN 17000533 & 17000535). The first nine E175s will be operated by **SkyWest Airlines**. **Tainjin Airlines** took delivery of its third EMBRAER 190-200 (E195) (SN 19000704) in January. The airline now operates 41 E190s and E195s. The airline ordered 20 E195s and 20 E190-E2s in July 2014, and it has the option to order another 18 aircraft.

**Virgin Australia** will dispose of its entire fleet of six E170s, which are currently on sub-lease to **Delta Air Lines**, by the end of the financial year, as it pushes for further cost-savings. The carrier will also sell five of its 18 E190s by September 2016. The regional jets will be replaced by increasing the utilization of its 737 fleet. **Virgin Australia** will have a mainline fleet of six A330-200s, 14 ATR 72-500/600s, two 737-700s, 58 737-800s, and 13 E190s by 2017. **Virgin Australia Regional** plans to retire its fleet of eight Fokker 50s. **Virgin Australia** and **Alliance Airlines** will cooperate in the fly-in/fly-out charter market for natural resource companies in Australia. The existing contracts will stay with the current operators, but **Alliance** and **Virgin Australia Regional** will assist each other with preferential agreements related to aircraft procurement, spare parts pooling, maintenance and ground handling.

## Turboprop Aircraft

**ATR** delivered three ATR aircraft in January, including the first ATR 42-600 (SN 1205) to **AirSWIFT**, Philippines. The airline also leases two -500s from **Nordic Aviation Capital (NAC)**. **Bangkok Airways** received its fifth ATR 72-600 (SN 1303), and **Myanmar National Airlines** accepted its second -600 (SN 1309).

**Aergo Capital** purchased two ATR 72-600 passenger aircraft (SN 1147 & 1154) from **Transportation Partners**. The aircraft continue to be operated by **Malindo Airways**, Indonesia, which is the fastest growing airline in the **Lion Air Group**. **DVB Bank** provided debt financing for the transaction.

**Bombardier** delivered one new Q400 NextGen (SN 4499) to **Air Canada Encore** in January. The airplane was stored since its first flight in May 2015, and it is operated by **Jazz Air**. **Ryukyu Air Charter** accepted Q400NG Combi (SN 4505), and **Air Côte d'Ivoire** purchased Q400NG (SN 4515).

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**Westjet Encore** received Q400NG (SN 4515) in January and two Q400NGs (SN 4517 & 4518) in February.

**Aurora**, Russia, commenced Dash 8-400 revenue operations in February, a month after the **Aeroflot** subsidiary received its first Q400 (SN 4351). The airline will acquire two more Q400s from **Aeroflot** this year, and the **Government of Sakhalin Oblast** will buy two that will be used for medical charter flights.

## Antiques and Other Junque

**Republic Airlines** will end Dash 8-400 operations for **United Airlines** by March 31; in conjunction with its closing its **Denver International Airport** hub where the Q400s are currently based. It will wind up its **Denver** operations by October 1. The fleet of 20 Q400s were leased from **Nordic Aviation Capital (NAC)** and six will be sold and 14 placed with **flybe** (SN 4188, 4202, 4203, 4213, 4214, 4323, 4328, 4336, 4339, 4340, 4342, 4345, 4346 & 4356) on lease. **Republic** is in the process of shifting to an all-jet operation and it will continue to operate twelve E175s for **United Express**.

**AerFin** purchased its fifth **Airbus A340-313** (SN 142) from **Cathay Pacific Airlines** in February, as part of the end-of-life solution for **Cathay's** fleet of 11 A340-300s. The A340 will be disassembled for spare parts, with serviceable inventory stored at **AerFin's** 24/7 distribution facility, located at **London Gatwick Airport** or at the company's strategic hubs around the world. The inventory will be used to support its growing customer base with a cost-effective and consistent supply of components for **Airbus A330/A340** aircraft. The CFM56 engines will be disassembled by **AerFin** at their newly refurbished 100,000 square foot facility in Europe.

**VAS Aero Services** signed an exclusive agreement with **HOP!-BRITAIR**, an **Air France** subsidiary, to buy two early **Bombardier CRJ700s** (SN 10006 & 10007), and **GE CF34-8C1** engines. The planes will be disassembled or resold. The CRJ700s were previously leased to **South African Express Airways**.

**United Airlines** announced it plans to phase out its fleet of 22 747-400s by the end of 2018, a full two years ahead of the previous schedule. **United** justified the move by citing the 747 fleet's age of 20.3 years on average, as well as a shrinking number of commercial operators of the type. These factors make support for the type increasingly difficult and expensive. The 747s are based out of Chicago and San Francisco, and starting next February, the airline will close out the Chicago operations. **United** will replace them with the 35 A350-1000s, 14 777-300ERs and 13 787-10s on order.

