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## Bombardier lifted as Global 7000 flies

by Kerry Lynch

Canadian OEM Bombardier's flagship Global 7000 felt the wind beneath its wings for the first time last month, completing a two-hour, 27-minute maiden flight from the company's facility in Toronto. Under the control of captain Ed Grabman, copilot Jeff Karnes and flight-test engineer Jason Nickel, the aircraft departed at 10:25 a.m. local time on November 4, climbed to 20,000 feet and reached the planned test speed of 240 knots. During the flight the crew tested basic system functionality and assessed the handling and flying qualities.

The first flight nearly coincided with the 20th anniversary of the first flight of the original Global Express on Oct. 13,

1996. Michel Ouellette, senior v-p of the Global 7000/8000 program, called that anniversary "a huge milestone" that reflects on the successful path the original Global program established. "We're walking into the next success with the Global 7000 and 8000," he added.

"The first flight is the culmination of an incredible amount of knowledge and experience from our dedicated employees, partners and suppliers," said Bombardier Business Aircraft president David Coleal. "This is a proud moment for Bombardier and confirms the Global 7000 aircraft program development is on schedule."

The 7000/8000 program is to become the crown jewel of the *Continues on page 50* 



## A decade in the making, Cirrus jet gets FAA OK

by Mark Huber

Cirrus Aircraft received full FAA type certification for the SF50 Vision single-engine jet on October 25, the Duluth, Minn.-based aircraft manufacturer announced at NBAA 2016. FAA Administrator Michael

Huerta congratulated Cirrus on receiving the approval, calling the aircraft "a step forward in technology and safety."

"My brother and I started with a few good ideas, but more Continues on page 50



New players and new strategies emerge as the industry adapts to a changing market that is seeing customers holding their assets longer. What has not changed is that cash is still king for buyers. **Page 30** 

## **Special Report**

Pre-owned Report

The over-populated used jet lot is under pressure from big discounts on some new ones and weak economic growth.

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## **Pilot Report**

**Gulfstream G550** 

After completing an intensive monthlong type-rating course, AIN's Matt Thurber flies the living, breathing G550. His verdict: an easy airplane to fly with proper training. page 38

## **Airports**

## HTO restrictions blocked

An appeals court issued a preliminary injunction blocking East Hampton's nighttime curfews and other access restrictions.

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## Bizjet deliveries down in Q3

A surplus of pre-owned aircraft and global geopolitical factors are to blame for the year-over-year dip in business jet deliveries in the first nine months, said GAMA.

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## Pre-owned Market

The market is under assault on various fronts, among them a growing inventory of used aircraft for sale and deep discounting by OEMs on some new aircraft. Page 20

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## Aviation International News.

James Holahan (1921-2015). Founding Editor Wilson S. Leach, Managing Director

EDITOR-IN-CHIEF - Charles Alcock

EDITOR - AIN MONTHLY EDITION - Nigel Moll

EDITOR - U.S. SHOW EDITIONS – Matt Thurber
EDITOR - INTERNATIONAL SHOW EDITIONS – Ian Sheppard

NEWS EDITOR - AIN MONTHLY, AlNonline - Chad Trautvetter

MANAGING EDITOR - AIN MONTHLY - Annmarie Yannaco

MANAGING EDITOR - Mark Phelps SENIOR EDITORS - Bill Carey, Curt Epstein, Kerry Lynch

Gregory Polek – Air Transport CONTRIBUTORS

Gordon Gilbert

John Goglia – Columnist Mark Huber – Rotorcraft

Amy Laboda - Safety

Harry Weisberger James Wynbrandt

**GROUP PRODUCTION MANAGER** – Tom Hurley

PRODUCTION EDITOR - Martha Jercinovich GRAPHIC DESIGNERS - Mona L. Brown, John A. Manfredo,

Grzegorz Rzekos DIGITAL MEDIA DESIGNER – Colleen Redmond

LEAD WEB DEVELOPER - Michael Giaimo

WEB DEVELOPER - Evan Williams VIDEO PRODUCER - Ian Whelan

EDITORIAL ASSISTANT - Samantha Cartaino

GROUP PURI ISHER - David M. Leach PUBLISHER - Anthony T. Romano

## ASSOCIATE PUBLISHER - Nancy O'Brien

ADVERTISING SALES - NORTH AMERICA Melissa Murphy – Midwest +1 (830) 608-9888 Nancy O'Brien – West +1 (530) 241-3534 Anthony T. Romano – East/International Joe Rosone – East/International/Middle East +1 (301) 834-5251

Victoria Tod – Great Lakes/UK

ADVERTISING SALES - INTERNATIONAL - Daniel Solnica - Paris

MARKETING MANAGER - Zach O'Brien AUDIENCE DEVELOPMENT MANAGER – Jeff Hartford

MANAGER OF ONSITE LOGISTICS - Philip Scarano III GROUP BRAND MANAGER – Jennifer Leach English

SALES ASSISTANT - Nadine Timpana

ADVERTISING/SALES SECRETARIAL STAFF - Cindy Nesline DIRECTOR OF FINANCE & HUMAN RESOURCES - Michele Hubert ACCOUNTING MANAGER – Marylou Moravec

ACCOUNTING/ADMINISTRATION STAFF – Mary Avella Bobbie Bing

## **U.S. EDITORIAL OFFICE:**

214 Franklin Ave., Midland Park, NJ 07432 Tel: +1 (201) 444-5075

## WASHINGTON, D.C. EDITORIAL TEAM:

Bill Carey (air transport and defense) bcarey@ainonline.com Tel: +1 (202) 560-5672; Mobile: +1 (202) 531-7566

Kerry Lynch (business aviation)

klynch@ainonline.com Tel: +1 (201) 345-0082, +1 (703) 969-9195

## **EUROPEAN EDITORIAL OFFICE:**

lan Sheppard; isheppard@ainonline.com Hangar 9, Redhill Aerodrome, Surrey RH1 5JY, UK Tel: +44 1737 200948 Mobile: +44 7759 455770 U.S. ADVERTISING OFFICE:

## 81 Kenosia Ave., Danbury, CT 06810 Tel: +1 (203) 798-2400 Fax: +1 (203) 798-2104

EUROPEAN ADVERTISING OFFICES: Daniel Solnica; dsolnica@solnica.net 78 rue de Richelieu, 75002 Paris, France Tel: +33-1-42-46-95-71

Italian Representative: Diana Scogna; dscogna@dsmedia.com.fr Tel: +33-6-62-52-25-47

## **RUSSIAN ADVERTISING OFFICE:** Yuri Laskin, Gen. Dir., Laguk Co. Ltd.; ylarm-Iml@mtu-net.ru Russia, 115172, Moscow, Krasnokholmskaya Nab., 11/15 - 132 Tel: +7-05-912-1346, 911-2762 Fax: +7-095-912-1260

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## As we go to press

## SECOND LONGITUDE JOINS TEST FLEET

The second Cessna Citation Longitude, dubbed P1, joined the flight-test program and completed its first flight on November 19 from Wichita Beech Field. This follows the first Longitude prototype's maiden flight by about a month, P1, which was piloted by Textron Aviation test pilots Scott Foster and Peter Fisher on the initial 90-minute flight, will be used for systems testing and further expansion of the performance envelope. In all, five Longitudes will be used in flight-testing, in addition to several ground-test articles. FAA certification and entry into service is expected by the end of next year, according to the company.

## SHANGHAI AIRPORTS ADD BIZAV PARKING

With private aviation traffic to Shanghai Pudong and Hongqiao International Airports increasing by 12 percent so far this year, Shanghai Hawker Pacific, which operates FBOs at both airports, has partnered with the airport authorities to establish high-density business aircraft parking. Added were 22 parking slots at Pudong and nine at Shanghai Hawker Pacific Business Aviation Service Centre's main Shanghai FBO at Hongqiao.

## LIGHT JETS POSSIBLE FOR SURF AIR EUROPE

California-based Surf Air is in discussions with Cessna and Embraer over a light-jet fleet order as the company lays the groundwork to launch a membership-based all-you-canfly charter service in Europe in the first quarter. Simon Talling-Smith, CEO of Surf Air's European

operation, said that the talks with the OEMs are for a "substantial" fleet order with deliveries spanning five years. Reportedly, the company is considering either the CJ4 or Embraer Phenom 300. Surf Air will use PC-12 turboprop singles for closer niche markets, while the light jets will serve longer-haul markets.

### LARGE JETS LIFT U.S BIZAV FLYING

U.S. business aircraft flying climbed 3.3 percent year-over-year in October, thanks to a 10.3-percent surge in largecabin-jet activity, according to data from Argus International. Other aircraft categories also helped, with a 2.9-percent uptick in light jet activity, a 2.3-percent rise in turboprops and 1.9-percent gain in midsize jets. By operational category, fractional flying was out front with a 5.7-percent gain, Part 135 activity leapt by 5.2 percent and the Part 91 segment logged a 1.5-percent advance.

## NBAA, TSA DISCUSS AIRSPACE ACCESS

NBAA is hopeful that a meeting last month with TSA Administrator Peter Neffenger will lav the groundwork for key business aviation initiatives as the agency undergoes another turnover under a new White House. NBAA president and CEO Ed Bolen and Neffenger discussed access to Ronald Reagan Washington National Airport (DCA), as well as airspace access following a major security event. The agency also recently appointed Paul Wysniewski as general aviation engagement manager, providing a bridge for collaboration, said Bolen.

## **INDUSTRY HONORS HOOVER** Many hundreds of people gathered in Clay Lacy's hangar at Van Nuys Airport, Calif., on November 18 to give R.A. Bob Hoover a fitting sendoff and celeate his remarkable life. The legendary pilot died on October 25 at the age of 94 (see page 42). Airshow performer Sean D. Tucker and Reno Air Races commentator Danny Clisham emceed. Opening the proceedings on a joyous note, Tucker inquired upward, "Mr. Hoover, re you looking down on us?" Mimicking the great Tennessean as only he can, Tucker replied, "You bet your ass I am!" Lacy, Harrison Ford, Mark Armstrong (Neil's son, who d John Gillespie Magee's High Flight) and Jonna Doolittle Hoppes nddaughter of Lt. Gen. Jimmy Doolittle, who long ago proclaimed over to be the greatest stick-and-rudder man who ever lived) mong many who paid their respects at the podium. With splitd timing befitting Hoover's flying, the March Air Reserve Base Honor Guard performed a flag ceremony for the Hoover family and, imultaneous with the last rifle shots, the flyovers began: a Sabrewo F-86s; and, most poignant, Hoover's P-51, Ole Yeller, which broke ay from a Spitfire, P-40 and F6F Hellcat in a Missing Man finale.

## Industry looks ahead to new U.S. administration

by Kerry Lynch

While industry leaders sort out what the new U.S. presidential administration will mean for aviation policy, they have a little more certainty on Capitol Hill, where many key leaders are returning after the November elections.

The presidential race provided few clues about how President-elect Donald Trump will approach aviation policy. But aviation groups, vowing to work with the president-elect, are hoping that his experience as an aircraft owner and pledges to rebuild infrastructure will serve as a beginning of collaboration.

Trump's campaign has promised "a bold vision for a cost-effective system of roads, bridges, tunnels, airports, railroads, ports and waterways and pipelines," according to his web site. He has been a highly visible business aircraft user, owning a Boeing 757-200, Cessna Citation X and two Sikorsky S-76Bs.

"As an aircraft owner, President-elect Trump understands the value of general aviation to

the economy and communities," said AOPA senior v-p of government affairs and advocacy Jim Coon. "We support his calls for more investment in airports and infrastructure, and we look forward to working with his transition team on issues important to general aviation pilots."

"We are pleased to have a person in the nation's highest office who appreciates the contribution of business aircraft to the nation's economy," added NATA president Marty Hiller. "The President-elect's regulatory and tax reform agenda presents the opportunity to resolve—in a common sense manner—issues important to aviation businesses." Hiller cited as examples the need to clarify the aircraft management fee tax policy, as well as to ensure that aviation taxes are deposited into the aviation trust fund.

NBAA vowed to continue its effort to highlight the importance and value of the industry. "NBAA has always worked with elected officials in both political parties to advance policies that foster the growth of business aviation in the U.S.," association president and CEO Ed Bolen said. "In that spirit, we look forward to working with President-elect Trump, as well as those in his administration, and congressional representatives from both parties, to promote proposals that recognize the industry's value and protect its interests."

Other organizations also pledged to work with the new President to ensure investment and to seek an environment that fosters a competitive playing field in trade. The National Air Traffic Controllers Association, which has backed Rep. Bill Shuster's (R-Pa.) proposal for an independent ATC organization, said it would continue to push for stable funding.

## **Few Changes for Congress**

While the groups gear up to work with the new administration, they are preparing to continue to strengthen their ties with a Congress that will look largely the same next year.

House Transportation and Infrastructure (T&I) Committee chairman Shuster is one of a number of lawmakers returning to Capitol Hill. He easily won against contender Art Halvorson

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## GAMA: Deliveries skid continues

by Curt Epstein

Business jet deliveries and total airplane billings fell year-overyear for the first three quarters of this year, according to statistics released last month by the General Aviation Manufacturers Association (GAMA). OEMs handed over 429 new business jets in the first three quarters, compared with 465 in the first nine months of last year, a slide of 7.7 percent. At the same time, industry billings shrank by more than \$2 billion, 14 percent off last year's third-quarter tally of \$15.7 billion.

"There's no way to sugarcoat the fact that these numbers are not what we had wanted to see," said GAMA president and CEO Pete Bunce. "Unfortunately, they reflect the instability of the used aircraft market coupled with complicating global economic and geopolitical factors."

Among business jet manufacturers, **Cessna** provided the lone bright spot, posting a year-over-year improvement in deliveries of 13 percent, buoyed by the ramp up of deliveries of the new midsize Latitude to 24 in the first



nine months of this year from four through the same period last year, even as it cut Sovereign deliveries by half.

Embraer was off last year's pace by one aircraft, delivering 74 in the first nine months of the year. While the Brazilian OEM handed over nine fewer Phenom 300s in the first three quarters of this year, the midsize Legacy 450 helped close the deficit, as did the handover of four more Legacy 500s than were delivered in the first nine months of 2015.

**Dassault**, which no longer provides numbers for specific models, saw deliveries slide by 17 percent year-over-year, while

**Bombardier** deliveries fell by one-fifth. The Canadian manufacturer saw erosion in delivery totals across most of its line, the exception being the Challenger 605/650, the newer version of which received certification a year ago.

Gulfstream deliveries were off by a quarter from the previous year, slipping to 88 in the first nine months of this year from 116 in the same period last year. The Savannah-based airframer handed over 21 fewer large-cabin jets in the first three quarters this year than it did in the same period last year.

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## NEWS BRIEFS Compiled by Chad Trautvetter

## **■ Bombardier Shipments Drop, Orders Rise**

Bombardier Aerospace delivered 36 business jets in the third quarter: seven Learjet 70/75s, 13 Challenger 350s, six Challenger 605/650s and 10 Global 5000/6000s. This is down from 43 from the year-ago period, when it delivered seven 70/75s, 18 Challenger 350s, three 605s and 15 Globals. The company recorded net orders for 22 business jets in the quarter versus a net loss of 32 last year. Bookto-bill during the quarter was 0.8:1. Business jet backlog now stands at \$16.5 billion, down from \$17.2 billion at the end of last year. The division also posted a third-quarter profit of \$84 million and revenue of \$1.314 billion versus a \$1.115 billion loss and revenue of \$1.558 billion last year. The large losses in the third quarter last year are attributed to cancellation of the Learjet 85 program.

## **■ FSI Sues for Damages in King Air Crash**

FlightSafety International (FSI) in late October filed a lawsuit against Hawker Beechcraft Global Customer Support and more than a dozen other companies over the Oct. 30, 2014 crash of a King Air B200 at Wichita Mid-Continent Airport that destroyed an FSI building. The aircraft, N52SZ, lost power from the left engine on takeoff and crashed into the FSI building, killing the pilot and three others and injuring six more. FSIwhich listed numerous companies involved with the manufacture and support of the aircraft, among otherscited negligence, "strict liability" and "implied breach of warranty of merchantability." The company is seeking to recover "market value damages, replacement value damages, cost of repair damages, loss of use damages, lost profit damages and other consequential and incidental damages."

## ■ Air Charter Starts Breathalyzer Tests

Business jet management and charter company Exclusive has become the first Part 135 operator to require crewmembers to use a breathalyzer for what it says is random alcohol testing. The West Palm Beach, Fla.-based operator has equipped its aircraft with SoberLink, which records and transmits not only blood alcohol levels but also GPS location and a photo to positively verify identity. If alcohol is detected an alert will be sent via text or email.

## DUI Could Prevent Travel to Canada

NBAA is advising travelers to be prepared for Canadian immigration policy, warning that offenses such as a conviction for driving while under the influence (DUI) of drugs or alcohol could prevent admission into the nation. If the offense occurred 10 years ago or longer, a person will be permitted to enter. If the offense occurred between five and 10 years from the completion of a sentence or probation, affected people can apply for "criminal rehabilitation" documenting that they are no longer a safety threat. Such documentation, however, can cost up to \$1,000. If the event occurred within the past five years, people can apply for a temporary resident permit, but the ability to use the option might be at the discretion of the border official.

## **■ TSB Repeats Call for Bizjet Voice, Data Recorders**

The Transportation Safety Board of Canada (TSB) reiterated its long-time recommendation to expand the requirement for cockpit and flight data recorders to business jets. In Canada, as well as in the U.S., only multi-engine, turbine-powered commercial aircraft flown by two pilots and carrying six or more passengers are required to carry a CVR. In 1991 the TSB made its first recommendation calling for upgrading recorder requirements.



## Silvercrest to power **Citation Hemisphere**

by Charles Alcock

Textron Aviation's selection of the Safran Silvercrest turbofan to power the Cessna Citation Hemisphere is a significant boost for the French engine maker's ambitions in the business aviation market. The announcement at last month's NBAA Convention follows confirmation that the engine will earn certification in the spring of 2018 under the revised development timetable for the Dassault Falcon 5X twinjet, now slated to enter service in the first half of 2020.

To win its place on the Hemisphere, Safran fended off competition from Rolls-Royce, Pratt & Whitney Canada and General Electric. "This is a strong vote of confidence for the Silvercrest," said Safran Aircraft Engines CEO Olivier Andriès. "I believe we were

selected because we designed the engine to be optimized for this thrust segment [9,500 to 12,000 pounds]." The powerplants offered by the other bidders would have had to be down-rated in thrust, resulting in penalties in weight and specific fuel consumption.

The Silvercrest being developed for the Hemisphere will be designated the -2C. It will share the same architecture as the -2D for the Falcon 5X but with some features tailored to the new Citation, according to Silvercrest program general manager Michel Brioude. The Cessna team has visited Safran's facility in San Antonio, Texas, where it has been flighttesting the engine for the 5X.

Since last year, the Safran engineering team has been quietly developing fixes for several technical problems that had prevented the Silvercrest from meeting its promised performance standards. The hardware changes now being implemented have focused on improving fan blade clearances, airflow leakage and vibration control.

"The technical issues on the Silvercrest are now behind us," Andriès told **AIN**. "This reconfirms our approach to this market, and that we are still offering the best product in terms of weight and performance."

## **JAPANESE MEMBERSHIP CHARTER ORDERS 20 KODIAKS**

Quest Aircraft announced a fleet order for 20 Kodiak 100s last month from Sky Trek, a new private air charter operator in Japan. The agreement was signed at the NBAA Convention, and the first aircraft was delivered in October, according to Sandpoint, Idaho-based Quest. Deliveries will continue through late next year, a Quest spokeswoman told AIN.

"We are excited to have received such a large order for the Kodiak," said Quest senior vice president of sales, marketing and customer service Nick Newby. "While we have had other fleet sales for multiple Kodiaks, this represents our largest commercial fleet order to date."

Sky Trek chose the turboprop single for its ability to take off in less than 1,000 feet at its mtow of 7,255 pounds and climb at 1,300 feet per minute. "These attributes make the Kodiak well suited for use in Japan, where the topography and private transportation infrastructure can be challenging," Quest Aircraft said.

The Kodiaks will be used for the membership-based private travel service that Sky Trek officially launched on November 7. It plans to begin service in the spring. Both corporate and individual memberships are available, Sky Trek said.



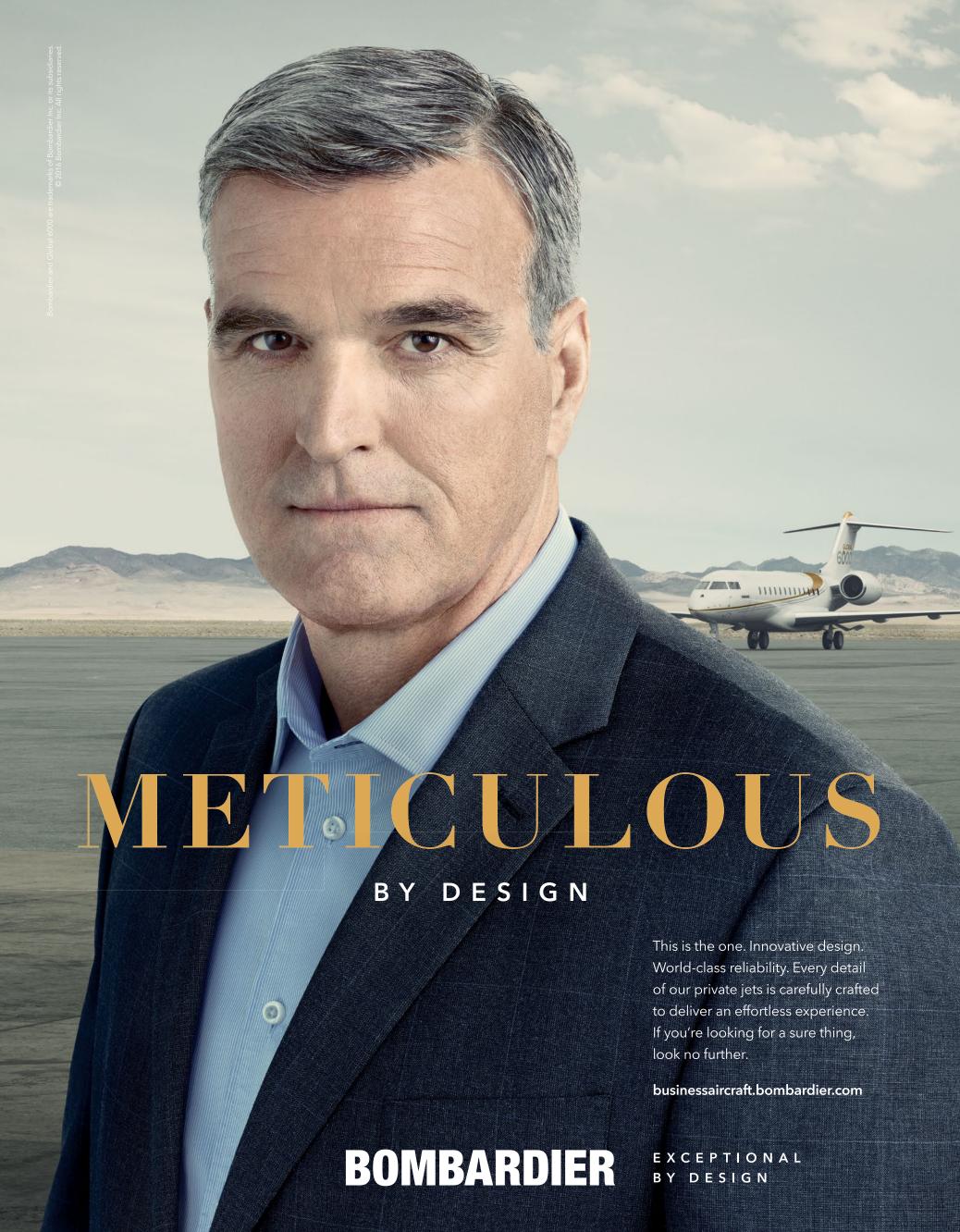
## nbaa2016

## **G500 AND G600 AHEAD OF SCHEDULE**

Gulfstream's new large-cabin, longrange jet programs are surging ahead of schedule. The OEM reported last month at the NBAA Convention that it now expects to begin deliveries of the G500 late next year, with first deliveries of the larger G600 following in late 2018. The company expects to fly the G600 this year; four flight-test G500s and one production G500 have accumulated 1,750 hours of flying. The first G600 has been delivered to Gulfstream's flight-test center in Savannah, Ga., and four more are in various stages

Both the G500 and the G600 are powered by Pratt & Whitney Canada PW800-series engines and have a Symmetry flight deck with Honeywell Primus Epic avionics and active sidesticks linked to full fly-by-wire flight controls. According to Gulfstream, the new engines are 30 percent more efficient than those on the G450 and help extend the time between key maintenance on the new aircraft by up to 25 percent.

Gulfstream CEO Mark Burns characterizes the G500 as a "predictable flight-test program that has gone well. These airplanes will perform just as we said they would." -М.Н.