**Global SuperTanker Services (GSTS)**, Colorado Springs, Colorado, acquired ex-**Evergreen International Airlines** 747-446(F) (SN 25308) from **Jet Midwest** for conversion into an aerial firefighting tanker. The plane is being refitted with an existing pressurized tank system at Marana, Arizona. The equipment was installed on **Evergreen's** 747-132(F) (SN 19898), but it was never used. **GSTS** purchased all the physical assets and intellectual property-rights related to the **Evergreen SuperTanker** except the 747-100 airframe itself. It hired core members of the former **SuperTanker** project team for its operations. **Global SuperTanker Services** is a subsidiary of **Cyterna Air LLC**, a portfolio company of an investment fund managed by the private equity firm, **Alterna Capital Partners**.

## **Accidents and Safety**

*From Aviation Safety Foundation*

**Zagros Air McDonnell Douglas MD-83** (EP-ZAB, SN 49930) sustained substantial damage due to a runway excursion upon landing at **Mashhad Airport**, Iran, on January 28, 2016. Seven passengers were injured. It is probable that the 26-year old MD-83 will be scrapped, because the airline intends to buy 20 **Embraer E-Jets** and it has 10 A320s and another nine MD-80s in its fleet.

**Daallo Airlines Airbus A321-111** (SX-BHS, SN 642) was en route from **Mogadishu Airport**, Somalia, to Djibouti on February 2, 2016, when a bomb exploded. The explosion opened a hole in the fuselage, but the aircraft was able to return to Mogadishu. One passenger was killed by the blast and sucked out of the airplane, and two others were injured. The A321 was wet-leased from **Hermes Airlines**, Greece. This was **Daallo Airlines'** first fatality since launching services in 1991, which is remarkable since the airline's home country has suffered more than two decades of civil war.

**Scandinavian Airlines System (SAS) Bombardier CRJ900ER** (OY-KFC, 15218) was damaged in a ground accident at **Kastrup Airport**, Copenhagen, Denmark, on February 4, 2016, when an airport tractor ran into the left wing. The tractor driver was seriously injured, and the airplane's left hand main landing gear collapsed. The three crew inside were not hurt.

**Myanmar Air Force Beechcraft 1900D** (4601) crashed into a field shortly after takeoff from **Naypyidaw International Airport**, Myanmar, on February 10, 2016. The plane was operating a check flight, and burst into flames after impact. One the five occupants survived the accident, but died later of his injuries. The rest were killed in the crash.

**Viking Air DHC-6 Twin Otter 400** (9N-AHH, SN 926) was operating a **Tara Air** flight when it was destroyed in an accident in the Myagdi district of Nepal, on February 24, 2016. All 23 on board were killed. The aircraft was found several days later and the cause of the accident has yet to be determined. The weather at both origin and destination airports was favorable, **Tara Air** said.

## 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.

### ASSET MANAGEMENT PROGRAMS

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.

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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.

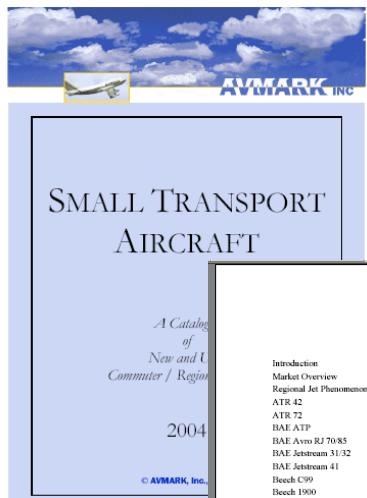
*AVMARK's Historic Jet and Turboprop Values*; summary of the then current fair market values as published in the AVMARK Newsletter for all jets and turboprops in service.

*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 transport 90 million passengers using state of the art technology.

Airline Association (RAA):

Source:

Ref:

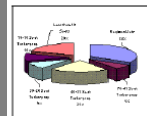


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**ATR 42-300**

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

| Specifications                      |                      |
|-------------------------------------|----------------------|
| Accommodations                      |                      |
| Passengers*                         | 46                   |
| Pilot                               | 2                    |
| Cabin Attendants                    | 1                    |
| Powerplant                          |                      |
| 2 Pratt & Whitney PWC120 Turboprops | 1,800 SHP / 1,342 kW |
| Hamilton Propellers                 | 4 blades             |
| 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     |

**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) |
|-------------|---------------|
| 85-99       | 3.0           |

**Direct Operating Costs (\$ per block hour)**

| Utilization (Block Hours / Year) | Cost (\$ mil) |
|----------------------------------|---------------|
| 100                              | 300           |

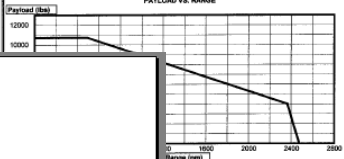
**Average Stage Length (nm)**

| Operating Costs                   | Cost (\$ mil) |
|-----------------------------------|---------------|
| Flying Operations                 | \$198         |
| Flight Crew, Salaries / Expenses  | \$173         |
| Fuel, Oil, Taxes                  | \$162         |
| Other                             | \$3           |
| Aircraft Costs                    | \$3           |
| Insurance                         | \$3           |
| Maintenance                       | \$478         |
| Depreciation                      | \$62          |
| Rentals                           | \$318         |
| Total Direct Operating Costs      | \$906         |
| Cost per Available Seat Mile - \$ | 12.33         |
| Cost per Airplane Mile - \$       | \$5.67        |
| Cost per Seat Block Hour          | \$15.67       |

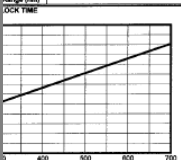
Note: Data from DOT Airline Reports.