## NEWS BRIEFS Compiled by Chad Trautvetter

## Deliveries Down at Gulfstream

Third-quarter deliveries of completed business iets at Gulfstream were down by 37.2 percent as the company works through a "planned production transition" from the legacy G450 and G550 to the new, fly-by-wire G500 and G600, said Phebe Novakovic, chairman and chief executive officer at parent company General Dynamics. However, she said order intake at Gulfstream was "the strongest third quarter since 2011," adding that she is optimistic that this sales momentum will continue in the current quarter. Gulfstream handed over 27 completed aircraft (21 large-cabin and six midsize jets) in the quarter, compared with 43 jets (31 large, 12 midsize) in the same period last year. For the first nine months, it shipped 88 jets (67 large, 21 midsize) versus 116 (89 large, 27 midsize) a year ago. Book-to-bill was 1.2:1 during the quarter, though backlog slipped by \$300 million, to \$11.5 billion, because of aircraft mix.

## **■ Piaggio Scores Evo Fleet Order**

West Coast Aviation Services inked a contract last month for five Piaggio Avanti Evos, as well as options for four more, that the Southern California-based operator intends to use for charter and fractional ownership. This also marked the first Avanti Evos sale in the U.S. The first of the ordered turboprop twins was delivered last month to the operator, and deliveries of the remaining aircraft will start in the fourth quarter of next year.

## **■ Teamster Pilots: Flight Ops/Flexjet Not Bargaining in Good Faith**

The International Brotherhood of Teamsters Local 1108 filed a motion for contempt and injunctive relief against Flexjet and Flight Options, claiming the company is still not bargaining in good faith with the Teamsters. IBT 1108 represents 600 pilots at Flight Options and Flexjet, which operate under the umbrella of aviation conglomerate OneSky Flight.

## **■ FAA Outlines Caribbean Safety Initiative**

The FAA is working with its counterparts in the Caribbean on a multi-pronged initiative to improve safety and efficiency in the region. FAA Administrator Michael Huerta noted that air traffic is expected to grow faster in the Caribbean than in any other region in the world, except the Middle East. The initiative includes collaboration to improve airport safety, expand certification in the area, improve air traffic flow management through collaborative decision-making and support the implementation of ICAO standards throughout the Caribbean.

## **■ EASA Proposal Seeks EFB 'Level Playing Field'**

An EASA Notice of Proposed Amendment (NPA) aims to establish a "level playing field" for both commercial and non-commercial operators applying for approval to use electronic flight bags (EFBs). The specific objectives of this proposal are to ensure compliance with the ICAO standards and recommended practices; provide specific requirements on the use of EFBs in the air operations regulations for commercial air transport operations; provide requirements proportionate to the complexity of the operations and/or propose safety promotion actions related to the use of EFBs for noncommercial operations and specialized operations; and conduct a first review of AMC 20-25 25 based on the experience gained so far by authorities since its publication. Published in 2014, AMC-20-25 provides an acceptable means of compliance to obtain airworthiness approval for use of EFBs. Comments on the NPA are due by Jan. 6, 2017.

## Hawker crash prompts NTSB call for improved flight data monitoring

by Kerry Lynch

The NTSB, finding significant deficiencies with the crew's management of the approach that ended in a Hawker 700A crash on November 10 last year, is calling on the FAA to mandate flight data monitoring programs for Part 135 operators. The Board is also asking for a requirement to install flight data recorders that can support those programs, safety management systems (SMSs), improved approach training and better processes to identify Part 135 operators that do not comply with standard operating procedures.

Those recommendations were among 13 the Board made as a result of its investigation into the crash that occurred while the Hawker, N237WR, was on a nonprecision approach to Runway 25 at Akron-Fulton International Airport (AKR). All nine people on board were killed.

The NTSB cited as a probable cause "the flight crew's mismanagement of the approach and multiple deviations from the company standard operating procedures, which placed the airplane in an unsafe situation and led to an unstabilized approach." It further cited the operator's "casual attitude toward compliance with standards," inadequate training and operational oversight, lack of a formal safety program and insufficient FAA oversight. The Safety Board believes that flight data monitoring, as well as SMS programs, might have uncovered the deficiencies that contributed to the crash.

According to NTSB chairman Christopher Hart, travelers on charter flights "implicitly trust that FAA standards, the charter company's standard operating procedures and the professionalism of the pilots will protect them from harm. The protections built into the system were not applied, and they should have been." The recommendations, he added, are designed to help operators make sure their flight operations are safe and in compliance with regulations, as well as help the FAA identify operators with a systemic disregard for the regulations.

"These companies must either

improve their practices or close their doors," the chairman said. "All companies have a responsibility to follow the regulations and to actively manage safety in all facets of their operations.'

The accident flight, Execuflight Flight 1526, had departed Dayton-Wright Brothers Airport in Dayton, Ohio, at 2:12 p.m. local time on a flight to AKR. While Execuflight had an informal practice of the captain acting as pilot on revenue-passenger carrying flights, the first officer was the pilot flying on this particular flight; the captain took the role of pilot monitoring.

The company's standard operating procedures specified that the pilot flying brief the approach, but in this case the captain—at the request of the first officeragreed to brief the approach. "The ensuing approach briefing was unstructured, inconsistent and incomplete, and the approach checklist was not completed," the NTSB said. "As a result, the captain and the first officer did not

Continues on page 16 ▶

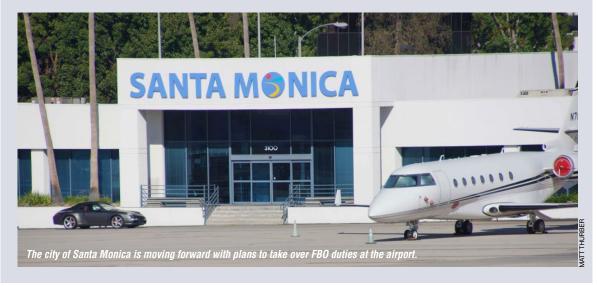
## SANTA MONICA FORCED TO DELAY FBO EVICTION PROCEEDINGS

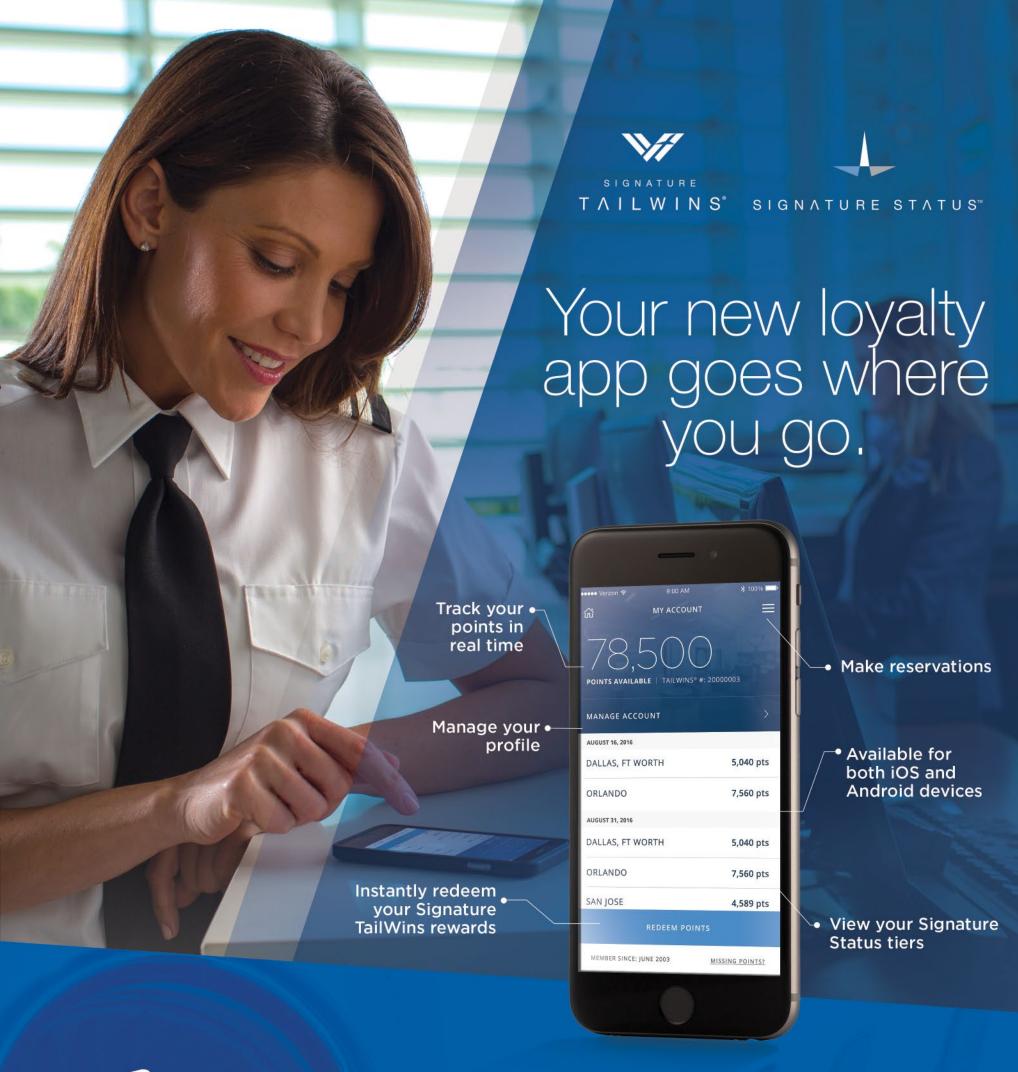
In the continuing dispute over Santa Monica Airport (SMO, see AIN, November, page 28), the city of Santa Monica, Calif., said it has been ordered "not to seek an expedited trial on [FBO] eviction proceedings prior to [a December 1 court date]." On November 4 the city filed unlawful detainer lawsuits against the two FBOs at SMO, American Flyers and Atlantic Aviation, in an attempt to force them to abide by 30-day eviction notices filed on September 15, and taking effect on October 15. The city has indicated that it would take over running FBO services at the airport.

According to the city, the FBOs "are operating under leases that have expired," although the city won't acknowledge that it refused to renew the FBOs' leases. The city explained that its lawsuits are a response to

lawsuits filed by the FBOs one day earlier that sought a temporary restraining order from Los Angeles Superior Court to prevent the city from filing its unlawful detainer lawsuits. The FBOs' request was denied, and a preliminary injunction hearing was set for December 1, and the city said it has been ordered not to attempt to expedite eviction proceedings before that date.

While this delays the eviction process, the city is not backing down on its plans to take over FBO services at the airport, which it is trying to close. "In the meantime," the city said in a statement, "the council has directed staff to proceed in an orderly fashion to assert our right to take over all legally required fixed-base operations at Santa Monica Airport and to establish a city-run FBO that operates in the public interest and not for private profit."





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## nbaa2016 News Briefs

## Pilatus PC-24 Makes NBAA Debut

When Pilatus PC-24 flight-test aircraft P02 made its U.S. debut on November 2 at NBAA 2016, the company also revealed more details about the \$8.9 million light twinjet's performance and certification. Two flight-test aircraft had logged 1,032 hours over the course of 600 flights through the end of October and are halfway through the test program, having completed natural ice testing, extreme temperature testing and flooded runway testing. Performance numbers are "better than expected" and will exceed the preliminary 425-knot cruise speed and 1,800nm range, the company said. Pilatus has promised to release hard numbers at EBACE in May. The PC-24 will initially be certified to land on pavement, with approval for unimproved field operations coming shortly thereafter. Pilatus will begin work on unimproved landings in the spring. It said it remains on track to certify the twinjet in the third quarter of next year.

## Satcom Direct Buying TrueNorth

Aeronautical communications provider Satcom Direct is acquiring Ottawa, Canada-based TrueNorth Avionics to expand its communications offerings for business aircraft. TrueNorth designs and manufactures satellite communications equipment for business jets and avionics OEMs. Its latest product, the Optelity line of cabin communications systems, delivers voice, fax and Wi-Fi for connectivity by mobile devices. True North also manufactures the Satcom Direct Router. After the transaction closes in the fourth quarter, TrueNorth will become a division of Satcom Direct.

## **JetSuite Gets Fresh Capital for Growth**

A minority equity investment from JetBlue announced at NBAA 2016 will allow JetSuite to expand its fleet of Embraer Phenom 100s and 300s and Legacy 600/650s, as well as Cessna Citation CJ3s. The company plans to push the JetSuiteX charters to the East Coast in the next year. In seven years the business aviation charter company has expanded from whole-airplane charters—with a fleet of Phenoms and CJ3s-to offering public charters sold by the seat online to a half-dozen destinations and expanding with JetSuiteX, which carries passengers in converted airliners, departing from JetSuite hangars, not airline terminals. The company is also creating a portfolio of managed jets under the banner of JetSuite Managed.

## **Honda Aircraft Expands Sales Reach**

Honda Aircraft has expanded its sales reach for the HondaJet, appointing SYI Aviation in Panama City, Panama, as a dealer. SYI Aviation will give Honda Aircraft a presence in the Middle Americas, providing sales, service and support for the HondaJet in Central America, the Caribbean and portions of South America to include Ecuador, Colombia, Venezuela, Guyana, Suriname and

## **Cessna Chooses Hemisphere Suppliers**

Textron Aviation has returned to a Honeywell cockpit, has chosen to stick with the Snecma Silvercrest engine (see page 6) and will incorporate a Textron Aviation-designed fly-by-wire system using Thales components for the largecabin Citation Hemisphere. The choice of Honeywell's Primus Epic avionics suite with touchscreen controls marks the company's first selection of a Honeywell cockpit since the original Citation X and Sovereign. The full fly-by-wire system, the first for any Citation business jet, will include active-control sidesticks. Textron Aviation will integrate the system, with Thales providing flight control computers and remote electronic units. Textron plans to fly the Hemisphere in 2019 and deliver the first aircraft the following year.

## **Appeals court blocks** restrictions at HTO

by Kerry Lynch

In a ruling that solidifies federal pre-emption over airport access restrictions, the U.S. Court of Appeals for the 2nd Circuit agreed on November 4 to a preliminary injunction blocking nighttime curfews and other access restrictions at the New York-area East Hampton Airport (HTO). The ruling came about a month after the town of East Hampton had issued criminal summonses to Part 135 and 91 operators for alleged noise and curfew violations at HTO.

In April last year the town imposed an 11 p.m. to 7 a.m. curfew for all aircraft, an 8 p.m. to 9 a.m. curfew for "noisy" aircraft and a limit of two "uses" per week for noisy aircraft between May 1 and October 31. Under East Hampton's definition most business jets and helicopters are "noisy."

NBAA joined operators, the Helicopter Association International and the Friends of East Hampton Airport in a lawsuit seeking an injunction to block restrictions. In June last year, a U.S. District Court blocked the weekly limits for noisy aircraft but permitted the nighttime curfews. The town had kept the nighttime restrictions, but did not enforce them until recently.

The Appeals Court, however, called on the lower court to bar all three restrictions, citing noncompliance with federal airport noise law, the Airport Noise and Capacity Act (ANCA). "It appears undisputed that the town enacted all three laws without complying with ANCA's procedural requirements, which apply to public airport operators regardless of their federal funding status," the court said. ANCA requires a detailed study and FAA approval before an airport can impose noise-based access restrictions.

"We conclude...that federal law mandates that such laws be enacted according to specified procedures, without which they cannot claim the proprietor exception to federal pre-emption," the Appeals Court added.

"NBAA has long advocated against unlawful and unreasonable restrictions being imposed at East Hampton Airport," said NBAA president and CEO Ed Bolen. "We are gratified that the

Second Circuit agrees that East Hampton remains bound by ANCA and related FAA policy and regulations."

Noting that Congress adopted ANCA to prevent access restrictions from being imposed piecemeal, Bolen added, "The success of aviation—both general aviation and commercial aviation depends on having a uniform and consistent set of rules.'

"Today's decision by the Second Circuit is important recognition that East Hampton's laws are preempted by ANCA, which applies to all public airports," agreed General Aviation Manufacturers Association president and CEO Pete Bunce. "Given the strong reasoning of the decision, we hope other courts will follow this important precedent."

In light of the decision, National Air Transportation Association president Martin Hiller called on East Hampton "to immediately rescind the 38 airport curfew criminal summonses it has issued related to these illegal restrictions and to refund the fines already levied on innocent general aviation operators."





## **CESSNA BOOSTS LONGITUDE PERFORMANCE**

Textron Aviation's Citation Longitude arrived at last month's NBAA Convention with performance numbers better than originally projected. The super-midsize jet's range has grown by 100 nm, to 3,500 nm; and full-fuel payload is up by 100 pounds, to 1,600 pounds.

"Increases for both range and payload on the Longitude will bring even more value to our customers, particularly for popular nonstop routes such as New York to Paris, London to Dubai and Singapore to Sydney," said Michael Thacker, senior v-p of engineering. The boosted performance comes just a few weeks after the Longitude logged its first flight, kicking off a busy

flight-test campaign that is expected to culminate in certification next year.

Once certified, the Longitude will give Cessna a surer foot in the super-midsize market, with a 77-inches-wide cabin seating up to 12 passengers and stand-up flat floor for 72 inches of headroom.

The Longitude is fitted with Garmin's touchscreencontrolled G5000 flight deck and powered by Honeywell HTF7700L turbofans and integrated autothrottles. The cockpit will incorporate a head-up display with enhanced vision, although Textron Aviation hasn't yet announced vendors for these products.





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## nbaa2016 | News Briefs

## MyGoFlight Introduces \$10K HUD

MyGoFlight, a provider of iPad/tablet gear for pilots, demonstrated a \$10,000 head-up display for business turboprops and jets at NBAA 2016. The company expects to release the SkyDisplay HUD-LCD180, which it calls the "first in a series of affordable HUD units," next year. A single HUD display is standard, but a second one can be added as an option. The HUD-LCD180 consists of a projection unit, clear glass display combiner and a display processor that connects to aircraft flight sensors and generates the HUD graphics. Knowing the position and direction of the aircraft, the system will display surrounding terrain and obstacles, flight trajectory and flight plan data without requiring any pilot input, meaning it will not add to pilot workload, the company said. A Smart HUD software option will add a terrain avoidance algorithm.

## **FSI Adds Master Aviator Program for Helos**

FlightSafety International has announced a Master Aviator program for helicopter pilots. Under this program, pilots complete two advanced aircraft-specific core courses and four electives that build on initial and recurrent training. At least one FlightSafety initial or recurrent training event also must be completed every eight months. The core courses cover helicopter factors/crew resource management and surviving inadvertent IMC. Elective courses cover fatigue management, safety management systems for aviation professionals, air medical resource management, warm weather operations, cold weather operations, adverse weather and monsoon conditions. helicopter approach and landing accident reduction and controlled flight into terrain prevention, among others.

## **World Fuel Launches Aviation Fuel Brand**

Long an aviation fuel distributor, World Fuel Services launched its own fuel brand at NBAA 2016. According to the Miami-based company, it will begin branding efforts over the next year, with signage and identifying equipment at participating dealers. In addition to fuel, World Fuel Services also provides support to its FBO customers, among them the Air Elite Network, which it sponsors.

## **Daher Pairing Owners, Charter Companies**

Daher launched a program to pair TBM turboprop owners with commercial charter operators at NBAA 2016. Called Fly and Charter your TBM (Fact), the program brings owners and operators together and provides initial documentation, insurance guidance and technical advice. It also offers a "TBM charter pack" to help raise aircraft utilization. The charter pack comes with an extended OEM maintenance plan, the TBM Care Program (TCP), to cover commercial operations and provide continuing airworthiness monitoring through Camp Systems, while also offering a dedicated maintenance hotline and TBM professional training courses.

## Panasonic Taps Satcom Direct as Dealer

Panasonic has named Satcom Direct (SD) its first business aviation reseller. The company's Global Ku-band network relies on 19 satellites and covers 99.6 percent of the world's air routes, with only the poles lying in gaps. Intended primarily for in-flight entertainment, the Panasonic system provides Internet connectivity, wireless content streaming from an onboard server to portable devices, cellphone functionality and live television everywhere. According to Marshal Perlman, general manager for business aviation. Panasonic's satcom system has received FAA DO-160 authorization and the first example is currently being installed on a Gulfstream IV. The company expects to receive an STC for the installation by year-end.



## It's a buyers' market, say NARA brokers

by Ian Sheppard

The largest display area in the NBAA 2016 static park at Orlando Executive Airport last month was that of the National Aircraft Resale Association (NARA)—bigger even than the impressive displays of the OEMs, and in fact the largest ever single display at any NBAA Convention. NARA had 34 aircraft in its display "and all are for sale," board member Sabrina Prewitt, who is also senior v-p at Jack Prewitt & Associates, told AIN. The array included four G550s, a G650, a 7X, a Global 6000 and a GIV-SP.

According to Prewitt, "NARA members make up 5 percent of the broker/dealers in the world, but accounted for half of all transactions in the \$9.2 billion market last year. We're proud of that. The U.S. market is going well and most of the market is here." She asserted that NARA has "raised the standards" and standing of aircraft brokers. NARA now has 42 broker/dealer members, with other members taking the total to 101.

This **AIN** writer walked around NARA's static display to gage the market sentiment and was somewhat surprised to find that many brokers have started recently to enjoy a resurgence in pre-owned aircraft sales.

First stop in the static was Nick Schneider of Boca Raton, Fla.based Global Wings, who said the market "seems to have opened up in the last 30 days. That was the theme from a number of NARA members

at our [pre-NBAA] meeting." He added that the previous four to six months were "quiet," but that the NARA consensus is that there has been "a lot more discussion and expressions of interest, and in the last 30 days people have started acting on their interest." He suggested that this could indicate that the bottom of the market has been reached, although he admitted, "The interest for us has been mainly U.S. based."

## **Undervalued Airplanes**

Next stop was Jack Prewitt of Jack Prewitt & Associates, who also said there is "a kind of consensus" that market conditions have improved. "It will go back up but I can't tell you when it's going to start. It's been going down for eight years and I think it'll take eight years to come right back up to where it was. Airplanes are extremely undervalued." He said some owners have spent millions of dollars buying their aircraft, but in the current market will have to accept they won't recoup that expenditure if they sell.

Dallas, Texas-based Mente Group's COO, Richard Emery, said his company is heading for its "best year ever"; he attributes that success to being on retainers with 17 clients to provide advice and analysis and tell them the best times to buy and sell aircraft.

He advised a client recently that a two-year-old aircraft represented the best value, but noted that the average aircraft depreciation rate Consensus among aircraft brokers is that the pre-owned market, particularly in the U.S., is starting to gather steam, but there is a ways to go.

has increased from 6.5 to 8.5 percent, and in some cases as much as 10 percent, from 2 to 4 percent. Tasked with "having to keep the lights on," OEMs are discounting new aircraft, and this also has an accelerating knock-on effect on older aircraft, which depreciate sharply. But he suggested, "I don't think there's ever been a better time to buy an aircraft."

Not many buyers want to accept this reality yet, he noted. "Typically we are looking at 200 days to sell most models of pre-owned business aircraft. However, if they are competitively priced they can sell within 90 days." Choice in the number of large-cabin, long-range aircraft, which Mente specializes in, is diminishing, and as a result resale values on aircraft less than five years old are stabilizing. He also said pre-owned inventories are flat—perhaps another sign that the market is saturating.

"With our client base we are seeing limited activity on brand-new aircraft transactions, which we attribute to a generational shift," he said. "Also, CEOs and business founders have the mindset of a 'capacitysharing generation' akin to Uber, Lyft and Airbnb millennials.

"They are more diverse and less brand loyal. They will be prouder that they struck a good price on their aircraft, rather than boast they picked up the latest business jet. The status of a new aircraft transaction is less important to our clients," he said.

According to Emery, "Today's problem is that there are too many models to match market demand. If product development slips, the brand is at risk." This is putting the OEMs under a lot of pressure, he concluded.

## **News Note**

Piaggio Aerospace is boosting aftermarket support for operators of the P180 Avanti twin turboprop with options for new brakes and landing gear. Parker's wheel and brake division is developing an alternative braking system for the Avanti that Piaggio says will reduce the cost of operating the aircraft by as much as 70 percent. The new steel brakes and main gear wheels will be available for retrofit in the middle of next year. Piaggio is now offering legacy Avanti operators the option to install the more advanced landing gear that it uses for the current-production Avanti Evo. It has a new digital steering system intended to reduce pilot workload.



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## Textron Aviation issues additional layoff notices

by Kerry Lynch

Textron Aviation is continuing to lay off workers, issuing another round of notices last month. The move, part of a larger Textron cost-cutting initiative, follows similar steps taken by several other business jet manufacturers. The number of Textron Aviation employees affected in the latest round was not specified, but a Textron Aviation spokesman said the notices "are in line with actions previously announced by Textron."

In late August Textron announced a restructuring plan that was to continue through the

first quarter of 2017, but that the majority of the changes would affect other areas of the company. Last month's notices were part of a series of actions that Textron Aviation has taken this fall, including offering a voluntary separation program in September and announcing it was closing two of its maintenance centers. "We are taking action to streamline our business through workforce reductions to improve our overall operating efficiency," the spokesman said. "Our focus remains on bringing products and services to market that help our customers achieve success."