**ATR 42-300**

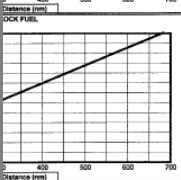
**PAYLOAD VS. RANGE**



**Range (nm)**



**Distance (nm)**



**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 "Idle 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.

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

**Select Aircraft Type**

Available Aircraft

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

Picture



Selected: Airbus A340-300

Description: Widebody 4 Engine Passenger

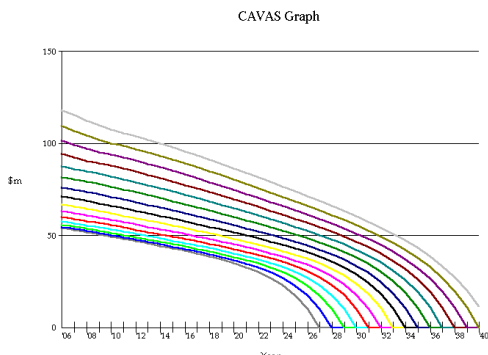
Manufactured: 1992 To 2006

Values: \$54.00m \$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                 |
|--------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| <b>REVENUES (US\$)</b>         |                   |                   |                   |                   |                   |                   |
| 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           |
| <b>TOTAL OPERATING REVENUE</b> | <b>59,194,505</b> | <b>59,124,887</b> | <b>59,055,070</b> | <b>58,985,055</b> | <b>58,914,841</b> | <b>58,844,684</b> |
| <b>VARIABLE EXPENSES</b>       |                   |                   |                   |                   |                   |                   |
| Fuel                           | 6,918,975         | 6,917,742         | 6,916,509         | 6,915,276         | 6,914,043         | 6,912,810         |
| 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           |
| <b>TOTAL VARIABLE COST</b>     | <b>23,443,212</b> | <b>23,443,212</b> | <b>23,443,212</b> | <b>23,443,212</b> | <b>23,443,212</b> | <b>23,443,212</b> |
| <b>SEMI-VARIABLE EXPENSES</b>  |                   |                   |                   |                   |                   |                   |
| 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                 |
|-------------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| <b>FIXED EXPENSES</b>               |                   |                   |                   |                   |                   |                   |
| 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                 |
| <b>TOTAL FIXED COST</b>             | <b>522,892</b>    | <b>522,218</b>    | <b>521,544</b>    | <b>520,870</b>    | <b>520,196</b>    | <b>519,522</b>    |
| <b>TOTAL OPERATING COST</b>         | <b>31,464,497</b> | <b>31,464,497</b> | <b>31,464,497</b> | <b>31,464,497</b> | <b>31,464,497</b> | <b>31,464,497</b> |
| General and Admin. Allocation       | 1,573,225         | 1,573,225         | 1,573,225         | 1,573,225         | 1,573,225         | 1,573,225         |
| <b>TOTAL COST</b>                   | <b>33,037,722</b> | <b>33,037,722</b> | <b>33,037,722</b> | <b>33,037,722</b> | <b>33,037,722</b> | <b>33,037,722</b> |
| <b>OPERATING PROFIT OR LOSS</b>     | <b>26,156,782</b> | <b>26,156,782</b> | <b>26,156,782</b> | <b>26,156,782</b> | <b>26,156,782</b> | <b>26,156,782</b> |
| <b>D-CHECK ADJUSTMENT</b>           |                   |                   |                   |                   |                   |                   |
| Cumulative Hours                    | 4,830             | 9,650             | 14,459            | 19,257            | 24,045            | 28,833            |
| Cumulative Dollars                  | 315,000           | 0                 | 0                 | 0                 | 0                 | 0                 |
| <b>ADJUSTED CASH FLOW</b>           | <b>25,841,782</b> | <b>25,841,782</b> | <b>25,841,782</b> | <b>25,841,782</b> | <b>25,841,782</b> | <b>25,841,782</b> |
| <b>AIRCRAFT LIFE ADJ. CASH FLOW</b> | <b>25,841,782</b> | <b>25,841,782</b> | <b>25,841,782</b> | <b>25,841,782</b> | <b>25,841,782</b> | <b>25,841,782</b> |

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