## **Industry Tightens Belt**

Textron Aviation is among the business aircraft manufacturers that have announced layoffs or voluntary retirement plans in recent months. This past summer, Bombardier issued layoff notices and shifted workers in Wichita in response to slow Learjet sales. More recently, the Canadian company announced plans to lay off 7,500 workers company-wide, about one-third of them coming from the aerospace division.

Earlier in the year Bombardier had announced an overarching cost-cutting plan to improve its cash position and streamline operations. President and CEO Alain Bellemare updated analysts on progress last month, saying, "We are 80 percent complete with the first major workforce reduction."

Embraer confirmed this fall that it is cutting 1,463 employees, or 8 percent of its workforce, through a voluntary buyout program that the Brazilian manufacturer announced this past summer. That came on the heels of a \$200 million charge the company took as part of a corruption investigation, but also as it lowered its business jet delivery forecast and reported a 25-percent drop in revenue from executive jets.

Gulfstream, which laid off about 600 contractors and 3 percent of its employees last year, offered voluntary separation agreements in June. That offer ended in August. Gulfstream is not disclosing the number of workers who accepted the offer.

This year, business jet deliveries have dropped by 7.7 percent and billings for fixed-wing general aviation aircraft have fallen 14.4 percent. (See article on page 4.)

Textron Aviation's business jet shipments, however, have been stronger this year, up by 14 aircraft through the first three quarters. Revenue is up by nearly \$150 million. But the division's profits are down, a factor the company attributes to two factors: operating costs associated with higher volume; and the mix of deliveries. Textron pointed to softer pricing of the Latitude this summer, but expected it to strengthen in the latter part of the year.



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## **GAO** report highlights **ATC** reform issues

by Kerry Lynch

A transition to an independent organization to run the U.S. ATC system would be "a difficult, complex, challenging" effort that could stretch out seven years, according to a government watchdog report. The Government Accountability Office (GAO) report, conducted at the behest of key Democrats who have opposed such a reform effort, also reveals mixed views on how that organization should be funded.

The GAO, which released the report last month, based its findings on surveys and interviews with 70 industry stakeholders; industry, financial and air traffic experts; air navigation service providers and other officials.

Officials involved in restructuring of ATC organizations in other countries generally reported that the results were ultimately positive, but the GAO warned, "Given the key transition issues involved, a restructuring of any kind could be more complicated than in other countries because the U.S. ATC system is bigger and more diverse than any other system in the world.'

## **Financing Structure Debate**

Financing was a key consideration, and the GAO pointed to lessons learned from other organizations, such as the UK system, which was forced to refinance and restructure, relax the caps on user fees and find a new investor after traffic dropped following the 9/11 terrorist attacks. Any new organization must have in place a funding structure that would mitigate such financial risks, the investigative organization said in the report.

Most of the respondents falling in the "expert" category (think tanks, academia, former government officials, current government organizations and financial institutions, among others) backed the concept of a user-fee system for an ATC organization. They also indicated that the airlines, business aviation and cargo operators should be covered under a scheme such as a weight and distance formula. But many of those experts believed that general aviation should not be included.

There was less consensus among industry stakeholders, however. Less than half of the stakeholder respondents favored

a user-fee system, with opponents citing concerns about higher costs and complexity.

The FAA believes that if user fees were applied equally, costs would rise for business and general aviation and cargo users.

The experts believe that such a system would provide more stable funding. But some stakeholders and the FAA raised concerns about how the rest of the aviation functions would be funded.

As far as organization, experts agreed the responsibilities of the FAA and new entity need to be clearly delineated and documented.

Many agreed that safety functions should remain with the FAA. But there was less agreement about flight standards responsibilities such as new performance-based navigation procedures, and on harmonization responsibilities.

The GAO report also emphasizes the need to build in an adequate amount of planning and implementation time, noting that transitions involving other countries took up to seven years. "There are many multifaceted, substantial transition issues involved," the GAO concludes.



## Akron Hawker crash

Continued from page 8

have a shared understanding of how the approach was to be conducted."

As the aircraft approached AKR, the controller instructed the pilots to reduce speed because the Hawker was following a slower airplane. To comply, the first officer began configuring the airplane for landing, the NTSB believes, by lowering the landing gear and possibly extending the flaps to 25 degrees. Since the aircraft was not equipped with a flight data recorder, this is an estimate on the part of the Safety Board. About 4 nm from the final approach fix, the controller cleared the Hawker for the localizer 25 approach and instructed the pilots to maintain 3,000 feet msl until established on the localizer. But the airplane was already established on the localizer when that clearance was given, the NTSB said, adding that the aircraft could have descended to the final approach fix minimum crossing altitude of 2,300 feet msl. But the aircraft maintained 3,000 feet.

## **Aircraft Control**

The airplane continued to slow from 150 knots to 125 knots, well below the proper approach speed of 144 knots with flaps at 25 degrees. The captain made several comments about the dwindling speed, the NTSB investigation revealed. "The first officer's speed reduction placed the airplane in danger of an aerodynamic stall... but the first officer apparently did not realize it," the Safety Board said. "The first officer's lack of awareness and his difficulty flying the airplane to standards should have prompted the captain to take control of the airplane or call for a missed approach, but he did not do so."

Before the final approach fix, the first officer requested 45-degree flaps and reduced power, and the airplane began to descend. The use of the 45-degree flaps was not in line with Execuflight's Hawker 700A nonprecision approach profile, which calls for 25 degrees until after reaching the minimum descent altitude (MDA) and landing is assured.

The captain, however, did not question the first officer's actions. The airplane crossed the final approach fix at 2,700 feet msl, 400 feet higher than the minimum crossing altitude. Since the aircraft was high on the approach, the rate of descent steepened to 2,000 fpm, twice the normal rate. The NTSB attributed this "to the first officer [likely] attempting to salvage the approach by increasing the rate of descent, exacerbated by the greater drag resulting from the improper flaps 45 degrees configuration."

While the captain told the first officer not to descend so rapidly, he did not take control of the airplane. Nor did he make required callouts regarding approaching and reaching MDA. Execuflight procedures state that at MDA the approach must be stabilized. But when the Hawker reached MDA, about 500 feet above touchdown elevation, the aircraft was 11 knots below the minimum required

airspeed of 124 knots and with the flaps improperly configured at 45 degrees. "The captain should have determined that the approach was unstabilized and initiated a missed approach, but he did not do so," the NTSB said. Fourteen seconds past MDA, the captain called for the first officer to level off. But the airplane stalled and crashed into a four-unit apartment building at 2:53 p.m.

## **NTSB Findings**

In its investigation, the NTSB cited an "unstructured, inconsistent and incomplete" briefing for a nonprecision approach and further contended that the first officer's action "placed the airplane in danger" and while the captain recognized the situation, he never took over control. "The captain's failure to enforce adherence to standard operating procedures and his mismanagement of the approach placed the airplane in an unsafe situation that ultimately resulted in the loss of control," the NTSB found.

The investigation further revealed that both the captain and first officer had been fired by their previous employers—the captain for failure to show up for recurrent training and the first officer for performance deficiencies.

Further, the weight-and-balance measurements for the accident flight were wrong. In addition, the NTSB found shortcomings in the crew resource management training, inadequate training for continuous descent approaches and deficient maintenance records on the part of the operator, Execuflight.

Execuflight did not make anyone available to **AIN** for comment.

The NTSB said the accident points to a number of safety issues, among them the lack of flight data monitoring programs. These programs help identify operational deficiencies, such as noncompliance with standard operating procedures, the Safety Board said, adding that it "has investigated many other Part 135 accidents in which the operator lacked the means to monitor routine operations."

The Safety Board also pointed to a need for SMS, which reinforces a positive safety culture and can help identify deviations from standard operating procedures. "This accident is one of many Part 135 accidents and incidents in which the NTSB has determined that inadequate operational safety oversight played a role."

Further, the Safety Board identified a need for a Hawker 700- and 800-series nonprecision approach procedure that meets stabilized approach criteria and defines "landing assured." The NTSB pointed to a lack of definition of landing assured and the varying definitions provided by Hawker simulator instructors, some of which conflict with regulations regarding descending below the MDA. The NTSB also sees a need for training on the continuous descent approach final technique and improved FAA surveillance of Part 135 operations.

These findings led the numerous recommendations to the FAA, training centers and Textron Aviation, covering safety programs, training and oversight.

## GA LOSS OF CONTROL STAYS ON NTSB'S 'MOST WANTED LIST'

The National Transportation Safety Board is keeping in-flight loss of control (LOC-I) in general aviation on its Most Wanted List of transportation safety improvements for the third year in a row. The Board, which last month released its list for 2017-2018, re-emphasized a number of themes from previous lists: fatigue, distractions, medical fitness and substance impairments.

In retaining LOC-I on the list, the NTSB noted that data between 2008 and 2014 confirms that LOC-I "continues to be the biggest killer in general aviation," accounting for nearly half of fatal fixed-wing general aviation accidents. The accidents resulted in 1,194 fatalities, the Board added.

The NTSB pointed to multiple reasons for LOC-I, such as pilot distraction, loss of situational awareness or weather, and said the most common type involves a stall.

"Stalls may happen because a pilot lacks understanding about how a stall actually relates to exceeding a wing's critical angle of attack as opposed to the more common idea that it's just related to airspeed," said the Safety Board. "When airplanes are close to the ground, such as in a landing pattern, there is limited time and altitude available to recover from a stall or spin, making these stalls particularly deadly."

The Board cited as an example the crash of a Hawker 700A on November 10 last year

while on a non-precision approach to Akron Fulton International Airport and pointed to the crew's mishandling of the approach in the probable cause. (See article on page 8.)

"Although LOC-I happens in all phases of flight, approach to landing, maneuvering and initial climb are statistically the deadliest phases of flight for LOC accidents," the safety Board said, adding, "To prevent unintended departures from flight and better manage stalls, pilots need more training and a better awareness of the technologies that can help prevent these tragedies."

"General aviation has seen enormous gains in terms of safety in recent years," said AOPA senior v-p of the Air Safety Institute George Perry, noting that the fatal accident rate has dropped to 0.89 from 1994 to 2015 from 1.73 per 100,000 flight hours.

But Perry added, "Even more progress can be made by allowing pilots to install modern and proven safety-enhancing equipment in aircraft." Regulations governing the process for equipping aircraft with new technology can stifle modernization, he said. He added that the association also is continuing to find innovations to improve pilot training.

"With access to the latest technologies in the cockpit and future training improvements, we hope pilots will benefit and continue to make gains in aviation safety," he said.

—K.L.



## HONDAJET PRODUCTION TO REACH 80 ANNUALLY BY MARCH 2019

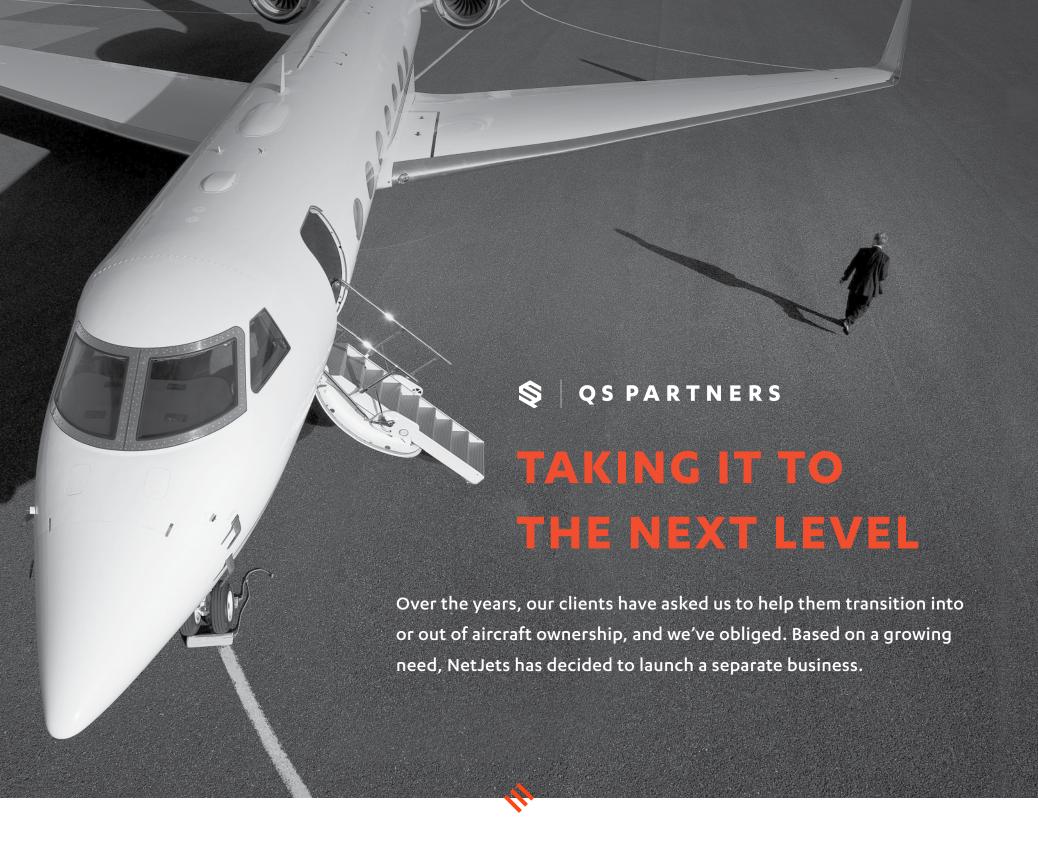
Honda Aircraft plans to ramp up production of the HA-420 HondaJet to 80 per year by mid-2019, company president and CEO Michimasa Fujino told Japanese reporters visiting its plant in Greensboro, N.C., last month. By the end of Honda's 2018 financial year, meaning March 2019, "We'd like to be near full production of around 80 units," he said.

Fujino reported that the current rate is 36 aircraft per year, though the most recent delivery numbers released by GAMA do not yet reflect this. According to the GAMA data, six HondaJets were delivered in the third quarter—one fewer than in the second

quarter. In the first nine months, 16 of the \$4.85 million light jets have been handed over to customers.

The company received its FAA production certificate on July 11, authorizing Honda to produce, flight-test and issue airworthiness certificates for the HondaJet for customer deliveries. At that time, it said it had been steadily ramping up production since receiving FAA type certification for the aircraft late last year. The twinjet has since racked up approvals from the EASA and Mexico's Dirección General de Aeronáutica Civil (DGAC).

—C.T.



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**TORQUED** 

Full-throttle opinion from former NTSB member John Goglia

## Hollywood's depiction of NTSB investigations vs. reality

As I write this at the end of October, the movie *Sully* has grossed \$170 million. That translates to 20 million people who have seen the movie already, and the figure is likely to rise exponentially.

That's a good thing for the depiction of the highly skilled crew, the aircraft manufacturer and the water-borne rescuers whose combined actions saved 150 passengers and five crewmembers that frigid January morning in 2009 and made the "miracle" on the Hudson a reality.

But the movie has left many of us accident investigators concerned about the portrayal of the investigation and specifically the questioning of the crew by NTSB investigators. Several of my former colleagues have been outspoken about what they feel is a negative portrayal of their roles in the accident investigation. And many at the NTSB are concerned about the effect the film will have on future cooperation of airmen and others, in aviation and other modes of transportation, with accident investigators.

While it will be hard to erase the memory of a dramatic big-screen movie, the least I can do is try to set the record straight here by reviewing the important, yet limited role, of the NTSB in crash investigations.

### **Independent Investigator**

The NTSB was established in 1967 as a part of the Department of Transportation "to promote transportation safety by conducting independent accident investigations and formulating safety improvement recommendations." The NTSB's role is to find out why an accident occurred—determining probable cause and making recommendations to prevent future accidents. It is not to determine anyone's legal liability for damages or to prosecute anyone for any regulatory violations.

Congress soon recognized the importance of a truly independent accident investigation board and in 1974 passed the Independent Transportation Safety

Board Act, establishing the NTSB as a stand-alone federal agency. In creating the independent board, Congress stated: "proper conduct of the responsibilities assigned to this Board requires rigorous investigation of accidents involving transportation modes regulated by other agencies of Government; demands continual review, appraisal and assessment of the operating practices and regulations of all such agencies; and calls for the making of conclusions and recommendations that may be critical of or adverse to any such agency or its officials. No Federal agency can properly perform such functions unless it is totally separate and independent from any other department...of the United States.'

Significantly, the law prohibits the use of the Board's accident reports as evidence in legal proceedings for damages resulting from an accident. Again, this section was intended to free the NTSB from entanglements in lawsuits and to ensure open cooperation of all parties with knowledge of issues relevant to any accident.

Part of the NTSB's role in accident investigations is to interview crewmembers or other people who might have information that is relevant to an accident. It is the depiction of the crew interviews in the film *Sully* that has caused the most concern for accident investigators at the NTSB and members of the public, especially airmen. The interviews come

across as almost prosecutorial, as though the investigators were trying to make a case against the pilots. That depiction is so inaccurate. I have never seen the adversarial tone depicted in this movie.

And if you worry that NTSB accident investigators could end up as witnesses at an enforcement hearing seeking before an NTSB law judge to suspend, revoke or fine an airman, don't. The rules do not allow NTSB employees to be directly subpoenaed. And any subpoenas that are sought have to be addressed to the NTSB's General Counsel and have to show clearly that the information requested "is not now, and was not otherwise, reasonably available from other sources." To my knowledge, no NTSB employee has ever testified in an enforcement case.

Finally, an airman who does face an interview with an NTSB accident investigator doesn't need to go it alone. The NTSB regulations specifically provide that a witness is entitled to representation.

The opinions expressed in this column are those of the author and not necessarily endorsed by **AIN**.



John Goglia is a safety consultant. He welcomes your e-mails at gogliaj@yahoo.com.



## HPN privatization deal is opposed

by Curt Epstein

An initial offer to privatize New York's Westchester County Airport (HPN) has met with a chilly reception from the county's lawmakers. In a legislative session last month, the county's board of legislators investigated the deal Westchester county executive Robert Astorino proposed as part of his 2017 budget plan. Under the proposal Californiabased investment firm Oaktree Capital Management would take over control of the New York City-area, dual-use airport for the next 40 years.

Opponents of the plan criticized its lack of transparency, pointing out that while there are several companies that would be suitable bidders for the contract—among them current airport manager AvPorts—no RFP on the subject was discussed or submitted. In essence, Oaktree was the sole competitor. The RFP process is technically not required, but the county executive's failure to solicit competing bids has raised eyebrows among many in the county.

If approved, the current deal would make HPN the first commercially served airport in the U.S. to be privatized, and would take the county out of the profitand-liability equation for the airport. That would be transferred to Oaktree, which would pay the county \$130 million, in addition to making infrastructure

## News Note

Plans to build a commercial helipad in Boston are being revived with the relocation of General Electric's headquarters to the city over the next couple of years. The Boston city council held a hearing last month to discuss the issue. Boston's last two public helipads closed in 1999 to make way for other developments. Plans to construct a new one fizzled in 2008 amid strong local opposition. At the time, the council said, "Establishing a helipad would likely lead to an influx of helicopters to the area, which would impact noise, air pollution and safety concerns in our neighborhoods."

According to the council's order in June for a public hearing, "State and local officials have begun actively identifying potential locations to place the helipad without public input."

improvements at the passenger terminal. Indeed, Astorino has already penciled in \$15 million in upfront payments from the deal to bridge a gap in next year's county budget.

General aviation accounts for 78 percent of the traffic at HPN, a bustling business aviation hub. The site is home to several corporate hangars, two fractional hubs and five FBO facilities

(two each operated by Signature Flight Support and Ross Aviation, and one by Million Air). According to private operators and businesses that serve general and corporate aviation at HPN. there was no request for input on the proposed deal. They fear that if the deal is approved, it could result in drastic hikes in landing and fuel flowage fees.

While county officials seem amenable to the idea of privatizing HPN, its initial reception suggests the current deal will face difficulty gaining traction. Confirmation of any such deal requires the approval of at least 12 of the 17 county legislators, the FAA and a 65 percent) of the commercial carriers that serve the airport.





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## Pre-owned Market 7016

Even before the U.S. election results and subsequent stock market rally, the used business aircraft market was showing signs of emerging from its summer crypt, with some brokers reporting record "activity" going into the fourth quarter and 37 percent of end users reporting to a survey compiled by our sister publication, Business Jet Traveler, that they intend to make more use of private aviation. While the inventory for both used business jets and turboprops is well below the historical average of 13 percent, the prices asked for them are bargain basement, attributable to largely four factors: anemic global economic growth; deep discounting of new aircraft by the OEMs; too many late-model aircraft for sale and the continuous backfilling of the inventory of those aircraft; and the costs associated with performing mandated upgrades to older aircraft. There is still pronounced softness in both the light and large-cabin jet segments, but signs are emerging in various surveys that market pessimism amongst aircraft owners is waning and the bottom might be right around the corner. With the new jet market not expected to make a meaningful recovery until at least 2020, it might be a slow crawl out of the hole, but at least the worst of the carnage might be over.

## **USED JETS:** Awash in aluminum

by Mark Huber

he used jet market is still glum beneath an aluminum overcast. Maybe this one thing is all you need to know about the current state of the business jet market. The largest display at this year's NBAA show was not on the show floor; it was out at the static display at Orlando Executive airport and it was a collective consisting of members of the National Aircraft Resale Association (NARA, see article on page 12). It was here under the small picnic tents and next to the used iron—not on the glitzy show floor—that the deals were getting done. This was basic, no-frills, hand-tohand retailing.

And no wonder. According to JetNet data for the first half of the year, 11.7 percent of the global biziet fleet—2,436 aircraft—was on the market, an uptick of 0.5 percent from the same period last year. The average aircraft lingered on the market for 307 days, and while that was 12 days less from the same period last year, asking prices were also down by a discouraging 11.2 percent. There's no shortage of used metal out there and it's going cheap. Even though prices are falling and speeding transactions, the used jet inventory is still building in behind it. There's just no

way to perfume this. The elevator may not be in free fall, but it is nowhere near slowing to a comfortable pace.

In September, Embraer Executive Jets CEO Marco Tulio Pellegrini noted the state of the market and observed, "How do you go to a board and ask for a new \$50 million business jet flying 300 to 400 hours per year that will be worth only \$20 million in a few years? Today, there are 2,400 used jets on the market and only 600 to 650 new jets [are] selling [annually]. A ten-year-old bizjet is still a fairly new airplane and about 700 to 800 of those on the market fall into this category."

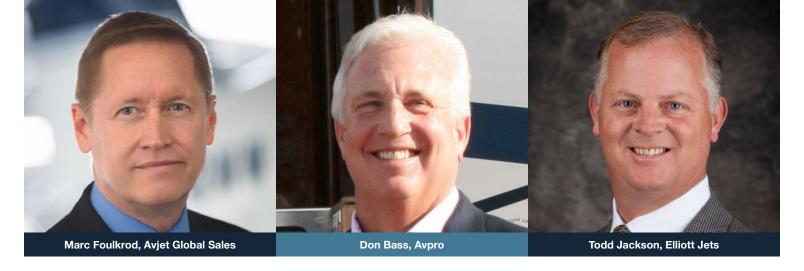
Indeed, the late-model depreciation wall of shame is long and distinguished, dominated by recently out-of-production models from the late Hawker/Beechcraft (now Textron Aviation) and plenty of honorable mentions to go around. A cursory sampling of 2009 model data from Vref revealed the following since-new depreciation numbers: Hawker 4000, 79.13 percent; Learjet 60XR, 71.43 percent; Hawker 400XP, 70.27 percent; G200, -69.26 percent; Hawker 800XP, 68.81 percent; G150, 68.11 percent; Premier IA, 66.39 percent; and Citation X, 61.93 percent.

Granted, some of these members from the Class of 2009 have specific woes related to market appeal or sector problems. For example, Gulfstream recently announced the end of production of both the G150 and the G450 and all models of Learjets are viewed with growing trepidation in the absence of new model development by parent Bombardier and swelling market skepticism about the continued viability of the brand. But resale values for popular models



## Top brokers analyze new opportunities in the preowned aircraft market

If you're in the market for a preowned business or private aircraft, your timing couldn't be better: a global oversupply continues to deflate prices, creating great values. At the same time, sellers face a challenge to know when and on what terms they should close deals. Now more than ever, expert brokers can make sense of a confused marketplace and ensure best-possible values for those they serve in transactions. With open-source data unavailable, brokers increasingly rely on their network of sources to gauge pricing as closely as possible, and to know when the time and circumstances are right to close deals.



We asked some of the industry's most experienced aircraft brokers to assess today's complex and challenging marketplace and how their expertise can make a difference in it. Read on for their exclusive perspectives on what's selling, who's buying, and where the supply is located.









Don Dwyer, Guardian Jet

## How do you advise your clients to think about future resale values when they are buying an aircraft?

Don Bass: We are extremely honest and direct about current market pricing and projected resale values with our clients. The day you buy an airplane is the day you think about selling it. It has never been more important to buy "right" than it is now. If you're aware of the market going into the purchase, vou can better execute your ownership strategy. Owners must realize the utility of the private jet and the advantages it affords them. The jet is now more than ever a tool, a multiplier and a time saver. So, future resale values will be depressed and the challenge will be to maximize the aircraft's usefulness while it's owned.

Todd Jackson: Buyers should purchase the best airplane that fits their mission for the money. On today's used market, you can get more for your money than at any previous time. With so many good options available, you can pick the right price point and find an airplane to fit your needs.

Short-term trends are more established, but it can be impossible to know long-term resale values. Make sure to factor items like avionics obsolescence, parts availability and OEM reputation into the equation to help gauge an aircraft's economic viability.

Jay Mesinger: First, I have a discussion about needs and wants. Once we have collaboratively determined that the time is right to

purchase, we can discuss the value metrics we have developed—our industry internal data points and global economic external data points—to predict future value. This approach, combined with specific aircraft considerations, helps us determine credible shortand long-term residual values.

Joe Carfanga: We forecast for approximately three to five years, sometimes longer, and make estimations using statistical probability. We run an NPV [net present value] analysis, in many cases, when performing acquisitions so that the total cost of the purchase, the operation and the residual value are all factored into projected total cost of ownership. Estimating residual values conservatively is certainly the industry trend.

Marc Foulkrod: This is a very challenging guestion. We are experiencing rapidly falling prices. The two questions on a buyer's mind are: one, am I getting the best deal in the marketplace and two, what will the value be when I sell? While those are important questions, I try to get the client to look at the value not necessarily from an asset standpoint or a dollar amount but from a convenience standpoint. Those two values are something we can help the client calculate in real dollar figures over their expected ownership timeframe.

Getting the cheapest aircraft or best deal but acquiring the wrong

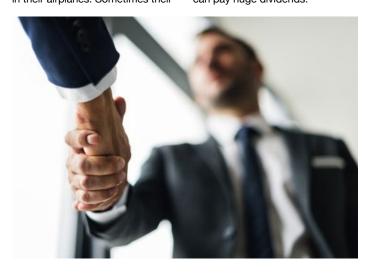
aircraft can net the client a huge loss. Calculating a future value entails informing the client to realistically understand that values are falling quickly and that even the best forecasted values can quickly expire. I get calls from sophisticated financial institutions, seeking private jet values so they can value them on their books. Even banks with computer asset models and quantitative analysts with Ph.D.s are at a loss when forecasting values more than a year out.

Don Dwyer: The first thing we do when we are buying an aircraft is to make sure that we can resell it. And there are triggers you just don't want to miss. A big part of our job is protecting the capital that our customers have invested in their airplanes. Sometimes their

desires are not necessarily in sync with that, which is OK. They must understand the delta, and what the cost is to not being as careful about it as we would like.

We are looking for a nimble asset. An airplane is not a liquid asset, like a stock, but it should be as nimble to get into and out of as possible. That way, we can identify the market opportunity and react to it better, because we have an airplane that will sell quickly. Along with physical features, configuration, condition and pedigree are the main drivers protecting your investment.

Buying in the right market cycle has a lot to do with future value. We want our clients to always be aware of their aircraft value and how the markets are behaving. Being smart about when you buy can pay huge dividends.





## What is the No. 1 reason that an aircraft will sit on the market? If the answer is price, how do you try to get the seller comfortable with realistic pricing?

Todd Jackson: Price will be the No. 1 factor. Aircraft sale prices aren't public knowledge and can vary widely. However, through our industry relationships, we're able to secure actual selling prices that give customers an accurate view of the market. We show our customers this data to help them price their aircraft realistically the first time so that they don't lose money in the long run by riding the market down.

Don Bass: There is a tremendous difference between buyers of new and preowned aircraft. Otherwise, you could never justify the cost delta. Preowned aircraft have become commoditized. A preowned buyer is looking for utility and value rather than the thrill of a new-aircraft purchase. Preowned aircraft purchases are influenced more by spreadsheets and forecasts than by emotions. Sellers who haven't accepted the current marketplace are most apt to watch on the sidelines as values decrease. Market acceptance and realization are unique to each owner.

**Don Dwyer:** The No. 1 reason airplanes sit on the market too long is price. The best-prepared airplane will sell. Part of being prepared is pricing correctly. If you have an airplane that hasn't

been painted in 10 years, with a scruffy interior, this impacts the time to sell as much as pricing, however. Owner expectations can keep an airplane from selling.

When values are falling 10 percent or more a year, each day you are on the market is expensive.

The best way to prepare the owner for that is data. We think we have the most robust valuation process in the industry. We're constantly talking to other brokers and sellers about where airplanes are selling. There are things that can help you with pricing. Ask prices are predictive. Trends can help us be predictive. If you have an airplane that lost value for the last two years, it's likely to go down in the next quarter. We're not pricing for the current market but for the market 90 days from now, and that is tricky. You don't want to leave anybody's money on the table, but you certainly don't want to leave an airplane out there for sale.

Jay Mesinger: Incorrect pricing is the main reason for an airplane remaining on the market too long. Configuration, location in the world, damage history and other factors also play a role. However, price overcomes all of that. There are buyers in today's market, so selling or



Price determines everything in these rapidly falling markets. The No. 1 mistake most brokers make with their sellers is to focus on the last comparable trade.

Marc Foulkrod, Avjet Global Sales

sitting is all about being correctly priced or not. We provide sellers with empirical data to ensure that they won't leave money on the table. We gather our own data, distill it and analyze it to provide metrics to develop an asking price that will reduce time on the market. Our clients listen to us and are making smarter decisions than ever before, mitigating the downward slide. It takes this kind of work from your professional sales partner to navigate today's business jet markets.

Joe Carfagna: Aircraft can sit on the market because someone is uninformed or unrealistic. We believe that a good broker's main function is education. Educated clients are empowered. When empowered they are more proactive than reactive. We take into account historical and present market conditions when providing guidance using our proprietary

marketing and forecasting models, modified by our own knowledge of the very recent market. Once we've presented all the facts and overlaid them with our opinions, we typically can show clients why our value estimates have merit.

Marc Foulkrod: Price determines everything in these rapidly falling markets. The No. 1 mistake most brokers make with their sellers is to focus on the last comparable trade. In these markets you have to show the seller the price the next comparable aircraft will trade at, and if the seller doesn't want to be the next trade, you show them over time how much value they lose by having unrealistic expectations. The last trade isn't nearly as important as the next trade. Most clients, both corporate and private, are very smart and successful people. Show them accurate real-time data.

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## What technical upgrades, modifications or refurbishments most help to boost aircraft resale values?

Jay Mesinger: Today more than ever to the person in the back of the plane the answer is connectivity. Buyers also want an airplane in the most turnkey condition that they will not have to put down for near-term major maintenance, NextGen compliance upgrades or cosmetic refurbishments.

Don Dwyer: This always goes back to having the best-prepared airplane to sell. Without the proper configuration, condition and pedigree, you'll be on the market longer than you want to be, and as we said, that can be very expensive. You don't have to be on an engine program but in some markets not being on it can keep your airplane from selling. Paint and some interior refurbishment should be done on a recurring basis. Leaving it for the next buyer makes that buyer more scarce.

In the regulatory environment that we live in, airplanes that meet regulatory requirements sell quicker. It is not necessarily a question of if you spend the \$300,000 to get ADS-B out. It will sell faster because of the upgrade and if it sells faster, that \$300,000 will look like a smaller number compared with holding onto an airplane in a declining market.

Todd Jackson: Some upgrades, like a major avionics upgrade, can potentially increase resale value. However, many modifications can help decrease the time an aircraft is on the market. In a declining market, a faster sale can be the equivalent of a value increase because each day an airplane sits on the market it declines in value. Whenever you are making a paint or interior upgrade, keep in mind the ability to resell the aircraft with the scheme you have chosen or the reputation of the shop that completes the work. Reputation, quality of work and aesthetics can reduce time spent on the market.

Joe Carfagna: NextGen equipment that is required going forward is a big driver today, but this isn't a new concept. Many years ago, retrofitting an aircraft with TCAS was of paramount importance and a large expense; so was RVSM for some older models, when it was mandated. When a minority of aircraft of a certain type have had the impending modifications done, the upgrade increases value. typically by the full cost of the improvement. When a majority of aircraft of a certain type have had the modifications done. those that lack the upgrades often lose as much value as the upgrades would cost.

Marc Foulkrod: High-speed data and Internet access are a must these days. We live in a world of real-time communication, and clients feel like they've landed on the moon if they don't have access to email, texting and Internet. On older aircraft, interior modern refurbishments and new paint help aircraft resale values. On the technical side—this is especially true with large-cabin, long-range aircraft—items like CPDLC, FANS 1/A, and ADS-B out are important upgrades.

Don Bass: I once heard: "We'd rather lose an engine than Wi-Fi." Seriously though, this is a very interesting question. We have found that the buyer will never value the cost of your recent upgrade/improvement in concert with what you paid. It may even be a different system/mod than what they had in mind. Buyers represented by Avpro or other firms will take into account the aircraft as is and adjust their offers accordingly. So while pricing should find its level, a well-equipped aircraft on programs will, however, almost always sell quicker.

We have found that the buyer will never value the cost of your recent upgrade/improvement in concert with what you paid.

Don Bass, Avpro



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## What's the best advice you can give to an aircraft buyer who's concerned about overpaying? What's the best advice for a seller concerned about getting the best price?

Marc Foulkrod: Find the aircraft that has everything you want in terms of interior layout, options and mission profile, and then focus on negotiating the best deal at that time. I can almost guarantee that whatever a client pays today, the value six months from now will be less, and a year from now even less.

Find the right aircraft that meets the client's needs 100 percent. I've had clients miss out on the exact aircraft they were searching for because they were worried about overpaying and then had to wait another year or more to get what they wanted or buy something that wasn't 100 percent of what they were searching for. Nothing is worse than feeling like you bought less than what you wanted because you missed the last deal.

Don Bass: You must have competent representation and work with a firm in your desired market. Again, it's an information business. If you buy new, you overpaid. If you buy preowned, you overpaid 30 days later. Increase in inventory has not matched increase in demand. Furthermore, as largecabin aircraft descend in price you do not necessarily have an increase in the pool of qualified buyers. I can buy a GIV-SP for less than a new King Air 350 now. That doesn't mean Beechcraft owners are building bigger hangars. It is a unique dynamic in our industry. Aircraft are business tools or

personal luxuries, and their values must be calculated going forward on another line item. Ask: Am I more productive with it? Does it help business? Can I spend more time with my family because of it? That is the currency of private jet aircraft going forward.

Selling to get out of aviation or selling to upgrade/downgrade is tough and your first loss may be your best. There are opportunities when swapping aircraft and this is an area Avpro, as a dealer, excels in. We are able to present a transaction in its entirety, which is often more palatable.

Todd Jackson: Right now, the amount of money that can buy an airplane is arguably the best deal in the history of corporate aviation. If you delay a purchase because you think you will get a better deal in the future, you will in theory never buy an airplane. Buyers, make sure you are buying the best value airplane for the kind of airplane that fits your mission. Sellers, clarify that brokers have real-time data and fully understand how much equipment

affects the value of the airplane and can help you price the aircraft right the first time, getting you more money in the long run.

Jay Mesinger: Choose a broker who is active in your market and can demonstrate their understanding of the trends of the target market and surrounding markets—and produces internal metrics and historical sales price data to help them make good informed decisions.

Buyers will never make a purchase good enough to get them ahead of the falling market, and totally protect them against future value losses. At the same time, making the best buy will mean purchasing an aircraft with good pedigree, in good mechanical condition and as turnkey for your operation as possible—accelerating entry-intoservice time so you can obtain value through utilization faster.

International transactions are taking longer and costing more than ever. With values falling each month and quarter, more time between having an accepted offer and entry into service means potential lost value.

Sellers should work with trusted advisors to establish realistic market expectations and pricing strategies. The longer your airplane sits on the market the less you will take later. Prices will not go up. Being patient will cost you money.

Joe Carfagna: No. 1, hire a good professional. A good broker today does not just buy and sell aircraft. They are consultative in every aspect. They will help an owner plan for the future effectively. They will, of course, know the market far better than any website listing aircraft for sale, and have handled the buy-and-sell process over and over. Retaining a National Aircraft Resale Association (NARA)-certified professional is the best insurance against overpaying or selling under the market.

Don Dwyer: Whether buying or selling, the answer is understanding where the market is. If you buy new aircraft, the pricing can be very dynamic. It helps to have someone in your corner who has done it before, with a lot of information on what new aircraft are selling for. If you are buying used aircraft, buy now or be patient. Pricing is at an all-time low.

We like to say best-prepared airplanes sell. In today's market, being prepared means to price aggressively. The less time you spend on the market the more you sell for.



Todd Jackson, Elliott Jets



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**ELLIOTT**J<del>ETS</del>



## How do you see the current supply/demand dynamics in the upper end of the preowned market?

Don Bass: Aircraft today provide unprecedented access to global markets. When JP Morgan died in 1913, his empire was bound by the railway and steamships. Today with a G650ER, you are one stop from anywhere on the globe. There is a saturation point—\$73 million jets and the G550 and Global series. How many folks have the 7,500-nm mission?

Why buy new when preowned G650s are below \$50 million? Gulfstream's flagship G600 will soon compete with preowned. better-performing, larger-cabin G650s. Most missions are less than four hours and with fewer than four passengers, anyway. Falcon is slow rolling its 5X, and Bombardier is sitting out the turmoil by announcing delays on its 7000 and reducing production on the 5000/6000. So many incredibly capable aircraft are available now. Supply will outweigh demand for the foreseeable future.

Joe Carfagna: It's pretty apparent that late-model, long-range aircraft are in heavy supply at the present time. We believe this will hold true into 2017 given that the European Union, Russia, China and South America continue to reflect a downward or flat trend. Additionally, oil-producing countries are adjusting to lower oil prices and some must curb spending. These areas of the world have been a significant part of the expansion of the large-cabin aircraft market for approximately the last 10 years.

Don Dwyer: Post 2008, the only end of the market with more than tepid performance in terms of new sales and residuals was the very high end. We cautioned our buyers two years ago that the light-, mid- and super-midsize markets were going to recover or the large-cabin used prices would head south. No one was predicting an economic recovery on a grand scale so the latter happened. We

haven't seen the stabilization of the high end that we have seen in the light and midsize jet markets.

Marc Foulkrod: Buyers have the upper hand in this market. It's simple supply-and-demand equations and right now there is too much supply and not enough demand. This is especially true in some large-cabin markets where there are literally fewer than a half dozen buyers and 20 to 30 aircraft for sale in some segments.

Brokers incorrectly surmised that the very top of the upper end of the market, say the G650, would be immune to market forces. They were wrong. We sold a brand new G650ER at the top of the market last July (2015) for nearly \$74 million. Just 12 months later a similar one sold for under \$64 million, the next one will likely trade at \$62 million. Just like in 2008 when all business jet markets corrected from a bubble, so did the G650 market in the long term.

Jay Mesinger: The supplydemand dynamic is prevalent throughout the markets, but particularly with upper-end aircraft. Discounted pricing from OEMs and the increased pressure in earlier-vintage aircraft is creating a lack of confidence in the pricing of like-new aircraft. Buyers are reluctant to purchase like-new aircraft if they can acquire a never-before-seen deal from an OEM that includes a warranty or an older aircraft in the hopes of hedging expected residual loss.

Buyers are willing to buy older aircraft with good pedigree and average-to-low total time. Because of low-asset values many buyers make incredible buys and then invest millions of dollars to modernize the aircraft to their exact specifications so that they have aircraft that can fulfill their lifelong mission requirements. Buyers have a lot of options.

It's pretty apparent that late-model, long-range aircraft are in heavy supply at the present time.

Joe Carfagna, Leading Edge Aviation Solutions

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## Is there an oversupply of aircraft? If yes, what will help to fix the imbalance? How long do you believe this will take?

Don Dwyer: Clearly there has been an oversupply. OEMs are trying to address it. We have seen production cutbacks. The oversupply has impacted pricing. There is a tremendous amount of value in used airplanes today. The manufacturers are all trying to address that with programs, pricing and new products. From a residual perspective the newer designs are faring much better—the G650, Challenger 350 and Phenom 300.

What we are seeing now is market obsolescence, when the price of an airplane gets so low that the person is attracted to that price, but may struggle paying the operating costs of the airplane. While a lot of people could afford to buy a Falcon 900 today, they may not be able to afford to take it for an hour's trip li.e., cover the operating costs].

Todd Jackson: In some markets it may look like there is an oversupply of aircraft. Many of these airplanes will not actually be for sale or will be priced out of the market. As a buyer, you need to dissect each market and understand which of those airplanes are actually for sale.

Joe Carfagna: Yes, there is an oversupply of aircraft. OEMs will have to slow production down which some have already done. Looking forward, there may not be an increase in production of new aircraft. For the time being, less production is the new normal.

Marc Foulkrod: You don't have to have a Ph.D. in economics to tell you that prices are clearly signaling that we have an oversupply condition at all levels of the business aviation market. Right now, there is a 2014 G450 that can be purchased near \$19 million. It delivered less than two years ago and is still under factory warranty. The seller paid something on the order of \$33 million for that aircraft. It's lost 42 percent of its value.

While the pace of price declines will abate, until we can reach some equilibrium between buyers and sellers, it could be another year or two before we see a stable market. Right now there are 35 G550s for sale and 30 G450s. Combined, there might be a dozen buyers for the two aircraft.

Don Bass: Yes. New wealth generation and a greater acceptance of business aircraft as a tool and not a luxury will help. OEMs are victims of their own engineering excellence. Imagine if your car lasted 30 to 40 years. Tax incen-

tives now typically cannot overcome the rapid depreciation of the asset. The five-to-seven-year annuity most OEMs have come to expect has been replaced by rational valuations of flight department fleets. It is less expensive to operate out-of-warranty aircraft than to buy new and realize the huge loss in hull value.

Jay Mesinger: Totally an oversupply. Lower production of aircraft by the OEMs, combined with an increase in aircraft sales in emerging markets that had slowed down would help the imbalance. The problem is compounded by aging aircraft, which continue to be a viable solution for many. This combination has created the situation we find ourselves in now. It will likely take years to fix this imbalance and flush out the excessive supply.

What we are seeing now is market obsolescence, when the price of an airplane gets so low that the person is attracted to that price, but may struggle paying the operating costs of the airplane.

Don Dwyer, Guardian Jet

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## Over the past year some OEMs have cut their production rates and it looks like GAMA delivery numbers in the large-cabin segment will be down in 2016. Do you see this as a momentary correction or a new normal?

Jay Carfagna: This will be the new normal for the next short term until the entire industry can get a better understanding of the political and economic conditions in the world market.

Don Bass: I do not think the pre-2009 pace was maintainable. Again the dichotomy of the incredible airplanes now being produced. B-29s in World War II had engine overhauls at 250 hours. We now expect 10,000 hours as routine. There will always be new buyers and new improvements to

entice those buyers. However, the pool of capable aircraft increases every year and will certainly affect future production.

**Todd Jackson:** Until the pricing on the used market has been stabilized it will be impossible to know the long-term effect on the production of new aircraft.

Don Dwyer: The smartest thing that OEMs could have done is cut back production; and that is good for everyone. It allows them to have some discipline and credibility in their pricing and that is good for everyone. That's also good for residual values long-term. OEMs have worked hard to reduce the number of speculators in the market, and that is very positive. The idea to cut back production is a good one, but we don't see it lasting forever. Activity is very strong this year. We are buying new airplanes. Our customers are buying new airplanes.

Jay Mesinger: I hope the production rate follows the global demand.

Marc Foulkrod: I see it as a momentary correction. One has to remember that after the 2008/2009 financial crisis China poured billions of dollars into the world economy and OEMs were all too happy to take orders from China for literally hundreds of aircraft, many of which are just now hitting the market. This has contracted the backlog we just spoke about and is having a severe negative consequence on the current pricing environment. The projections OEMs made for Asian customers looking out five to seven years were simply too optimistic.

## Where do you see the best aircraft values in today's market?

Don Bass: What's your mission? Ultra-long-range aircraft have never been more affordable. Light jets are abundant and can be owned and operated in a cost-effective way. Not to mention the turboprop market where PC-12s provide comfortable, safe and economic solutions as well. If you buy right and manage your expectations, you can manage aircraft ownership. As Dirty

Harry once said: "A man's got to know his limitations."

Marc Foulkrod: Whether you are searching for your first jet or you're in the market for your 10th jet, values are down across the board and there are great values in the marketplace in every category. The largest obstacle at the moment is that buyers always feel that prices will go lower indefi-

nitely and are hesitant to commit to an aircraft for fear that a better deal will come along.

I recommend to my clients to find the best aircraft on paper that meets everything they desire (interior layout, options, mission profile, etc.) and focus on negotiating the best price for 100 percent of what you want. Otherwise you end up on the sidelines, indefinitely, while good aircraft trade.

Joe Carfagna: The large-cabinclass aircraft that are nearly new have had a significant drop in pricing because of the rapid oversupply in the market. The disparity between new aircraft pricing and near new is somewhat dramatic and makes the used aircraft more desirable because market depreciation in subsequent years will be less. Jay Mesinger: The best values are in aircraft five to 10 years old. Consider more than getting a plane for less money. A combination of major maintenance compliance status and technological upgrades are available and they can make these slightly older aircraft as capable as new aircraft but at a lower cost. There are tremendous opportunities in the preowned market.

**Todd Jackson:** The used market is in a position where some of the best values ever seen in business aviation are available in most makes and models.

**Don Dwyer:** There are great values all over the airplane markets. From a residual value point of view I'd look to the markets that have stabilized. Right now that looks like light, mid- and super-midsize aircraft.

The best values are in aircraft five to 10 years old. Consider more than getting a plane for less money.

Jay Mesinger, Mesinger Jet Sales



# Has there been a geographic relocating of preowned aircraft over the past 12 to 18 months? Are certain locations net buyers or net sellers of business aircraft? How do you see this trend in the future?

Marc Foulkrod: The business aircraft market is a fluid, everevolving market. Right now the United States is the net buyer of aircraft. This is especially true of the newer large-cabin space, comprising 80 percent of the preowned inventory we have bought over the past 12 to 18 months. China only three years ago was a net buyers' market. Now China sells large quantities of preowned large cabins. In the past six months we have seen Europe shift from a net sellers' to a net buyers' market, but very slowly. South America, once a net buyers' market, has been relatively absent the past 12 months.

Fears over an economic meltdown in Brazil have buyers on the sidelines. Lastly, Africa, which only three years ago was seen as the new engine of growth in the preowned markets, is struggling at the moment due to weakness and lack of investment from China. My main concern is that the United States has become the last-resort buyer. If anything prevents U.S. corporations and clients from buying business jets, the oversupply condition could become catastrophic.

**Todd Jackson:** North America remains the market for net buyers, and Europe and South America the market for net sellers. This has not changed in a few years.

Jay Mesinger: The activity for buying in the last 12 to 18 months has predominantly been in North America. This means that many aircraft, originally sold internationally, are coming back to North America.

Don Dwyer: In the last 12 to 18 months the hottest market has been the United States. The only hot market would be North America. Mexico is fairly strong and Canada seems to be doing fine. These assets are transportable so there is a little bit of a relocation. We don't have the exact numbers. There is probably a net loss in Europe and Asia, although parts of Southeast Asia are doing fairly well. If a U.S. customer is buying, the easiest place to buy is in the United States.

We are looking for good deals around the world. We see the international markets eventually recovering and are making moves to be ready when that happens. We have recently opened an office in London because of that.

Don Bass: Into China, out of China. Europe expands and then contracts as do South America and the Middle East. There has definitely been an influx of aircraft back into the United States. Non-U.S. markets are certainly more volatile and ride the wave of policy and intrigue more than we do in the United States. Planes will ultimately find their homes.

Joe Carfagna: Over the last 12 to 18 months the trend has been for more North American sales than the rest of the world and North America has been the net buyer. Other world markets are net sellers. There are exceptions here and there, but this forecast holds for the short term.

#### **Conclusion:**

Though market conditions are changing quickly, there's never been a better time to buy, say brokers who participated in this special supplement. Brokers who possess the right experience and information can help both buyers and sellers by ensuring that an aircraft is market-ready and that owners and purchasers have realistic expectations.



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See the real Golden work done by Louie and Miles by visiting jetsales.com/golden. that remain in production and that come from stable-parent households are doing only marginally better, with depreciation values that average from the high 40s to high 50s at best. And, driven in part by newaircraft price discounting, the depreciation rates are spooling up, according to Richard Emery, COO of Dallas's Mente Group, who noted average annual rates had jumped from 2 to 4 percent to 6.5 to 8.5 percent and in some cases 10 percent.

#### **International Opportunity**

There's simply too little gold chasing too much aluminum. While JetNet reports that during the first six months of this year the percentage of the U.S. bizjet fleet for sale jumped to 11.6 percent from 11.3, internationally it climbed by almost triple that rate, going to 11.7 percent from 10.9.

The Brazilian market is particularly distressed, according to Marcelo Abello of International Jet Traders, who describes the buyers' market as "basically dead." However, he said, there is no shortage of sellers. "They're selling everything." Abello brought several Brazilian-registered aircraft, including a G550, for sale to this year's NBAA Convention in search of buyers. Asia isn't far behind.

The distressed international markets present savvy buyers with opportunities for substantial savings, but are also fraught with pitfalls, warn several experts. While importing an aircraft, especially a large-cabin late-model aircraft, into the U.S. might at first glance seem like a bargain the associated transaction costs can easily be double those of a domestic deal, cautioned broker Josh Mesinger. He also pointed out that pre-buy inspections, logbook verifications, de-registrations, escrow and title clearances are all more complex.

Meanwhile, aviation attorney David Cooke advised that it is a good idea to obtain aviation

counsel in both export and import countries when doing such a deal.

#### Some Signs of Activity

While on the aggregate, the U.S. market has been slow, there have been spurts of activity and around certain models throughout the year, specifically the beginning and in recent weeks. "We were really busy at the beginning of the year, then quiet over the summer, and now more active again in recent weeks," Lee Thomas, aircraft sales manager for Eagle Aviation in West Columbia, S.C., said in early November. Eagle specializes in the resale of Citations, particularly the CJ3. "Over the last month it's [buying] really picked up a lot as prices have fallen," he said. "The prices have really come down."

Thomas ascribes some of this also to the normal end-ofyear surge associated with buyers looking to take advantage of accelerated depreciation provisions in the U.S. tax code. He said models that have readily available avionics and airframe upgrades, such as the CJ1 and the CJ3, seem to do better in the current market. However, he thinks the used market as a whole is undervalued and says valuation services may at least be partially to blame, maintaining that published valuations for certain aircraft models "make no sense," especially in light of the improving economy.

They are without question spurring sales activity. Nick Schneider of Boca Raton, Fla.based Global Wings specializes in used Hawker/Beechcraft aircraft and has been bringing them to NBAA for 10 years in that capacity. In all that time he said he could ascribe one direct sale to exhibiting at the show, a sale he downplayed as incidental to it. But this year's activity resulted in several sales and two letters of intent. "It's been quite a positive show."

Schneider said the falling prices have opened up the private jet market to a new class of





individual who previously could not afford them. "You've opened the market to the guy who lives in a \$2.5 million house on the water in Boca. I live on a little island and I had two airplane owners on my island and now I have six—not because they have gotten rich but because what

before cost \$8 or \$9 million they can now get for less than \$2 million. I'll split it with my buddy at the golf club and now we have an airplane. So [the falling prices] have expanded the volume of buyers; your customer base has grown hugely because the prices have come down."

That's a sentiment shared by Brad Hatt of Hatt & Associates, a Denver-based brokerage also with heavy Hawker experience. "Last year we did 30 transactions, 18 were Hawkers. Textron has done a nice job of supporting the aircraft."

Continues on next page ▶

### **USED TURBOPROPS:** Slower descent

by Mark Huber

he used turboprop market might not be as distressed as its business jet cousin, but there is hardly cause to pop the champagne corks, either. Through the first six months of this year, inventory continued to backfill, ticking up to 8.3 percent of the fleet on the market from 8 percent from the year-ago period, according to JetNet. At the same time prices continued to fall, dropping 2.3 percent for the

period. There were some hopeful signs, as supply outside the U.S. marginally tightened to 7 percent from 7.1 of the fleet on the market and the average time on the market dropped to 299 days, an acceleration of 15 days. But U.S. supply surged to 9.4 percent of the fleet from 8.7 percent. At mid-year there were 1,230 business turboprops on the market.

Using 2009 as the model year baseline for depreciation values from Vref, it is clear that singles continue to hold their values best: Cessna 208B Grand Caravan 12.77 percent; Pilatus PC-12/47E, 20.65 percent; Daher TBM 850, 31.88 percent; and Piper Meridian, 35.41 percent. King Airs from the Class of 2009 (all models) depreciated across a range from 41.46 percent to 41.73 percent. As a class,

turboprops continue to offer superior depreciation protection compared to business jets: a 1980 Twin Commander 840 that originally listed for \$1.018 million can still fetch \$970,000 on today's used market, a depreciation (unadjusted for inflation) of 11.59 percent.

A wide view of recent aircraft listings found all makes and models trading in predictable, mostly narrow ranges. Among the singles, Cessna 208Bs from 1997 to 2013 were between \$1.29 and \$1.699 million: a 2009 Quest Kodiak was trading at \$1.25 million; Piper Meridians built between 2003 and 2014 were priced at between \$569,000 and \$1.55 million; TBM 700s from 1992 to 2005 were from \$880,000 to \$1.39 million; and Continues on page 24 ▶





#### **Jet inventory**

► Continued from preceding page

Hatt noted that about 10 percent of the late-model Hawker fleet is on the block, anywhere from 55 to 70 aircraft in recent months, but reminds that "it is a big fleet." He said the 400XP has stopped dropping and described the light jet market, decimated in recent years, as currently "stable."

Hatt concurred it was a dry summer but said the market began to look up in August. "We've been as busy as we have been in the last two years within the last 60 days and the majority of it is U.S.-based buyers. You'll always get more fourth-quarter activity, and that generally starts in the third quarter."

Hatt said some of his U.S. buyers are interested in foreignbased for-sale bargains, particularly European-registered aircraft where there "is no stigma" attached to them with regard to records or maintenance.

While Hatt sees some market tightening, he thinks it has limits. "I don't think we'll ever see the market [as good as it was] pre-2008 again. While we are not having issues selling airplanes, it is still a buyers' market and a lot of people are buying used as opposed to new. The bargains are to be had pretty much on any of the airplanes around here. The people who buy these airplanes still aren't going to be jumping on the airlines. But they will spend \$4 million now for an airplane that sold new for \$14 million seven years ago and will still be worth \$2 million five years from now because after depreciation they are probably even." Hatt said this encourages more first-time buyers in the market and more of his customers fall into this category. He has also had some success in selling aircraft to former jet card users and fractional owners.

Clint Holly, vice president of Jack Prewitt & Associates in Colleyville, Texas, shares his peer group's opinion that sales activity is picking up toward year-end. "We all feel like the bottom has come and prices should mellow out and maybe even start to rise in a couple of these markets. While there are still a lot of aircraft on the market, we see a slowing down of price decreases."

Holly said individual model preferences continue to be cyclical, pointing to the preference timing demands between latemodel Challenger 604s and GIV-SPs as an example. "When the GIV is selling hot, the 604 market slows down. Once all the good GIVs are gone, then the 604 market heats up. Right now, the market is more skewed to 604s. Both offer a lot of value for the price."

Indeed. Using our 2009 baseline model year, a G450 has lost 58.06 percent of its market value, typically trading in the \$15 million to \$13 million range, while the same-year Challenger 605 was moving at between \$11 and \$9 million, a 60.82 percent drop from its original \$28 million list price.

#### Potential for **Market Distortion**

Mesinger cautioned that an oversupply of a particular make and model on the market can create a propensity for soft deals for that aircraft—that is, when the buyer has the option to accept or reject the aircraft at the conclusion of the pre-buy inspection. Hard deals prevail in conditions of scarcity, when there is a rising market with short demand, and buyers are locked into deals

**Attractive Upgrades** 

The Beechjet/Hawker 400A/XP is just one of the used markets to benefit from comprehensive and cost-effective upgrade programs being offered by third-party providers. Typical is the 400E program from Elliott Aviation. For the customer aircraft and approximately \$700,000, customers receive an upgraded 400A/XP with new Garmin G5000 avionics, interior and paint that trims an estimated 360 pounds. The redesigned interior includes a newly designed shell kit with a recessed headliner for more headroom. The new interior has USB charging ports, redesigned cabinetry and variable-color LED upwash and downwash cabin lighting, all controlled through a mobile app. It also features a redesigned arm ledge with LED accent lighting in the drink holders, window reveals, lower sidewalls and electric window shades as well as Gogo WiFi with Gogo Vision (on-demand movies).

Nextant Aerospace continues to offer its pricier rebuilding program for the aircraft, which includes new avionics and re-engining it with a new pair of Williams International FJ44-3APs.

Similarly, the Citation CJ3 market is benefitting from a touchscreen avionics upgrade to Rockwell Collins Pro Line Fusion developed in cooperation with Duncan Aviation. The touchscreens eliminate the need for traditional FMS control display units mounted in the pedestal. STC certification of the CJ3 Pro Line Fusion upgrade is expected by year-end. Installations will be available from Duncan Aviation and Textron Aviation service centers. Last year, Rockwell Collins estimated the fly-away cost for the upgrade would be in the region of \$320,000.



earlier in the buy cycle with nonrefundable deposits or terms that give sellers opportunities to cure.

The dynamics of the current resale market have made the need for reliance on a specialized transaction team even more critical, Mesinger said, citing aging aircraft issues, the large number of used aircraft on the market, and

the recent trend to import aircraft into the U.S. In any market condition, a skillful aviation attorney who knows how to craft a detailed aviation-specific prebuy agreement is valuable as that agreement then becomes a vehicle to "create a level of confidence and a level of trust," he said.

However, even if the current aircraft oversupply remains constant, there are two potential factors that could bring further distortions in terms of aircraft and buyer scarcity.

If the FAA does not extend the ADS-B OUT 2020 compliance deadline, an unknown number of aircraft will be removedat least temporarily—from the market. At this year's NBAA Convention, Duncan Aviation president Aaron Hilkemann pointed out the potential scope of the problem, noting that only one-sixth of the U.S. general aviation fleet is currently ADS-B equipped and, given the current conversion rates of an average of 65 per month, it is highly unlikely that the fleet will be in compliance at the deadline. Hilkemann estimated the conversion rate

would need to more than double and said that the industry simply doesn't have the capacity to handle all the needed avionics upgrades in time. He predicted that "2018 and 2019 are going to be very difficult."

The second wild card is interest rates. The era of near-free commercial loan money may be coming to an end. As early as this month the Federal Reserve could begin a long-term policy of ramping up interest rates. On November 11, Federal Reserve vice chairman Stanley Fischer told an international banking conference that the Fed is preparing for "a gradual removal of accommodation" and that the case for tightening monetary policy is "quite strong."

How much interest rates need to move up to chase new buyers out of the market remains to be seen, but a combination of higher prices and higher interest rates could end any market climb, no matter how short or subtle, and ensure that the inventory of used aluminum overcast remains a stationary front.

Report continues on page 24 ▶



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#### T-prop market

Continued from page 21

Pilatus PC-12s from 1998 to 2011 were between \$875,000 (but with 19,600 hours total time) to \$3.645 million.

For twins, Cessna Conquest Is traded from 1982 to 1983 from \$479,000 to \$1.145 million; Conquest IIs from 1978 to 1980 from \$499,000 to \$895,000; 1978 Twin Commander 690Bs from \$695,000 to \$795,000; and vintage twins such as a 1975 MU-2M with relatively low time (4,563 hours TT) for \$259,000 and a 1976 Piper Cheyenne II for \$400,000. Other Piper twins ranged from 1984-1985 Cheyenne 400LSs from \$1.195 million to \$1.595 million; 1984 Cheyenne IIIAs from \$635,000 to \$1.095 million; 1981-82 Cheyenne IIIs from \$495,000 to \$795,000; 1981-83 Cheyenne IIXLs from \$775,000 to \$975,000; 1978-81 Cheyenne Is from \$275,000 to \$395,000, and 1984 Cheyenne IAs from \$399,000. Fairchild Merlin IIIs continue to trade in a fairly narrow range driven by engine times; 1973-1986 models trading from \$249,000 to \$900,000. Hightime—20,000 hours and up— BAe Jetstream 31s can be had for as little as \$450,000. Beechcraft King Airs continue to dominate listed turboprops for sale, with 90-series examples the most plentiful: a 1977 C90 for \$299,000 to a 2009 C90GTi for \$1.899 million; the 200 series ranged from \$1.295 million for a 1988 model with 14,000 hours to \$2.795 million; and a 1998 Model 350 was listed for \$1.995 million. Reflective of their unique capabilities for operating in harsh environments, de Havilland Canada Twin Otters continue to command prices that can be charitably characterized as insane: a 1968 DHC-6-200 was recently listed \$1.9 million while a new-production 2011 DHC-6-400 from Viking Aircraft on floats commanded an ask of \$5.6 million. Piaggio Avantis continued to take a beating; a relatively low-time (2,200 hours TT) Avanti II was listed for \$2.5 million. about \$400,000 below retail and a 60-percent drop from its original \$7.2 million purchase price.

#### **Product Support Matters**

The Piaggio is an instructive case study of what happens to aircraft valuations when the brand is sullied by sporadic new aircraft production—the fleet numbered 219 at summer's end after 26 years of production—and sketchy product support over a long period of time. In July Piaggio Aerospace published a new industrial plan as part of its corporate

restructuring that called for the company to drop its engine support and overhaul business and to be transformed into a defense and special-mission supplier. In August, CEO Carlo Logli said the company remained committed to the Avanti program and supporting it, but just days later he was replaced.

Meanwhile, numerous operators began to voice frustration about spares availability, some going as far as to plan to acquire "parts planes" to keep flying. Before he left as CEO, Logli acknowledged that the substandard product support for the aircraft was linked in part to the "restructuring process." When this process will be concluded and to what end remains to be seen. But Piaggio historically has been slow responding to custom-

also has 17 authorized service centers that support the aircraft. Company president Matt Isley notes, "Ninety-five percent of our parts requests are out the door the same day. We stock a lot of inventory. When you compare the support that we provide with the support of in-production aircraft, we're on par with some of the best OEMs to make sure our owners have mission-capable aircraft." Twin Commander also has a variety of upgrades available for owners such as Hartzell Q-tip propellers and the Garmin G950 integrated glass panel flight deck, a new environmental control system, acoustic sound blankets, and interior and exterior LED lighting.

Mitsubishi (in the form of Mitsubishi Heavy Industries America) and contractor Turmore easily updated. Owners are upgrading MU-2 panels with a variety of avionics such as Garmin G600 displays and GTN 650/750 touchscreen navigators. Available upgrades, parts and robust training and a continued attractive price have combined to drive growing sales activity in the MU-2 to strong levels this year, according to TAS.

#### Upgrades Breathe New Life

Under Textron's stewardship, King Air production and support have remained robust and there is no shortage of available engine, prop, avionics and interior upgrades for the thousands of legacy aircraft in service from third-party providers. However, price discounting of new aircraft has negatively (LPV/APV) and radius-to-fix (RF) legs, and the latest version of the integrated flight information system. All the packages satisfy NextGen requirements and provide synthetic vision, and one introduces electronic charts, enhanced maps and SiriusXM and Arinc weather capability. Rockwell Collins is also offering Pro Line Fusion 14-inch touchscreens as an option with the upgrades.

BLR has developed a new "Whisper Prop" for King Air 90s and 200s with carbon fiber blades and composite cores that provide noise and vibration dampening, making some King Air 90s up to 50 percent quieter. Added to the company's composite winglets, the new props can improve runway performance by up to 33 percent. The winglets alone provide an increase in mtow of 400 pounds and 210 pounds of landing weight.

Meanwhile, Advent Aircraft Systems has received FAA STC approval for its eABS GPS/digital anti-skid braking system for the King Air 300 series equipped with Rockwell Collins Pro Line GPS 4000S or Garmin G1000 avionics. Advent is working on the system for the King Air B200 and the Pilatus PC-12/PC-12 NG. On the King Air 300 series, the Advent system reduces landing distances by 5 percent and takeoff length by 10 percent.

Blackhawk Modifications recently announced its King Air 350 XP67A engine upgrade, which replaces the stock Pratt & Whitney Canada PT6A-60As with more powerful 1,200-shp PT6A-67As and new MT propellers; the new engine/prop combination is expected to cut sea level to FL350 climb time to 18 minutes in hot conditions and boost maximum cruise speed 37 knots, to 340 knots. Blackhawk expects to receive STC approval for the program next May. Blackhawk provides new engine installations for all King Air 90s and 200s; the Cessna Conquest; the Piper Cheyenne I, II and IIXL; and the Cessna Caravan 208A and 208B.

Commuter Air Technology (Cat) is expanding its King Air B300 gross weight increase to include the Rockwell Collins Pro Line 21 avionics panel and Cleveland wheels and brakes, increasing maximum ramp weight to 16,600 pounds, mtow to 16,500 pounds, and MLW to 15,675 pounds. The STC supports the weight of the Cat 350ME fuel tanks, which provide an additional 280 gallons of fuel, giving the aircraft a potential endurance of 12 hours and a maximum range of 2,760 nm.

Report continues on page 26 ▶



ers and updating the Avanti line. In 2011 the company announced that it was working on the propellers and a variety of other improvements for the aircraft, including anti-skid brakes, a better environmental control system and a digital cabin-management system and that they would be standard on new aircraft and available for retrofit on legacy models. Those changes took nearly five years to implement into the production line and are now available on the Avanti Evo.

Contrast this with support for various models long out of production, such as the line of Twin Commanders. Approximately 700 turboprop Twin Commanders remain in service worldwide. Today, Twin Commander Aircraft of Creedmoor, N.C., holds the type certificate and supports the airplane with parts that it makes from 58,000 pieces of original production tooling. It

bine Aircraft Services (TAS) also have done a laudable job continuously supporting the MU-2, both in terms of aftermarket equipment and training for these high-performance twins, approximately 270 of which are still flying worldwide. The MU-2 again ranked first among all turboprops in AIN's annual Product Support Survey. New for the aircraft this year is a relatively inexpensive (\$5,000 to \$6,000) angleof-attack system from Alpha Systems that provides visual and aural warnings and a new online icing video and quiz that fulfills FAA-mandated training requirements. Working with the FAA, Mitsubishi recently updated the training and operating rules governing MU-2s, replacing Special FAR 108 (SFAR 108) with Part 91, Subpart N, moving the training program from the Code of Federal Regulations to an Advisory Circular to allow it to be affected used aircraft sales of all King Airs, particularly late model years. However, inventory levels have remained relatively stable, with only B200 and B200GTs bumping up against the bellwether 10-percent red line. Innova Aerospace has developed an STC for installation of the \$350,000 BendixKing AeroVue flight deck in 90-series King Airs and can also re-engine them with the GE H80 under the Power 90 program, generating significantly more power and lower fuel burn.

BendixKing is developing its own STC for installation of the AeroVue in King Air B200s. Earlier this year Rockwell Collins added three Pro Line 21 NextGen upgrade packages for King Airs for ADS-B OUT, synthetic vision, updated flight management system with localizer performance and approach procedures with vertical guidance



#### T-prop market

Continued from page 24

And Raisbeck Engineering continues to offer its popular line of King Air performance enhancing options, everything from wing lockers to aft body strakes to swept-blade propellers now flying on 1,300 King Airs.

Similarly, a variety of upgrades are available for pressurized singles: the TBM 700 through 900, Pilatus PC-12 and Piper Meridian. Daher began to offer the Garmin G1000 integrated glass-panel-avionics retrofit package for all TBMs in 2010. While the retrofit costs about \$300,000, it weighs substantially less than the original avionics and raises the 700B's full-fuel payload by 112 pounds.

#### **Numerous Options**

Lower-cost avionics upgrades are also available. For slightly more than a third of the cost of a full upgrade to a G1000 system, owners of legacy TBMs can upgrade to the G600, which comes with the righthand RVSM G600, the L3 Trilogy standby unit, dual Garmin GTN 750s, Flight Stream 210 remote audio panel GMA 35 and dual remote Garmin transponders, one of which meets ADS-B OUT requirements. The availability of a cost-effective avionics upgrade could be key to moving older TBM 700s, which have a tendency to linger on the market for an average of 17 months and command prices in the low \$1 million range. Over the summer, Daher said it plans to make its new "Elite Privacy" removable rear lavatory option available for retrofit into older TBMs. This should make the aircraft more appealing to charter operators, particularly in Europe, where single-engine restrictions on charter aircraft have recently been eased.

Frequent product refreshing and no shortage of available upgrades combined with the aircraft's unique capabilities has kept the used market tight for Pilatus PC-12s of all vintages over the last two decades, with volume consistently in the low single digits. Older PC-12/45s and PC-12/47s for sale are up around 5 percent of the fleet, while less than 4 percent of newer PC-12/47E (NGs) are for sale.

Finnoff Aviation Products has developed upgrades for the PC-12, among them an STC for installation of the PT6A-67P on pre-NG models that yields up to 20 knots more cruise speed; a new engine instrument

system; and installation of a new 300-amp generator with an enlarged NACA scoop for cooling. Finnoff also distributes an MT five-blade composite propeller for the PC-12 that cuts cabin noise by 6 to 7 dB and shrinks takeoff distance by up to 15 percent. Earlier this year Hartzell received FAA STC approval for installation of a new five-blade swept-fan composite propeller for pre-NG aircraft with the Finnoff -67P engine upgrade. The new propeller is standard on all 2016 PC-12 NGs. Innovative Solutions & Support's Future Generation flat-panel-display system and integrated autothrottle for retrofit in the PC-12 was close to receiving FAA STC approval last month. IS&S president Shahram Askarpour said that the company's Future Generation (FG) flight deck in the PC-12 would be "capable of complying with all known upcoming mandates over the next 10 years." The IS&S autothrottle for the PC-12 is the first ever developed for a business turboprop. IS&S said at this year's NBAA convention that it plans to offer the autothrottle as a stand-alone option at a price that could be as low as in the \$40,000 range.

The FG flight deck features primary (PFD) and multifunction (MFD) displays, integrated standby unit (ISU), integrated flight management (IFMS) and electronic flight bag (EFB) system. The integrated EFB features include airport diagrams and approaches; moving maps with overlay of flight plan; airspace; airways (both high and low); runway depictions; navigation aids and intersections; satellite weather: electronic checklists: and display and control of the enhanced vision system.

The relatively low price of used Piper Meridians-\$700,000 for first-generation aircraft with Meggitt avionics, \$900,000 for second generation with Avidyne panels and \$1.1 million and up for the latest with the Garmin G1000limits what buyers are willing to invest, but there are options such as a Garmin G950 threescreen retrofit that lets owners keep the existing autopilot. On first-generation aircraft, much of the same capability you get from the G950 can be achieved at a much lower cost by installing two G500s and two G750s.

Most business turboprops, even those that have been out of production since the 1970s, remain well supported and have clear paths for upgrades for one simple reason: they hold their value.



# Analysts to sellers: move aircraft fast

by Curt Epstein

ith business jet values declining at an accelerated pace and the pre-owned inventory creeping back up, the time is right for aircraft buyers to step in and claim the models that they want. According to industry data provider JetNet, the average number of days on the market for business jets that found buyers has steadily declined over the past four years, to 300 days from 381 in 2013. "It's my firm belief that we're going to look back five years from now and say this was the best time in a generation to be buying the types of quality airplanes that are available in the market at these values," said David Labrozzi, COO of Global Jet Capital.

Yet that shorter time on the market has not applied across the board. "The markets say there are X number of airplanes for sale and that they've been sitting there for 250 to 300 days on average, but the airplanes that sold in the last six months have averaged less than 180 days," said Donald Dwyer, managing partner of aircraft broker Guardian Jet, speaking at the recent NBAA regional forum at New York Westchester County Airport. "Clearly, the best prepared airplanes are selling.'

In a buyers' market rich in choices for each aircraft type, customers can apply even more scrutiny before settling on the best deal, and for sellers the goal, more crucial now than ever, is to make their particular aircraft stand out in the herd. With depreciation now inflicting real

pain, sellers face a new variable in the equation: how much they stand to lose when their aircraft lingers on the market. "You'll sell for more if you sell your airplane more quickly," explained Dwyer. "Especially in these seriously declining markets, but even in a market that goes down five or six percent, being out there for a year when you don't have to can cost you money."

Dwyer believes that sugar coating the dilemma is not the proper tactic. "The best thing we can do for our customers is to just tell them how ugly it is and get them to buy into the pricing discussion," he said. "The best service we can give them is to let them know what the next 90 days look like, and it hasn't been easy. It's not an easy way to get customers either, but it's the right thing to do."

#### Get Models off the Market

Where to set the price is crucial, of course. "You've got to price for the next 90 days, not the last," noted Dwyer. For brokers, that means carefully examining both the asking and sales price trends for not only that particular model but also for comparable models from other manufacturers. There is no registry for actual selling prices of private aircraft, so brokers develop their own picture by talking amongst themselves. "A lot of what we see now is a guy saying he has an off-market aircraft or 'make offer'; we don't have much luck with that."

Other factors at play are keeping up with the physical condition of the aircraft. In a crowded

market, a maintenance program can decide whether an aircraft makes the first cut. "Maintenance is value, game over," said Barbara Spoor, executive vice president with aircraft appraisal firm Asset Insight. She added that customization of a particular aircraft can also be a detractor. "I think the configuration is a big deal: what was done to make that special configuration and what's needed to bring it back to normal configuration," she said. "If it's going to be a big restructure problem, there's going to be a value difference."

With regulatory mandates such as the FAA's 2020 ADS-B equipage looming, Dwyer advises his clients to make sure their aircraft (except those approaching obsolescence) comply when they hit the market. "You'll get your money back, and if you don't get it back in the purchase price, imagine not selling your airplane for another six months in a market that is going down at 20 percent. Be prepared to sell."

Last, cosmetic appearance shouldn't be underestimated. "Paint and interior are huge," Spoor emphasized. "You might not actually raise the value of the aircraft but it's more marketable, that's for sure." Dwyer advises his clients to refresh their aircraft inside and out every seven years to make sure it is always presentable.

With a portfolio of many aircraft, Global Jet Capital plots a sure course when dealing with jets coming off lease: "We need to make that airplane the next best airplane on the market amongst its competitors," said Labrozzi. "That doesn't necessarily mean we are going to recoup dollar for dollar on investment, but if we're the next airplane to sell, or re-lease in this market, we have saved perhaps six months of asset value depreciation."



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#### U.S. election fallout

Continued from page 4

with 63.4 percent of the vote. Shuster narrowly beat Halvorson in the Republican primary, and had the unusual situation of facing him again after Halvorson received enough write-in votes in the Democrat primary to clear a path for him to run as a Democrat.

Shuster's counterpart in the Senate, Commerce Committee chairman John Thune (R-S.D.), also returns. Thune sailed through his race, capturing 71.8 percent of the vote.

However, Capitol Hill did lose two notable lawmakers who have shaped aviation policy. Shuster's predecessor on the T&I committee, Rep. John Mica (R-Fla.), was unseated by Democrat challenger Stephanie Murphy in a 51.4-percent to 48.6-percent decision. Local media characterized the loss as "stunning." Mica, who had steered aviation policy first as the chairman of the House aviation subcommittee and then of the full T&I Committee, had served in the House since 1993.

Over the years Mica had been deeply involved in FAA reauthorization, transportation security, airport funding and an array of other issues affecting the industry. NBAA presented him its American Spirit Award in 2005 for his support of the business aviation community and his help in the effort to relocate the association's annual convention to Orlando in

the aftermath of Hurricane Katrina. At the NBAA opening general session in 2012, he said, "Some people just don't get it that business aviation is one of the great economic engines of our economy and of a free-enterprise system." However, he hasn't always aligned with business and general aviation. Most recently he backed Shuster's proposal for an independent ATC organization.

Also ousted was Senate aviation subcommittee chairman Kelly Ayotte (R-N.H.). She lost her race to Gov. Maggie Hassan, by 0.1 percent. AOPA identified Ayotte as a strong proponent of general aviation issues.

Republicans retained control of both the Senate and the House, but the margins narrowed by two seats in the Senate and by six in the House. The narrowing of margins might make it a little more difficult to push through Republican-backed proposals, such as ATC reform. But that also might depend on the White House stance.

Also notable to general aviation advocates, the General Aviation Caucuses lost at least 33 members, who either lost their seats or were not returning.

One outcome already has resulted from the elections: a temporary flight restriction prohibiting general aviation flight around Trump's Manhattan residence up to 2,999 feet agl. That no-fly zone, which permits flights into the local heliports, will remain in effect through the inauguration on January 20.

#### WHITE HOUSE BECOMES WILD CARD IN ATC REFORM DEBATE

As a new cast takes shape to occupy the White House, the business aviation community will be watching the direction the next administration might take on ATC reform. Business aviation advocates have little doubt that the battle over reform will resume on Capitol Hill.

"There will absolutely be another proposal to separate the ATC system," NBAA president and CEO Ed Bolen said during the association's annual convention. FAA reauthorization, which was extended only through the end of next year, will come up for debate again, and Bolen noted that the airline lobby, Airlines For America (A4A), has already clearly stated its intention to push for independent ATC.

Bolen noted that Capitol Hill publications have carried advertorials by A4A saying, "This is something that could be a win for the new administration, something that could get done in the first 100 days." He continued, "Because the big airlines seem so committed to pushing this, it seems inevitable that it will be part of the policy discussion."

The primary backer of independent ATC on Capitol Hill, Rep. Bill Shuster (R-Pa.), has already said he plans to renew reform efforts. He noted that with the results of the election, "We have a unique opportunity to begin this work immediately by embracing

innovative ideas and approaches to improving our infrastructure. In the coming months, for example, Congress must pass an FAA reauthorization bill that modernizes our aging ATC system and significantly improves the efficiency of our aviation system."

While the same players in the reform effort are renewing their calls, Bolen said, "The question on the table is what's going to be different this time around. Every time you go into a new battle, you have to recognize it's not the old war. There will be evolutions. Every year brings changes and new challenges."

The wild card, added GAMA president and CEO Pete Bunce, is whether the new administration comes forward with an ATC privatization proposal. The Obama administration chose to stay out of the debate this year and remain neutral. "If an administration came forward...with a proposal for some kind of privatization, then it would change the ballgame from the standpoint of how we...fight that battle," he said.

Both leaders agree that the business aviation community has remained united and, despite support from Shuster, a number of key Democrats and Republicans have opposed the effort. "We have enough allies out there that I think we could defeat it with a lot of work," Bunce said.

—K.L.

# Appeals court denies request in Bombardier Flexjet lawsuit

by Kerry Lynch

The U.S. Court of Appeals for the Fifth Circuit has denied Bombardier's request for an en banc review of its case against the IRS over taxes assessed for management fees (FET) charged to customers of its then Flexjet operation. Bombardier had requested a full court review after a three-judge panel at the Fifth Circuit determined that the IRS properly taxed fractional operation management fees as commercial air transportation activities.

Bombardier originally filed the lawsuit in 2012, disputing tax levies that the IRS had applied to activities in 2006 and 2007, before Congress clarified that fractional operation management fees were not taxable as commercial air transportation activities. A District Court ruled in favor of the IRS in March last year and further found that Bombardier's reliance on FAA regulations was "misplaced." The appeals court agreed with the lower court's determination on July 25, saying the lower court's determination of possession, command and control was appropriate and in line with the IRS definition of commercial activity.

The panel also determined that a previous court ruling involving NetJets does not apply because the business model is different and that an IRS 2004 technical advice memorandum gave clear guidance on the IRS stance on the fees. "We... do not find that the IRS has been meaningfully inconsistent," the appeals court panel said.

#### En Banc Review

Bombardier then sought a full (en banc) Appeals Court review, disputing those findings. The company reiterated that it should not be liable for the taxes because the IRS has been inconsistent in its application and the courts previously ruled that its competitor NetJets is not liable for them. Bombardier further continued to argue that the IRS has been unclear in its guidance on the issue.

"The IRS has for many years taken inconsistent positions as to whether these management fees—which are paid by aircraft owners irrespective of whether they are ever transported on their aircraft—are subject to FET," the company told the court. "The IRS even specifically advised Bombardier a decade ago—twice—that it was not required to collect FET from the owners who pay Bombardier for management services. The IRS then reversed position and now seeks to collect FET from

Bombardier retroactively, even though Bombardier cannot realistically collect FET from the owners responsible for it, and even though another federal court has held that identical types of payment to the largest industry participant (Net-Jets) are not subject to FET, resulting in a severe competitive disadvantage to Bombardier."

Bombardier cited a number of incidents where the IRS found that management fees related to fractional activities were not taxable as commercial air transportation and then others where the IRS had reversed course. This violates a "duty of clarity," the airframer argues, saying the U.S. Supreme Court has determined that such duty "precludes the IRS from imposing tax—especially retroactively—where collecting agents had not been provided 'precise and not speculative' guidance as to whether the tax applied."

The company further argued that the enforcement of the assessments would come "despite the grossly disparate tax treatment afforded to similarly situated industry participants."

Bombardier also disputed the IRS contention that the activity is commercial, saying, "The IRS is attempting to tax an activity—the business of 'transporting persons for compensation or hire'—that FAR 91.1005 and FAR 119.337 say Bombardier cannot lawfully conduct." The regulations, the company adds, do say that Bombardier could "engage in a noncommercial aviation management business. That is exactly the business in

which Bombardier engage[d]—a business not properly subject to FET."

NBAA had filed an amicus brief urging the court for the en banc review, saying the panel's decision conflicts with a previous Supreme Court decision and that the case is of "exceptional importance as it could result in disparate collection obligations imposed on similarly situated taxpayers."

Noting that the IRS has provided inconsistent treatment of the fees over the years, Scott O'Brien, NBAA senior manager of tax and finance policy, added that the recent decision makes it "hard to understand not only what the IRS thinks of these rules, but also the courts."

NBAA noted that for decades fractional aircraft ownership management companies did not collect federal transportation excise tax on monthly management fees (MMF). "The IRS repeatedly has accepted the fractional managers' position that MMFs are not subject to FET, but in this case the IRS took the position that Bombardier should have collected FET on MMFs. Because the IRS violated its duties of consistency and clarity, the panel erred in affirming the district court's holding," NBAA contended.

"Holding fractional providers and aircraft management companies liable for these retroactive taxes is not fair and will have a devastating impact on business aviation," O'Brien added.

NBAA is working with Bombardier to evaluate options, which could include appealing to the U.S. Supreme Court.

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# CHARLES SPECIAL REPORT

# The changing face of business aviation finance

New names, new practices emerge as the industry adapts to the current market.

by Curt Epstein



ith the nation and, indeed, the world stunned at the results of the most bizarre and rancorous U.S. Presidential election in history, there are widespread concerns over the stability and long-term confidence of the economy in the largest market for business aviation.

Earlier this year, all the major economic indexes reached alltime highs; the Dow Jones Industrial Average flirted with 18,700, the S&P 500 nudged 2,200 and the Nasdaq reached a peak of 5,340. The U.S. unemployment rate fell to 4.7 percent in October, the lowest rate since August 2007, and the U.S. gross domestic product (GDP), typically a bellwether for business aircraft usage, grew by 2.9 percent in the third quarter, its highest rate in more than two years. However, those numbers do not mean what they used to. Cycles for the U.S. business aircraft fleet this year are expected to approximate the levels last seen in 2003, according to statistics provided by industry analyst JetNet. At that time, there were 9,500 business jets in service in the U.S.; today there are 12,500.

"There's been a change in behavior," noted Paul Cardarelli, the data provider's vice president of sales. Before the recession, he explained, usage cycles outpaced the growth in GDP. After the economic meltdown of 2008 into 2009, cycles began to rebound, only this time steadily underperforming GDP growth. From a peak of 4.8 million in 2007 to a trough of 3.4 million cycles in 2009, bizjet usage has rebounded to an anticipated 4.3 million cycles for this year, while GDP is expected to exceed 2007's level by a wide margin. "In the first several years following the



Michael Amalfitano

Great Recession, the rise in corporate profits was driven largely by expense cuts, which does nothing to spur demand for business jets," said Joseph DiLallo, head of corporate aircraft finance and leasing with BMO Harris



Joe DiLallo



Robert Kent

Equipment Finance. That has led to a slowing of the aircraft replacement cycle as owners held onto their airplanes longer than usual. "Aircraft owners are less likely to upgrade than during the heated economy leading up to 2008," said Robert Kent, president of Scope Aircraft Finance. "In 2006 and 2007 we experienced a loan repayment rate of 22 percent, meaning that a fifth of our borrowers sold their aircraft usually—but not always—to trade up," he noted. "In 2015, that number had dropped to 12 percent."

"Owners and operators who traditionally turned over their aircraft on average every three to five years are now holding onto their aircraft on average six to eight years," noted Michael Amalfitano, executive vice president and senior managing director for Stonebriar Commercial Finance, one of several new private lenders.

That dynamic, coupled with the slowdown in the rest of the world, has caused the current oversupply and the spiral dive in used business jet values. "Lack of demand for business jets from virtually all non-U.S. markets is the core cause of today's supply-and-demand imbalance,' DiLallo asserted. "For the past 10 years, OEMs set their production rates, investment levels in new model R&D and new model launch timing with an expectation of decent demand from major markets outside the U.S., that largely hasn't happened."

Slumping oil prices have had a significant effect on the industry, but political issues in Brazil, Russia and China have all played a part in dampening business jet appetites. Add to that a strong U.S. dollar, and a clearer picture emerges of the global situation in which the U.S. is once

again seeing the lion's share of business jet deliveries. "Business aviation is a U.S. dollar denominated market," said Amalfitano, who previously headed Bank of America's business aircraft finance portfolio. "As the U.S. dollar strengthens, the cost to purchase a business aircraft by an international client rises in relation to the local currency. Given the currently depressed global economies (Europe, Middle East, Africa and Asia) and lower currency values, coupled with the continual decline in used aircraft values, it is quite difficult for an international client to sell an existing low-value older aircraft to buy a high-value newer aircraft." He added that devaluing of foreign currencies has led to the importation of a number



Kirsten Bartok Touw

of used aircraft into the U.S.

As the pre-owned business jet inventory begins to creep up again, industry watchers are concerned about the number of late-model used aircraft (zero to five years) on the market, and the competition they place on new bizjet deliveries. To help alleviate the pressure, most OEMs have scaled back their production rates, but experts believe such curbs will not be an

immediate panacea. "It's a challenging market because there's an oversupply of new aircraft by the manufacturers,' said Amalfitano. "The production reductions announced by the OEMs will take at least a couple of years to arrest falling values, especially given the relative lack of pricing discipline on new sales."

"Eventually discipline works its way into the market," added Kirsten Bartok Touw, managing partner with AirFinance. "If demand doesn't grow, supply must fall." While this year's edition



Janine Iannarelli

of the Honeywell business aircraft delivery forecast (see article on page 48) predicts the industry will be on an upswing by 2018, after further slippage next year, some in the finance industry believe the doldrums will persist. "Market softness and oversupply will be a factor for the next three to five years," said James Simpson, managing director for aviation and marine finance with First Republic Bank. "We now believe that long-range aircraft such as the G550, G650, Falcon 7X and Global 5000/6000 have an economic depreciation of roughly one percent a month or 12 percent annually."

#### Cash Is Still King

Aircraft that are finding buyers are being purchased with cash. "The majority of the people I'm working with don't need financing," said Janine Iannarelli, president of Houston-based aircraft brokerage Par Avion. "So the options that are available to them are enticing, but it becomes 'Do I use my own money and simply pay cash?' For 100 percent of my clients last year, that's exactly what they did." She added that the trend has persisted this year, and of all the inquiries her firm has received, just one in 20 has

involved some form of financing.

Older, less expensive airplanes account for more of the transactions, said Jay Mesinger, president and CEO of Colorado-based Mesinger Jet Sales. He added, "In some cases maybe there's less demand for financing because many people are self financing or pulling it from other credit facilities.'

According to the latest statistics from JetNet, which derives its data from FAA reports, 80 percent of U.S. business jet transactions in the third quarter of this year were conducted in cash, the highest percentage the Utica-based company has seen since it began keeping score in 2000. Some might simply prefer a cash buy because it affords them the flexibility to jump on a good deal. "Practically speaking, a finance or lease closing involves a third party and typically takes more time to close as lenders underwrite, comply with federal 'know your customer' requirements and document the deal," said industry veteran David Labrozzi, COO of Global Jet Capital, another newcomer to the aircraft finance arena. "Many purchasers are paying cash because they feel that the financing will be time consuming and frustrating, which in general is true," said Sam Harris, founder and owner of JetLease Capital. "For those with the patience, aggressive rates and terms are available.'

It remains unclear how many of those cash buyers will then seek to finance their purchase later. "Cash is always king if the buyer can leverage the certainty of closing that it provides to extract concessions from sellers," said Michael Kahmann, managing director and group head of CIT Business Aircraft Finance. "Once the deal closes, then yes, we agree that buyers should consider whether the optimal use of cash is parking it in the aircraft. If the jet owner's alternative use of cash (such as investing in his or her business or the stock market) provides a reasonably higher rate of return than the loan rate, then refinancing post-close makes a lot of sense."

"I think you must first differentiate between jet buyers who want to finance and jet buyers who need to finance. If they can't get decent financing, they can't afford to buy a jet," said DiLallo. "The buyer who depends on financing will benefit if banks loosen their conservative lending standards, or if there are more

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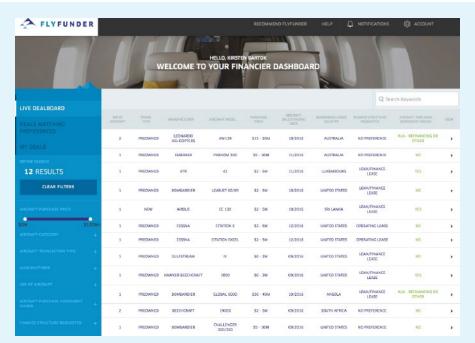
Jay Mesinger



Ford von Weise



Dave Labrozzi



Through FlyFunder's new online marketplace, participating lenders can view prospective deals to determine their level of interest in financing them.

#### **FINANCIER LAUNCHES ONLINE** AIRCRAFT FINANCING MARKETPLACE

San Francisco-based business aircraft financier AirFinance last month launched an online general aviation finance marketplace, FlyFunder, that promises to match buyers of business airplanes and helicopters with aviation financiers, streamlining the current "shopping" process.

According to the company, each participating lender will provide a list of specific attributes for deals that they will consider financing, including aircraft value, age, registration, region of operation and type of deal structure. When the system receives a deal matching those criteria, it notifies the lenders and they can contact the potential customer to express interest in financing the transaction. The process is anonymous initially, and when a deal inquiry is launched, the information presented to the lender is non-specific.

Financiers will gauge their interest by scrutinizing the particulars of the deal rather than the identity of the customer. "Eventually, after we match, then the buyer and financier do meet, but only after the buyer approves the release of his or her identity to the financier," Kirsten Bartok Touw, Flyfunder co-founder and AirFinance managing partner, told AIN. Once a dialog begins, they can communicate and share documentation through the site's secure messaging and upload system.

"FlyFunder will give financiers greater visibility into more aircraft financing opportunities than they would typically see through their origination teams," said Chris Miller, managing partner of Shearwater Aero Capital, one of the first lenders to sign on. "It is a great platform for buyers looking to access financing and for financiers looking for potential deals they might otherwise not have been exposed to."

The site is free for all users to join, and lenders pay FlyFunder a commission only upon the closing of a deal put together through the platform. Its proprietors are looking to encourage the use of the digital marketplace by the aircraft/broker community as well, and to that end, on any completed financing deal launched by a broker/consultant, FlyFunder will pay them half of the commission paid by the lender.

'We see significant growth potential in both mature and emerging markets," said FlyFunder co-founder and director Paul Sykes. "We believe that a transparent, easy-to-use online marketplace will provide aircraft buyers everywhere with greater access to financing and more options to choose from. All industry participants will benefit from greater connectivity and interaction."

#### Financing 'Void'

With recent changes to the aircraft finance market, including the recent or imminent departure of major names such as GE Capital and CIT, and retrenchment of others such as Element Financial, FlyFunder believes it is now more difficult for aircraft buyers to find financing, particularly outside the core areas of North America and Western Europe, as well as for older and smaller business aircraft. Likewise, the company noted, manufacturers are often left searching for customer financing options to close a sale.

"When financing exists, sales of assets grow when they don't have to be purchased with 100-percent equity," said Touw. "It is our hope that FlyFunder can help increase aircraft sales by working to fill the financing void that has grown in the last few years."

The company says it has been approached by non-traditional funding sources such as hedge funds that are interested in seeking aircraft funding opportunities that historically they would not have known about. FlyFunder says it has already fielded a dozen funding inquiries from the U.S. and from as far away as Sri Lanka and South Africa.

#### ADVICE FROM THE EXPERTS

AIN asked industry professionals what recommendations they would give to someone looking to acquire an aircraft. Their advice ranged from take advantage of the tremendous values in the preowned market to re-evaluate purchasing entirely and consider leasing, fractional, jet card or club membership programs instead. Here are some of their comments:

"Because of the changing regulatory environment, I would urge potential buyers to work with a bank with which they have an existing relationship to get the best rate and structure. Transactionoriented financing is otherwise becoming more expensive."

-Ford von Weise, director & head of global aircraft finance, Citi Private Bank

"Buy a three- to five-year-old aircraft; no need to buy a new one."

James Simpson, managing director of aviation and marine finance, First Republic Bank

"Work with an experienced team of advisors: broker/acquisition consultant, attorney and lender. Develop a financing structure that amortizes your balance in line with a realistic prediction of the jet's future value, so you don't get 'upside down' on your loan-to-value."

> —Joseph DiLallo. head of corporate aircraft finance & leasing, BMO Harris Equipment Finance

"Don't buy an airplane larger than you need for your mission profile simply because they are so cheap. Also, understand total operating costs very well; hire a consultant to assist in this area as it's a small amount of money well spent. Many buyers are too thrifty to spend a few dollars up front but they pay a huge price later. Should you insist on spending more money on an airplane, go for newer rather than larger, if larger doesn't fit the mission profile."

> senior advisor and president emeritus, 1st Source Bank's specialty finance group

"Maintain equity in the airplane, match fund the term of the debt or lease with a longer-thanexpected ownership/lease horizon, and select an experienced lender that doesn't flip its paper after the closing."

—David Labrozzi, COO, Global Jet Capital

"Make a large enough down payment so that if you need to unload the aircraft in a few years you do not have to write a check to cover a negative equity position."

-Robert Kent, president, Scope Aircraft Finance

"Have your financial information in order and call as many financiers as possible to play them off each other. Typically, non-U.S. borrowers aren't as well organized with their financial information.'

-Kirsten Bartok Touw, managing partner, AirFinance



Continued from preceding page

financiers that focus on higher risk transactions."

As always, the higher a customer's credit, the more desirable he is as a customer. That axiom rings true these days more than ever. "As one banker put it to me, those are the people we want, but those are not the people coming to us to ask for money," said Iannarelli. "Anyone who comes asking for money pretty much needs the help, so they're a credit risk."

#### **Monitoring the Banks**

The complexion of the business aircraft finance market has changed recently with the widespread adoption of the Basel III Accord, a worldwide voluntary regulatory framework on bank capital adequacy, stress testing and market liquidity risk intended to protect against



Al Qualey

bank failures. "When combined with the broader, heightened requirements for liquidity and capital in general for financial institutions, Basel III has redefined how banks allocate capital, deploy their balance sheets and how they measure return on their capital," said Ford von Weise, director and head of global aviation finance with Citi Private Bank. "This has forced and will continue to force banks to re-evaluate each product they offer, including aircraft finance."

The new regulations have also had an effect on some longtime lenders in the industry. "While some regional banks have either entered the market for the first time or have re-entered it, regulatory reforms have forced some larger financiers to withdraw from the business aviation market," said von Weise.

"Loan terms from the regulated lenders have reduced greatly, typically to five years," noted Amalfitano. "Banks are pressured by regulatory capital requirements, cost of capital, low margins and weak existing aircraft portfolios.'

Last year, GE Capital announced it was withdrawing from the corporate aviation finance market to concentrate on finance in its core manufacturing areas. It sold off most of its business aircraft portfolio, worth \$2.5 billion, to Global Jet Capital in October last year. CIT first announced it was withdrawing only from the international business aviation finance market but later decided to exit it entirely. According to sources,

its 60-aircraft portfolio, estimated at \$630 million, will be split among three buyers, likely before year-end.

#### **Spiraling Residuals**

"There has been a serious deterioration in business jet values over the last year," noted Allen Qualey, senior advisor and president emeritus of 1st Source Bank's specialty finance group. "We're seeing many models losing half their value in the first five to seven years. This is unprecedented." Indeed, many aircraft that were signed to a 10-year lease before the downturn in 2008 are reaching the end of their terms, causing continual headaches and writedowns for some long-time lenders. Sharply eroding values have forced banks to "mark to market" the residuals on aircraft in their portfolios. "True lease players are leaving because of portfolio residual problems," noted Simpson. "There is a scarcity of operating lease providers because of alarming declines in aircraft residual values," agreed DiLallo.

That has left something of a vacuum in the market for buyers seeking leases. "The departure of these two venerable banking sources, especially for middlemarket companies, has created a void non-traditional financing sources are starting to fill," said von Weise. "Firms such as Global Jet Capital and Stonebriar Commercial Finance are

using non-depository sources of funding to try to capture the very markets in which GE and CIT previously saw great success." Among the other lenders that have either exited entirely or are retrenching are Guggenheim Partners, which sold its business aircraft finance division to Stonebriar in April, and Element Financial, a Canadian lender that stopped originating new transactions a year ago. Element told AIN it has had discussions regarding the sale of its \$971 million (C\$1.3 billion) business aircraft portfolio.

Those uncertain residual values can make leasing appealing because the lender shoulders the consequences at the end of the deal. "More clients are exploring leases, which traditional banks are not as willing to underwrite because bank credit standards and capital requirements continue to tighten," said Amalfitano.

However, "there aren't many lessees today because most lessors have set residuals so low that buying/financing makes more sense than leasing," noted Qualey. "Should someone insist on leasing, there are still lessors available, but generally residuals are now being set at a fraction of what they were 10 years ago."

While conventional lenders might have less appetite for the funding of leases, most remain interested in providing funding for structured debt transactions. and the overall impression is that players in the finance industry have become more specialized. "There are certainly fewer financiers who want to be all things

to all people," said DiLallo. "Nearly all banks have become more selective about the type or age of jets financed, and to whom they provide financing.'

In UBS's October business jet survey, 27 percent of the financiers polled said they believe the availability of financing has deteriorated, compared with 6 percent of the dealer/brokers queried, yet despite that assessment there appears to be enough money in the finance tank to meet current demand. "I'm finding more people willing to finance," said Mesinger, who attributes this to the fact that the industry has contracted somewhat, making capacity look better than it did. "I'm finding more people willing to finance older airplanes, willing to finance modernization. Whereas in the past, as we came out of our downturn, it was-in my perception—part of the problem, now it's not.'

"The current level of capital liquidity in the market is high as U.S. banks have unused capital that needs to be deployed to drive loan and asset growth with existing clients," said Amalfitano, adding that the rising demand in North America for small and midsize jets is affording more aircraft loan opportunities to regional and local banks.

Yet, despite that assessment, according to the Federal Reserve Board's mid-year 2016 senior loan officer survey, 10 percent of the banks surveyed indicated they have somewhat tightened their standards on commercial and industrial loans to

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### LOOKING TO MITIGATE RESIDUAL VALUE RISK WITH A TRUE OPERATING LEASE?

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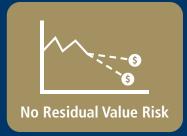


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Continued from page 32

companies. Three percent said they have eased loan standards.

#### Age Is but a Number

Aircraft age remains one of the major concerns among financiers. Aircraft are considered old when their economic value is significantly affected by their utility, as determined by the aircraft technological and regulatory compliance standards, which define the value and economic useful life of an asset. According to one lender, "business aircraft continue to have a 30- to 35-year economic useful life and

have market utilization that far exceeds 40 years in service." That same lender went on to define "old" as any aircraft older than five years. Financiers' definitions of "old" stand as evidence of the niches the institutions are beginning to occupy. "Old aircraft are often classified by the age of 10 years," said Global Jet Capital's Labrozzi. "We have no concerns about financing these with a structure appropriate to the airplane and relative to the customer profile."

"We try not to finance jets more than 17 years old and turboprops over 25," Scope's Kent told AIN. While BMO Harris will lend on jets between 0 and 15 years old, Citi's von Weise considers old to be an aircraft built more than 20 years ago.

"Age is less important than the quality of the airplane," Qualey noted, adding that under the right conditions his company would fund a 30-year-old aircraft purchase. "However, as airplanes age and require more maintenance, the variable costs always rise."

The value of the airplane as defined by age, operating region and maintenance history is also crucial in determining lenders' interest. Aircraft that are on maintenance programs are generally more attractive to financiers, and looming compliance deadlines such as ADS-B can also be a concern. "It's a discussion we have with every new financing request involving aircraft that are not currently compliant," said DiLallo.

"In some cases the cost to meet the new standards might be greater than the intrinsic value of the aircraft," noted Amalfitano. "Clients will need to decide whether to keep their existing aircraft and make the required capital investment or dispose of it at the depressed values."

For foreign operators, jurisdictional management and security are also important because lenders want to know that their repossession provisions will be honored in the event of default. Most will insist the aircraft be placed under a recognized independent management company, which will move it to a neutral location if so instructed by the lender.

#### **Lenders Court Buyers**

Some banks will limit financing almost exclusively to existing clients, while others will actively seek out new customers. "We also want to know that we can provide other products and/or services to the client for a long time," von Weise told AIN. "We are looking for a marriage, not a date." From a bank perspective, he added, aircraft lending must complement other bank products and should no longer exist as a product unto itself.

For most financiers, the dance between them and a potential borrower typically progresses in the same manner. "Although every client opportunity is different, several common factors are usually present," explained Global Jet's Labrozzi. "Our typical interaction begins with an imminent client acquisition decision. Discussions quickly move to client financial considerations, and objectives, anticipated time horizon relative to owning/operating the new airplane and so on.'

"Most customers contact us after they have selected an aircraft, and sometimes after they have put down the deposit," noted Scope's Kent. "We can, however, provide a pre-approval pending an aircraft selection."

'Some clients call at the earliest stage of the acquisition process, requesting guidance on jet selection, broker/attorney recommendations and recommended finance structures," said DiLallo. "Others email a signed purchase agreement with a specified financing request and need us to evaluate, propose, approve, document and fund within 30 days. For most deals it's the latter." Some lenders such as First Republic Bank will even help the client select the aircraft to be purchased, according to Simpson.

"Be prepared to have 30



Ed Kammerer

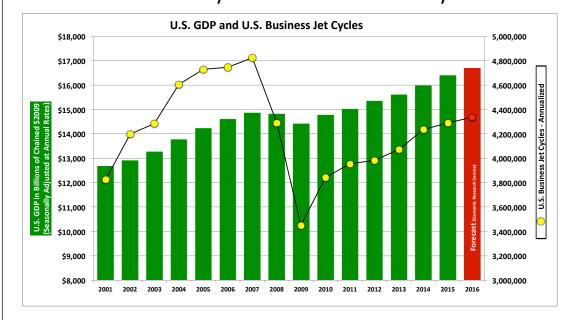
days from the start of the process to closing, and have a complete financial package," advised JetLease Capital's Harris. "Don't wait until you have an LOI on the aircraft to start, as fire drills for financing don't go over well in the current environment."

In most cases, for a domestic buyer the process will take two to four weeks, and roughly twice that for an international transaction. San Franciscobased AirFinance, which helps foreign aircraft buyers arrange funding from the U.S. Export-Import Bank (Ex-Im), says the process typically takes three months: one month to complete the credit evaluation, one month for Ex-Im to approve once they have received the credit memorandum and application, and one month for the lawyers to document the transaction and the customer to get all the conditions precedent that they need to.

Once a lender is decided upon and its rate is accepted, there are other factors to consider, according to aviation attorney Edward Kammerer, a partner with the law firm Hinckley. Allen & Snyder. The company financing an aircraft is worrying about the loan-to-value at all times, he told the audience at the JetNet IQ Summit this fall. "It wants to make sure that whatever it has lent you is there at the outset and wants to make sure that the value is going to be there through the course of the financing term." Lenders will insist on periodic inspections for the aircraft, he noted, and how many and who pays for them can be open to negotiation. "They want to make sure that you are doing all inspections, that you're complying with all airworthiness directives and service bulletins and that you're basically not letting the aircraft go," Kammerer explained.







#### Pre-owned Business Jet and Turboprop Inventory **Business Jets and Turboprops for sale** Sept 2007 - Sept 2016 3,500 20% 18% 3,000 16% 2.500 14% 12% 2,000 10% 1,500 1.000 4% 500 2% 0% 2008 2009 2010 2011 2012 2013 2015 2016 2007 2014 of Jets for sale # of Turboprops for sale % of Jets for sale % of Turboprops for sale





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# Is U.S. economy ready to file a straight and level flight plan?

by R. Randall Padfield

hen Republican President-elect Donald Trump takes his place in the Oval Office on January 20, it is likely he will do so under much less economic stress than Democrat Barack Obama encountered when he became President in 2009 during the Great Recession. Several economic factors support this: the U.S. GDP grew 2.9 percent in the third quarter this year (the strongest gain in two years); unemployment is low; some Americans who had left the workforce are rejoining it; and wages have risen at a rate that has not been seen since the 1990s.

However, there is still much economic stress. Millions of Americans have not yet started looking for work after leaving the workforce; the typical U.S. household has less buying power than it did in 1999; many lower- and middle-income families have not yet rebuilt the wealth they lost during the recession; and now some economists are predicting a 20-percent chance of a recession in 2017. Outside the U.S., the effects of the UK's exit from the European Union ("Brexit"), hostilities in the Middle East and the continuing refugee crisis threaten international economic stability.

Then there's the good old U.S. Federal Reserve, which raised the prime interest rate in December last year, the first hike in a decade. Now, the Fed has signaled its intention to raise the prime rate this month.

To provide AIN readers with an unbiased viewpoint of the current economic situation, Dr. James West, Professor of Economics at Moravian College in Bethlehem, Pa., sat down with Randy Padfield, former AIN editor-in-chief, to offer his take on the election and the economic prospects for 2017.

#### What are some of the important economic lessons of the 2016 election?

One of the biggest messages from the election is that populism, pragmatism and anti-globalization are the preferences of many people who are tired of the relentless transformation of the economy. This constant change, driven by trade, immigration, outsourcing and technology, has transformed both society and the workplace. Many people feel left behind.

The post-2008 economy has been exceptionally slow to recover, causing job losses and wage stagnation. Voters identify these problems largely with the international environment and are saying, "We need to slow down on the globalization path." Many view international competition as "unfair." Likely victims of this new nationalism/nativism are trade agreements, like the Trans Pacific Partnership [TPP], as well as earlier agreements, such as Nafta. While most economists are eager to see trade agreements succeed, presidential candidates Trump and Democrat Hillary Clinton expressed reluctance to go through with the TPP's ratification.

Ken Fisher, an investing columnist for Forbes magazine, wrote in the November 8 issue, "Stocks should treat a Clinton presidency like they normally have Democrats. That would make 2017 a positive surprise. Here's the twist: Since July I've come to see stocks treating a Trump presidency similarly... because so many conventional Republican investor types fear him as well....The Trump frumps' fears [therefore] must be all priced into the stocks now." What are your thoughts on this assessment?

I agree a little with Ken Fisher, but I'm not as certain or enthusiastic as he is. The psychological optimism, created by what Keynes called "animal spirits," along with the prospect of corporate tax cuts, infrastructure spending and tax incentives for repatriated profits, may well unleash a new dynamic for sustained growth. This is certainly the desired projection of the new Trump administration.

The stock market hates uncertainty, and Trump's early post-election diplomacy may have dispelled some of that uncertainty. But because he has never been in public office, much uncertainty remains. Clinton appeared to be a safer bet for the market, as she would have followed the lead of the Obama administration's Keynesian policies. The gyrations of the market during and following the election may be indicative of Fisher's analysis.

Since the 2008 financial crisis, the Fed has been pumping money into the economy. A lot of that money is not finding investments, but rather creating a liquidity trap of cash, as well as a hyper stock market. Real economic development in industrial investment and real estate, while improving, is still slow. Eight years of loose money creation and elevated deficit spending, rightly perceived as "monetizing the debt," has been a stimulant to the economy and is producing near zero, even negative, interest rates. To the extent that the excess money supply drives equity prices, this will necessitate an eventual market correction. The market might be roaring for a while to come, but whenever there is a bubble, there has to be a correction.

Political rhetoric can set the tone for the economy, yet productivity, innovation and risk-taking are the fundamentals that drive firms to make investments and produce globally competitive products. So while the tone set by presidential



Dr. James West, Professor of Economics at Moravian College in Bethlehem, Pa.

candidates is important, policies looking at the fundamentals are much more important. The policy-driven prospects of higher interest rates, inflation pressure and declining trade opportunities through protectionism all send signals that there are still strong possibilities for market corrections in the future.

#### How will situations around the world affect the U.S. economy?

Many countries are facing adjustments. China's growth has slowed, while India has emerged with fairly strong growth. India has begun to deal seriously with its "black" economy, which inhibits development there and in many developing countries. This is a positive, growth-affirming step. Another BRIC country, Brazil, despite recent political and economic problems, is coming out of its recession. In Europe, Brexit may in the end be positive for both the UK and continental European nations.

While prospects for recession in the U.S. are uncertain, the U.S. economy remains a driver of global growth. Progrowth measures at home and even the call to renegotiate trade deals may be appropriate, but the movement toward protectionism and isolation would be a recession-inducing error. That would take the wind from the sails of our booming stock market, generate retaliations and slow growth in the economy. Globalization fatigue may have helped win the election, but the new President must embrace trade, immigration and Foreign Direct Investment (FDI) openness, not retreat.

#### So, all things considered, how do you see the U.S. economy in 2017?

The surface vital statistics of the economy look pretty good: the unemployment rate is 5 percent; inflation is less than 2 percent—in fact the goal is to get to 2 percent inflation and we can't get there; growth at the end of the third quarter was at 2.9 percent, which is markedly above the 1.5 percent at the end of the second quarter.

But as good economists, who can see dark clouds with every silver lining, we still see there are problems. Labor participation rates are down; there are high levels of underemployed and discouraged workers in the workplace; and wages are stagnating. We have not seen a robust rebound in retail. And while the housing market is stronger, it is below potential, as is investment in heavy manufacturing. The right policies can reinvigorate the economy, but there is uncertainty whether the pro-growth or anti-growth messages of the Trump campaign will survive. A further significant challenge is that the extremely loose monetary policies will have to be unwound in a way to avoid growth-killing, interest-rate spikes and inflation.

I would not say a recession is definite, but in this environment it would be hard to rule it out.

#### What advice do you have for Joan the Investor\*?

While I feel like I say the same thing every year, good advice is good advice: diversify your investments portfolio; be cautious following even time-trusted advisors; and base your decisions on your own personal risk assessment. This assessment should be shaped by your goals and objectives, how close you are to retirement and the financial needs that guide your risk-return profile.

One noticeable change in stock investments is that purchases of individual corporate stocks have been going down. Day trading for the average investor is out and savers are moving more into index funds with more conservative, balanced portfolios. So quality index funds are something Joan and other long-term investors should consider...unless they discover the next Amazon or Google. Also, Joe the Plumber should keep his job. There is good employment ahead in the skilled trades.

\*"Joe the Investor" has appeared in Dr. West's annual interview with AIN for many years. He is a spin-off of a real person named Samuel Joseph Wurzelbacher, who became known as "Joe the Plumber" during the 2008 U.S. presidential election, after he asked the campaigning Senator Barack Obama about his small-business tax policy. AIN's Joe the Investor retired last year after carefully following Dr. West's advice. He suggested that we now direct Dr. West's advice for 2017 to his younger sister, Joan.

### Rockwell, B/E eye bizav aftermarket

by Kerry Lynch and Chad Trautvetter

Rockwell Collins is poised to expand its aftermarket reach significantly with the proposed \$8.3 billion deal to acquire cabin and cockpit systems maker B/E Aerospace. Under the agreement, announced in late October, Rockwell Collins would acquire B/E Aerospace for roughly \$6.4 billion in cash and stock and the assumption of \$1.9 billion in debt. In turn, B/E shareholders would receive 20 percent of the combined entity. The transaction is expected to close in the spring, subject to regulatory approvals.

B/E would become a separate segment of Rockwell Collins and would continue to be run by B/E president and CEO Werner Lieberherr.

The merger of Rockwell Collins and B/E would create a company that provides a spectrum of cabin and cockpit offeringsfrom avionics, cabin electronics, communications, information management systems and training to seating, food and beverage preparation and storage equipment, lighting, oxygen systems and galley and lavatory systems for both business jets and airliners.

#### **Doubled Opportunities**

Rockwell Collins chairman, president and CEO Kelly Ortberg called the proposed sale "transformative and complementary," saying the deal would "strengthen our position as a leading supplier of cockpit and cabin [equipment], increasing our scale and establishing a new platform of growth for our company. The addition of B/E will also diversify and balance our portfolio across OEMs, airlines and aftermarket clients."

Ortberg highlighted areas of revenue the combined entity would generate. A "prime area of focus" will be the business jet aftermarket. He cited the 20,000 business jets for which the company "can offer a full complement of interiors, from seating to lighting to electronics, while aircraft are undergoing avionics modifications."

Depending on the size of the aircraft, Ortberg said, there is \$200,000 to \$1 million of "opportunity" per aircraft. This could double the discretionary avionics modifications business, Ortberg suggested.

The B/E business base could grow substantially, since Rockwell Collins has a network of 300 dealers. B/E does not have a dealer network and thus currently does not have as much exposure to when aircraft may come in for retrofits.

When aircraft come in for maintenance today, that's when we typically will sell them avionics mods or even cabin entertainment equipment and updates," he noted. "When aircraft are going to be down for either a modification to the cabin systems or avionics, or even an engine overhaul, we can then upsell the cabin interiors

to that. This will almost double our opportunities."

With 80 percent of its revenue derived from airline customers, B/E Aerospace will provide Rockwell Collins greater penetration in the airline market, Ortberg said. He believes B/E's stronger airline relationships will open the possibility to sell more avionics. Likewise, where Rockwell Collins has the stronger relationship, the potential exists to sell more interior equipment. Ortberg estimated this could generate \$50 million 'per opportunity."

"We feel confident that this combination delivers significant long-term benefits neither company could realize on its own,' added B/E Aerospace founder and chairman Amin Khoury.

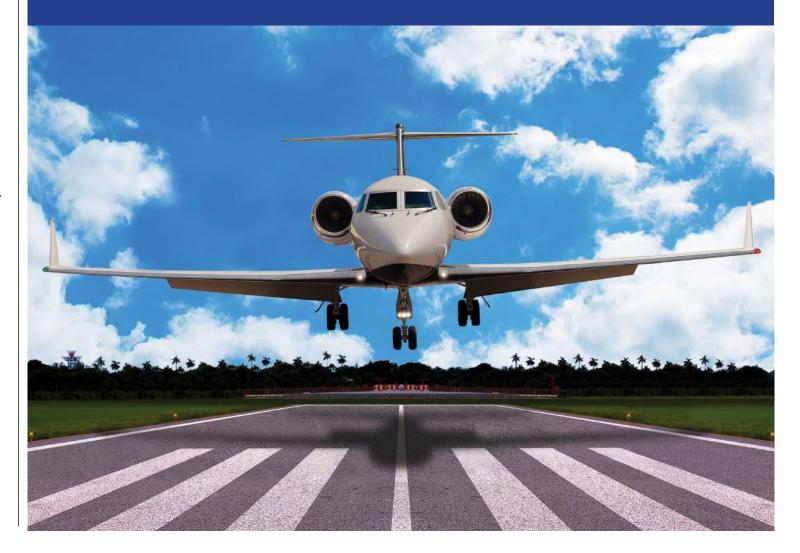
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# Flying the G550 At the controls, at long last by Matt Thurber



After earning a new type rating, most corporate pilots jump right into the cockpit of the airplane on which they just trained and go to work. When I finished the Gulfstream G550 initial course (AIN, November, page 46) at FlightSafety International's Long Beach learning center in June, I was doubly excited, not only because it was an opportunity to add the G550 to my pilot certificate but also because Gulfstream invited me to fly a real G550 shortly thereafter. I would finally get to see what it is like for other pilots to transition from training in a simulator, getting the type rating, then flying the real airplane.

Even better, when I arrived at Gulfstream's Savannah, Ga. headquarters for the flight, I learned that I would experience what the crew for buyers of a new G550 would go through. Senior international captain Ed Faciszewski and international captain Nick Rose said they would take me on a trip as if this were an entry-intoservice flight. This is a service that Gulfstream provides new customers and allows the crew to become thoroughly familiar with their new jet while flying with highly

experienced pilots and, if desired, completing the first few actual trips for the owner. Of course, there was no owner in this case, just me, Faciszewski and Rose and a gorgeous gently used low-time G550, N531GA.

The morning began with a

summary of the G550's capabilities and a thorough preflight briefing. Certified in 2003, the G550 has enjoyed a tremendous run, with 530 in service and no plan to phase it out of production as the new G500 and G600 enter service; the marketplace

will be the ultimate decider on that question.

The Rolls-Royce BR710 C4-11-powered G550 offers long range (6,750 nm at Mach 0.80), direct climb to FL410 on a warm day, sub-6,000-foot balanced field length at maximum takeoff

weight and the ability to tanker fuel by flying, with the right winds, from New York to London and back without adding any fuel. Maximum operating speed is Mach 0.885, and highspeed cruise is Mach 0.85. Cabin altitude at the maximum altitude of 51,000 feet and max cabin pressure differential of 10.48 psi is a comfortable 6,000 feet. This performance was attentiongrabbing when the GV—which later became the G550—entered service in 1997, but even more so when considering the clean Gulfstream wing, which has no leading-edge devices.

Four seating areas can be fitted in the cabin, or three when buyers opt for a crew rest area. The rear baggage area is accessible in flight, but there is a limitation of five minutes with the internal baggage door open above 40,000 feet. Since the compartment is accessible from the cabin, the exterior baggage door doubles as a secondary emergency exit.

Gulfstream has developed its own cabin management and entertainment system, with full high-definition video and audio, standard Blu-ray players, HD bulkhead monitors and Airshow 4000. Among the satcom options are Inmarsat SwiftBroadband. ViaSat Ku-band and Iridium plus Gogo Business Aviation air-to-ground connectivity. Next year, Gulfstream will begin equipping the G550 with Honeywell's JetWave system, which delivers the high-speed Ka-band JetConnex service.

The cockpit features Gulfstream's Honeywell Primus Epic-based PlaneView flight deck, which is now flying in 1,000 Gulfstream jets. Four 14-inch display units fill the instrument panel, topped by the central guidance panel, which is flanked by two display controllers, one for each pilot. These controllers are a primary component of the pilot interface and are used to adjust a variety of settings on the avionics. One setting, for example, is selecting synthetic vision to display on the primary flight display (PFD). Synthetic vision is optional on the G550 and, surprisingly, is not purchased by all buyers, probably because regulators still give no operational credit for the technology. The



AIN senior editor Matt Thurber, center, put his newfound knowledge to good use with a flight in a Gulfstream G550 with the company's senior international captain Ed Faciszewski. left. and international captain Nick Rose.

EVS II infrared-based enhanced vision system and HUD II head-up display are both standard, as is Fans, CPDLC and ADS-B OUT (the earlier version required now in Australia and some Asian countries).

Among the other avionics options are Waas LPV, Honeywell's RAAS (Runway Awareness and Advisory System), Sirius XM Weather, the latest version of ADS-B OUT and RNP SAAAR (special aircraft and aircrew authorization required).

#### Flight Brief

"We're here just to have fun today," said Faciszewski at the start of the briefing, but he reminded me that we had two objectives for the flight. "Number one is to operate safely at all times. The second is we want to provide real-world operational training following the FlightSafety training." For entry-into-service customers that take advantage of flying the first trips with Gulfstream pilots, he added, "We're the bridge between the simulator and the aircraft."

Faciszewski flew F-15s in the Air Force and was a T-37 instructor before joining FlightSafety, flying for some corporate operators then hiring on with American Airlines before returning to business aviation. He has been working for Gulfstream for the past 10 years. Rose graduated from Embry-Riddle's Daytona Beach, Fla. campus and flew for a regional airline for seven years before joining Gulfstream in 2006.

The plan was to fly two legs, from Savannah to Augusta, Ga., with some airwork on the way, with me flying right seat. At Augusta, we would switch seats and I would be the pilot flying in the left seat for the return leg. Faciszewski outlined the weather, which was just about CAVU, summarized Notams and described the plan for the flight in detail. We discussed possible traffic around Augusta's Daniels Field, which shouldn't affect our flight into Augusta Regional, and the need to watch for turkey vultures that like to circle near the approach to the airport.

The sterile cockpit rule would be observed from brake release until 10,000 feet. As I learned at FlightSafety, when the autopilot is on, the pilot flying "owns" the guidance panel except for the altitude preselect. When the pilot flying is hand flying, the panel is the responsibility of the pilot monitoring and his alone.

We discussed elements of flying the real G550 that were different from the simulator, such as the ability to lean forward and see the wingtip, and the large amount of thrust at idle, meaning that releasing the brakes is usually all that is needed to get the airplane moving on the ground. As it is in the simulator, the tiller nosewheel steering is notably sensitive, and we would use that most of the time except on straightaways because the rudder pedals allow for seven degrees of travel, and it's smoother than using the tiller. Faciszewski explained how he keeps the G550 on centerline during landings, and this was helpful for me as I tend to keep landing slightly to the left. "I always use the center of my body," he explained. "Try to put your nose on the centerline."

Because of the size of the G550's clean wing, "The 550 has tremendous ground effect," he said. "At about 100 feet, I start to move [the yoke] back slowly. It's a subtle flare. Once we touch down. we have ground spoilers come up and that pitches the nose over. You catch the nose. When you land, it wants to go nose down and you have to apply back pressure to catch the nose and fly the nose down. If you don't do that, the nose comes down pretty hard."

Price

Faciszewski emphasized that we would "exercise sound judgment and airmanship. I'm looking for smooth control inputs on the ground and in the air and a stable approach and landing." He would demo the first landing, at Augusta, then I would land back at Savannah. "I'm not going to introduce any abnormals or emergencies," he said. On most demo flights I'm usually not handling the radios, but on the first leg of this trip I was the pilot monitoring, and I would handle all the normal duties.

There would be just three of us on board—Faciszewski, Rose (in the jumpseat) and me—plus 13,500 pounds of fuel. As calculated using Gulfstream's Plane-Balance app, our takeoff weight would be 61,845.4 pounds, well below the 91,000-pound mtow. We would use 10 degrees of flaps for takeoff, and the trim setting would be 9.0. Fuel burn for the flight should be about 7,500 pounds, illustrating the G550's flexibility; it can easily handle short, light-load trips as well as long trips carrying a full load of fuel (41,300 pounds) and an 1,800-pound full-fuel payload.

#### Ready To Fly

Rose did the exterior preflight inspection (which is done with a maintenance technician and a dual sign-off) while Faciszewski and I brought the G550's cockpit to life. I expected this to go much faster than it did in the simulator, and indeed it did. This was my first try at running one of the more complicated cockpit flows in the real airplane;

\$61.5 million (typically completed and equipped) Rolls-Royce BR710 C4-11, each Engines (2) 15.385 lbs Gulfstream PlaneView **Avionics** (Honeywell Primus Epic) Passengers 2 pilots + up to 19 pax Range (with NBAA reserves, 200-nm alternate) 6,750 nm at Mach 0.80 High-speed cruise Mach 0.85 Long-range cruise speed Mach 0.80 Fuel capacity 41,300 lbs Max payload w/full fuel 1,800 lbs Ceiling (certified) 51,000 ft Cabin altitude at ceiling 6,000 ft Max takeoff weight 91,000 lbs Balanced field length at mtow (sea level, standard) 5.910 ft Landing distance 2,770 ft Length 96.4 ft Wingspan 93.5 ft Height 25.8 ft Volume: 1,669 cu ft Width: 7.3 ft Cabin Height: 6.2 ft Length (seating area): 43.9 ft

**Gulfstream G550** 

**Specifications and Performance** 

after the relatively simple APU start flow I did the before starting engines flow, which has 30 items, and I was pleasantly surprised to see that I remembered almost everything, including the dozen or so functional checks that are part of that checklist. Faciszewski has been doing this for a while, obviously, and was far faster at the subsequent challenge-and-response that is designed to catch any items missed during the flow, and we had the cockpit warmed up and ready in less than half the time

Baggage capacity

it took me and my partner in the simulator. This process included doing items in the airplane that can't be done in the simulator such as checking all the circuit breaker and electrical panels.

170 cu ft/2,500 lbs

I had asked during the briefing if I could practice inputting the flight plan in the FMS, and here was another experience that felt familiar, as I had done it so many times in the FlightSafety graphical flight-deck and full flight simulators. I did end up making a mistake that required I start all over again, and once again I wondered why Honeywell couldn't have put a "back" button on its FMS.

Once ready to taxi, I called for the clearance and was grateful it was fairly simple: as filed to Augusta, maintain 3,000 feet, expect 11,000 ten minutes after departure. We taxied out of the tight confines of the Gulfstream customer and design center ramp, and I was glad Faciszewski was at the controls because there isn't a lot of room for error.

It was fun to use my copiloting skills as we taxied onto Runway 28, lined up and then I gave the standard callouts as we accelerated—"airspeed alive, power set, 80 knots, V1, rotate"-and Faciszewski smoothly rotated; then "gear up" and "flaps up" as we climbed out. We were cleared

Continues on next page ▶



### <u>ng The</u> G550

#### At long last, at the controls

► Continued from preceding page

to a block altitude from 11,000 to 13,000 feet. Faciszewski gave me the controls and I hand flew for a few minutes, comparing the feel to the simulator, then flew two 180-degree steep turns, exactly as we did in the simulator. Faciszewski took over the controls, and we programmed the FMS with the Rnav 26 approach into Augusta. As we neared the initial approach fix, Faciszewski asked for flaps 10, then, lining up on the inbound course and near the final approach fix, flaps 20 and gear down.

The landing was smooth, and Faciszewski made it look easy, including letting the nose down gently.

We taxied to the ramp and followed a well choreographed routine that had us swap seats. which seemed like a lot of effort but was done with a high degree of safety awareness. Faciszewski and Rose had clearly gameplanned this seat transfer, and they did it in a way that ensured

the G550 was always, without question, under positive control while the engines were running. I was impressed by the sharp focus on safety.

#### My Turn

Now it was my turn in the captain's seat of the G550. I'll admit I was a little nervous, but Faciszewski is an excellent mentor. He did urge me to work on my smoothness, and while taxiing I felt that the only difference between flying the simulator and the real airplane is when using the tiller. Sure, the tiller is just as sensitive in the simulator, but in the airplane I was trying to precisely manipulate 60,000 pounds of airplane, and it took a really deft touch to avoid jerking the cabin around. "Easy in and out with the tiller," he explained.

I managed to give the pretakeoff briefing with some confidence and then to taxi to Runway 26 without causing too much discomfort. I lined up on

the runway, pushed the power levers forward, clicked on the autothrottles, accelerated and took off. I tried to make sure I brought the nose of the G550 smoothly up on rotation, and to the required 15 degrees. I had gotten into a bad habit flying the simulator, where I wouldn't bring the nose all the way up because I was expecting an engine to fail; if the nose is too high, it's easy to let the nose drift off course if you let the big jet slow down too much.

We stopped briefly at FL230 then continued the climb to FL390 for a minute then climbed to FL470 and leveled off. The entire climb took about 21 minutes, and we had enough energy left to have climbed straight to FL490. Faciszewski said.

Our flight plan took us southeast toward Gainesville, and we just cruised along at Mach 0.84. Faciszewski said this is what flying the G550 is mostly like, and I finally relaxed a bit and enjoyed the feeling of blazing through the skies in an amazing airplane, something there is little or no time to do during simulator training or a typical flight demo.

Soon enough it was time to plan the descent back to Savannah, approach to Runway 28, something I had done before in the simulator. Faciszewski showed me a neat trick for smooth flying in the Gulfstream: start a descent using vertical speed instead of FLCH (flight level change) or Vnav (vertical nav). He had me select a low rate, -100 fpm, then -200 fpm at first to get the descent started smoothly, then once that is established, switch to FLCH or Vnav. Another method he had me try was to use the FPA (flight path angle) knob to set up a descent at a steady angle to get the desired speed. This results in a super-smooth descent without the occasional hunting motion while in FLCH mode caused by atmospheric changes, Faciszewski explained.

He also had me try this in the climb, and it works well, but it is important to monitor speed carefully and adjust the FPA to remain at the proper speed. I did use the speedbrakes on the descent, and very carefully too. Pulling the speedbrakes out or retracting them too quickly could cause a sharp bump that might hurt a passenger, Faciszewski said.

During my leg, he pointed out that I was a little rough with the G550's switches and that I could use a little more finesse when pushing a switch. I had gotten used to punching the switches in the graphical flight-deck simulator, which isn't a good habit, and I was grateful for the critique.

As we got ready to start the Rnav 28 approach, I got caught up in the rapidly accelerating demands of managing the autopilot and following ATC instructions. I delayed selecting the Lnav (lateral navigation) switch when we were cleared for the approach and almost flew through the inbound course because I was futzing with the vertical mode. Faciszewski suggested concentrating on the

where we would fly the Rnav

We switched seats again, and Rose taxied us back into the design center ramp, and that was the end of a journey that had begun in February when I learned that I was going to G550 school. During the post-flight brief-

most important element first.

VREF at our weight was just

113 kias, and looking through the

HUD combiner, with the G550

stabilized with gear down and

full flaps, I clicked off the auto-

pilot and made sure the trim

was set while the autothrottles

worked their magic and kept us

and I didn't flare too much or

too early. It really was a lot like

the simulator, but also so much

more, with the sights and sounds

and feel of the G550 obeying my

commands and flying just as I

The landing felt pretty good,

right on speed.

had expected.

ing we discussed the flight and what I could do better next time. "Overall, what you need is reps [repetitions]," said Faciszewski, including more time manipulating the guidance panel, programming the FMS, using cockpit flows and making sure to read the lettering on a knob or switch before selecting it.

I did make some mistakes while I was flying the G550, and I think that more experience would cure those quickly. During the takeoff from Augusta, I made a rookie error, not moving my right hand to the yoke when Faciszewski called "V1" but he fixed that fast by moving my hand for me.

Another problem occurred as a result of the way I was holding the tiller while taxiing. I was trying to be super careful not to move the tiller too abruptly, and apparently my wrist tapped the audio panel and switched off the audio for my headset. The G550 cockpit is quiet enough that I could hear everything Faciszewski was saying, but it took me a few minutes to figure out the problem. This never happened in the simulator. I wasn't using good CRM practices, though, as I didn't mention it to Faciszewski right away, and this is one of those two-pilot crew skills that I need to work on. I also need to work on my thrust reverser deployment skills, not that we really needed them to slow down after the landing at Savannah.

The G550 is a fantastic performer with excellent handling and not at all hard to fly after proper training. My introduction to the G550 through training with the talented FlightSafety instructors and flying with two ultra-professional Gulfstream pilots was an awesome way to learn about a new airplane.



During his flight in the G550 Thurber had the chance to put into practice all that he had learned at FlightSafety, starting with inputting the flight plan into the FMS.





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# R.A. Bob Hoover:

Jan. 24, 1922 – Oct. 25, 2016

# The greatest stick-and-rudder pilot has flown west at 94

by Nigel Moll

Perhaps what is most remarkable about the flying career of Bob Hoover is that it concluded not in an unsuccessful tussle with gravity or the guns of a Messerschmitt or Focke-Wulf the fate of many of his friends and colleagues—but a few years before he passed peacefully, in his sleep in Southern California, on October 25 at the age of 94. Over the course of the 73 years he spent flying airplanes, rotten luck presented countless opportunities to claim him but he outwitted a terminally bad outcome every time through supreme flying skill and, by his own admission, good fortune.

The passing of Robert Anderson "Bob" Hoover leaves us in awe of an aviator like no other. He occupied a time that to the majority of humans alive now, if they care to look, is a dwindling image in the rear-view mirror of history. Aviation no longer has it in her to provide anyone the run Hoover enjoyed, and this can be attributed in large part to the experimental test piloting of Hoover and his compatriots in the late 1940s, 1950s and 1960s.

Hoover was bitten at an early age and worked hard to buy time in airplanes, but he soon learned that they made him sick. His self-taught efforts to learn how to fly even extreme attitudes and maneuvers smoothly enough to keep the airsickness at bay were the foundation for

his extraordinary achievements as an adult aviator. Despite his lanky height, which should have relegated him to the more spacious cockpits of transports and bombers, Hoover was a World War II fighter pilot; when his Spitfire was shot down over the Mediterranean in February 1944 he ended up in the Stalag Luft 1 prison camp in northern Germany. Eventually successful after many escape attempts, he commandeered a Focke-Wulf Fw-190 and enlisted a German mechanic to help him start the engine, took off and headed north to the Baltic coast and then west until he saw the windmills of Holland, reflecting all the way on the bitter irony were he to be shot down by one of the many Allied fighters prowling the skies of Europe at this late stage of the war.

After the war, working as one of the leading test pilots in the U.S., Hoover evaluated captured enemy aircraft and survived numerous upsets as he explored the "feathered edge" on the new generation of jet-powered military aircraft. He broke both legs departing from an F-84 Thunderjet and lived through his darkest hours lying in the desert 30 miles from Muroc (later Edwards AFB), Calif., convinced he would not be found and die alone in great pain.

Hoover was chosen to fly the Bell X-1 through "the sound

barrier," but what Hoover described as an act of unwise generosity toward another pilot (involving flying a jet over a particular airport for the benefit of said other pilot) did not go unnoticed by his superiors in the Air Force and they yanked him from the project ("It was not a good day for me," recalled Hoover), opening the door for Chuck Yeager in 1947 to go beyond Mach 1 and down in history while Hoover flew chase in a Lockheed P-80 Shooting Star and snapped the famous photo of the Bell manned bullet going supersonic and spitting shock diamonds out of its tailpipe.

#### Transition to Civilian Work

Hoover left the Air Force in 1948 and became a civilian test pilot. He worked for North American Aviation/Rockwell for 30 years. While there he intentionally put an F-100 Super Sabre into a flat spin from 44,000 feet from which he had to eject at 10,000 feet. The jet obliged Hoover's fervent wish as he hung beneath the silk and continued its flat spin all the way to a crump onto the desert floor.

Nobody who saw them will ever forget Bob Hoover's airshow acts in his yellow P-51, *Ole Yeller*, and the "energy management" routine in his Shrike Commander with both engines shut down and the props feathered. In one of his final public appearances, Hoover attended the 52nd (organizers canceled the 2001 event soon after 9/11) Reno National Championship Air Races five weeks before he died. It was the event at which,

for many years since 1964 as pace pilot for the Unlimiteds, he herded the racers down the chute and onto the course before telling them in his sometimes scratchy drawl, "Gentlemen, you have a race." Having discharged that responsibility, he would circle overhead throughout the race and serve as Guardian Angel helping guide pilots through emergencies to safe landings. He looked frail this past September, but that hallmark smile beamed as strong as ever from beneath his broadbrimmed straw hat as he gently bumped knuckles with fans.

A dizzying assembly of Hoover's flying exploits (he tenses

visibly when recalling how the seatbelt in *Ole Yeller* broke while he was inverted at low level at Reno, depositing him hunched in the canopy with no good options) can be found in Kim Furst's excellent movie, *Flying The Feathered Edge: The Bob Hoover Project*, and in Hoover's autobiography, *Forever Flying*, ghost-written by Mark Shaw (*see box item*).

For a more personal reflection on Hoover the man, AIN talked with Bob's close friend, airshow performer Sean Tucker. This writer is not alone with the notion that Tucker could rightfully assume the mantle of world's greatest stick-and-rudder pilot flying today.









Hoover at work at the 1982 Reno Air Races: Landing the Shrike deadstick at the conclusion of his energy-management routine, touching down first on one mainwheel then the other before coasting to a halt at crowd center, all with the engines silent; and landing Ole Yeller, his beloved P-51, after serving as pace pilot and guardian angel for an Unlimited race. (Photos: Nigel Moll)

#### Tucker on Hoover

It's a tremendous loss if you look at it as losing him, but if you look at it as how many people he has touched in life through his grace, dignity and wisdom and how many lives he saved and how much a mentor he was to so many people... It's only a loss if you don't take those lessons and implement them in your own life.

I've stayed in close touch with Bob over the past year, especially after Colleen, his wife of 68 years, passed away in March this year. His body was really failing him, but he was striving to live

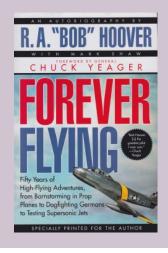
#### **MUST SEE:**

Flying The Feathered Edge: The Bob Hoover Project Film by Kim Furst; 86 minutes; DVD \$29.95; Blu-ray \$32.95 www.shopthebobhooverproject.com



#### **MUST READ:**

Forever Flying ISBN 9780671537616 Autobiography by R.A. Bob Hoover with Mark Shaw; 291 pages hardcover (eBay, signed \$40-\$700); softcover (Amazon, \$17)



longer than Colleen. Two days after he reached that milestone, I went to his house. I could see it in his eyes when he said, 'I'm ready now.' This man had been in pain his entire life, and his body was giving up on him but he flew that body into the wreck as far as anyone could. It was just so Bob Hooverish. Bob never weakened on his conviction, his commitment, his excellence and caring for the other person first. All of us have been so fortunate to learn so much from him. The journey he lived is an example for all of us. We have the potential to live that same journey in the life we have left.

Bob wasn't a hugely religious man; he didn't want a service. But we're doing this tribute with his friends, and I think there are 1,500 people from around the world coming to Clay Lacy's hangar at Van Nuys on November 18. I've been stewing this over, and thinking of how many friends I have lost in this industry, this crazy profession. When I lose a friend in an aircraft accident, my heart hardens because it hurts so much. But when a guy takes it as far as it will go and he takes it to the edge of edges and he's gone in his sleep, I feel pretty happy for that SOB! I was standing next to Clay at the Combs Gates award at NBAA, and I said to Clay, 'You know, you're the last of the rat-packers, these iconic figures who have done so much in aviation.'

The loss of Colleen was telling. It was like he was saving all of his energy for his wife, and when she passed, he was like, 'All right. I did my job. Get me outta here.' She died in the spring, and truly Bob was saying goodbye to everybody since then. He was sicker than a dog before he went to the Reno Air Races, and I said Bob, maybe you shouldn't go to Reno. 'It'll be my 53rd time at Reno, and I'm not going to miss it if it kills me.' So he's on his way there and I call him, You in Reno? 'Well, I had a little setback; I hit one of my toes on my plane and it almost came off. I gotta get me some new shoes.'

My five-year-old grandson, Alden (he calls me Butch), thought I was the best pilot in the world until he saw The Feathered Edge, and then he says 'Well, if Butch isn't the world's greatest pilot I need to meet this R.A. Bob Hoover.' About two months ago we flew down there and Bob spent two hours with him. Here's the deal about iconic figures: it's a pain in the ass to always be iconic, but Bob knew that was his burden, his responsibility, and he never shrugged it. He knew that was his job, that people would listen to him, and that he always had to comport himself correctly. He took this responsibility with great dignity and great pride. He never let any of us down, all the way to the end.

I talked to his doctor. I was going to go down and visit him on Monday [October 24] but they put him in the hospital. The doctor calls me at 9:30 that night and said 'He's got renal failure, heart failure. He doesn't want any measures, but I promised to keep him comfortable.'

A month before, Bob had called me because his heart had stopped briefly: 'Sean, I met the Grim Reaper. All of a sudden, I was just gone. It went dark, and it was like falling off a cliff. Then my heart started and I woke back up and, OK, you're not so scary.' He didn't see angels. He met the Grim Reaper.

What made Bob tick? Putting a goal out there and achieving it. He loved the challenge. Learning everything he could. He became an accredited engineer. He came from humble means (his dad was a bookkeeper) and he would save money for flight lessons and ride his bike around the river in Nashville. His early airsickness taught him that he had to be the smoothest pilot that could ever be.

What rattled him most in his flying career? When he bailed out 30 miles from Muroc in the F-84. He can see the wreckage of the jet and he's lying in the desert in great pain with two broken legs, convinced they're never going to find him. He said he had never felt so lonely in his life. That was the lowest moment in his life until Colleen died. After her passing, I said to Bob, if you want to die, that's your choice but you've still got so much to live for. We still really need you around. A couple of days later he called and said 'I've thought about it. My lowest time was lying in that desert, knowing they weren't going to find me and I was going to die. I made it out of the desert, and I'm going to make it through this.' He decided to live vibrantly through the coming months.

What really showed the measure of the man was when the FAA did what they did to him starting in 1994. This was a low moment for Bob. He knew he was correct. But never ever, not once, in the remaining 20 years did Bob badmouth the FAA.

Two FAA inspectors said that Bob didn't follow his routine at an airshow and testified that they had witnessed incompetence. Remember, this was a time when the age-60 retirement age was coming to ground, and the FAA was reticent to go to 65. But there were airline pilots out there saying, 'Look at Hoover, flying airshows at 72 years old. We're just flying airliners.' That precipitated some FSDO manager getting a campaign rolling. Incidentally, shortly after the trial ended, those two inspectors no longer worked for the FAA.

I testified for Bob during the trial that the FAA inspectors weren't even watching him. He was so worried about my career that he didn't want me to testify on his behalf because he was worried the FAA would go after me. 'Sean, my career is over with. Even if I get my medical back, I've got only a few more years. Yours has a full wind and I don't want you doing this.' Even when his pilot medical is on the line, he still thinks of the other man first.

Let me tell you how sharp Bob was at age 72 when the FAA grounded him. Another dear friend, Leo Loudenslager, was very close to Bob. During the trial, Leo became an expert witness. Bob took him in the Shrike. and world aerobatic champion Leo said he had never flown with a more finesseful aviator in all his life: 'Bob was completing with finesse and plenty of margin for safety what, even in my wildest dreams, I would not attempt to do. He had an escape path at every point if the maneuver were to fail. Hoover is a much better aviator than I could ever hope to be.

Bob was a wonderful mentor. He gave me a reverence for not just aviation but for humanity. Bob respected his character. and everything he did reflected that. I can't tell you how many people over the years have taken advantage of Bob. He would get disappointed on a business deal, but never once did he say a foul word. He just moved on. It was more important to Bob to live vibrantly than to hold a grudge. He was a magnificent guy, which takes me back to the opening thought on what a huge loss it is, but only if we don't take some of that character and all of us be a little bit like Bob.



Bob Hoover clearly enjoying being chauffeured by fellow airshow performer Sean D. Tucker at the Salinas show in California in 2014



# MIDDLE EAST OVERVIEW

# Forecasts give little grounds for short-term optimism

by Charles Alcock

The Middle East—once one of the true hotspots of business aviation growth—is now experiencing a cooling in demand. Even the most optimistic of industry observers acknowledge that a combination of political instability and declining oil revenue have dented the industry's prospects in the region, at least for now. Trends of flat to slight decline in the region appear to be the consensus among forecasters, even if aircraft manufacturers are still trying to look on the bright side.

In its latest, and largely pessimistic, 10-year business jet delivery forecast, Honeywell Aerospace predicts annual fleet growth for the combined Middle East and Africa region of just one to two percent through the end of 2021. This is down from the 2 to 3 percent growth rate experienced over the past five years. Overall, the avionics and engine maker cut its delivery forecast by around 6 percent from 9,200 aircraft last year to 8,600 in the new forecast. (See article on page 48.)

"The recent fleet growth slowed as predicted because of political instability and a migration of aircraft from the region," reported the Honeywell forecast team. "The fleet was nearly static last year."

However, Charles Park, Honeywell's director of market analysis, did offer some grounds for optimism. "At first blush you would think that oil prices really haven't recovered to anywhere near what they were before 2014, although they have firmed up somewhat, so we did pick up some improved rates of interest out of the Gulf states this year," he commented. "The overall Middle East/Africa buying plan rate is still below the world average, but it did improve quite a bit over the 2015 reads, so that was a little surprising to me, and it's a positive surprise.'

Honeywell's survey of customers found this year that 20 percent of respondents indicated they have plans to purchase new jets in the next five years. This would mark a modest increase in the outlook compared with 2015 and 2014, but is still some measure below the equivalent projections from operators in the region in 2010-2013.

Customers' plans to replace or expand their fleets with preowned aircraft over the next five years showed a dip to 21 percent in this year's forecast. This is lower than the equivalent projections for the previous six years when the rates for the rolling five-year windows varied between 16 percent (in 2015) and a high of 38 percent (in 2011).

Overall, Honeywell sees the Middle East and Africa accounting for just 3 percent of new jet sales worldwide to traditional corporate and charter operators. This makes it the least significant region in the world, by comparison with Asia-Pacific at 6 percent, Latin America at 12 percent, Europe at 14 percent and North America at 65 percent.

The latest forecast for business jet deliveries over the next 10 years from pre-owned aircraft broker Jetcraft sees the Middle East and Africa still accounting for just 3 percent of totals. This is well behind the company's projections for North America (rising to 60 percent for this year) and Europe (rising to 15 percent). It sees the Asia-Pacific proportion

of the total falling (to 10 percent), and the same trend for Russia and the CIS (4 percent) and Latin America (5 percent).

#### Saudi, UAE Still Top

According to business aviation data specialist JetNet, Saudi Arabia and the United Arab Emirates (UAE) have consistently boasted the number one and two fleets of turbine-powered business aircraft in the Middle East and North Africa. Together, as of the end of October, the two countries accounted for 40 percent of all aircraft based in the region, a proportion that has barely changed over the past decade. Looking at the national fleet totals for 19 countries over the period 2006 through 2016, the most rapid rates of growth were achieved

between 2006 and 2010 (with increases of between 20 and 31 percent), followed by falling single-digit increases (despite the fact that 2011-2014 saw average oil prices that were roughly twice what they are now).

As of the end of October, there were 184 turbine-powered business aircraft based in Saudi Arabia—a gain of 69 percent since 2006. The UAE has achieved even more impressive growth, with its fleet size rising by 184 percent to 139.

The rest of the region is a mixed bag, including anomalies such as Iran with 45 aircraft listed (albeit, undoubtedly, an aged assortment of models because of the long-running sanctions) and Israel with 95 aircraft.

North Africa has seen considerable growth over the past decade—no doubt motivating the recent move by the Middle East Business Aviation Association (founded in June 2006) to expand its scope into the neighboring Arabic-speaking countries. Morocco now has the largest of these national fleets with 47 aircraft. Egypt formerly had the dominant fleet until political upheaval culled that country's fleet to 40 this year from 48 in 2010. Algeria's fleet has grown to 40 aircraft, while Libya's has shrunk to 15 in the wake of the continuing political crisis. Tunisia is home to just three aircraft.

Business aircraft flight activity out of the Middle East lately has been somewhat encouraging. According to Germany-based data specialist WingX, there were 5,400 flights from the region in this year's third quarter, up by 21 percent over the same period last year. In terms of year-to-date activity (as of October 25), WingX (using Eurocontrol data) tracked 13,800 flights (up by 14 percent on last year).

#### Middle East and Africa Business Fleet 2006-2016

Country	2006	2008	2010	2012	2014	2016
Afghanistan	2	1	N/A	20	32	32
Bahrain	13	19	19	17	16	15
Iran	38	39	39	41	45	45
Iraq	3	4	8	7	8	9
Israel	68	73	78	76	87	95
Jordan	13	15	25	24	28	29
Kuwait	9	14	13	19	27	31
Lebanon	11	15	19	22	24	23
Oman	5	5	33	38	13	16
Qatar	9	11	18	27	25	27
Saudi Arabia	109	123	159	170	175	184
Syria	3	3	2	2	2	2
United Arab Emirates	49	97	129	128	134	139
Yemen	1	2	4	3	5	4
Algeria	27	26	34	40	41	40
Egypt	31	34	48	45	46	41
Libya	16	18	21	20	18	15
Morocco	21	27	39	44	42	47
Tunisia	1	5	5	5	4	3
Total	429	531	693	748	772	797

The last decade has seen business aircraft numbers grow in the Middle East, with the UAE up by close to 200 percent.



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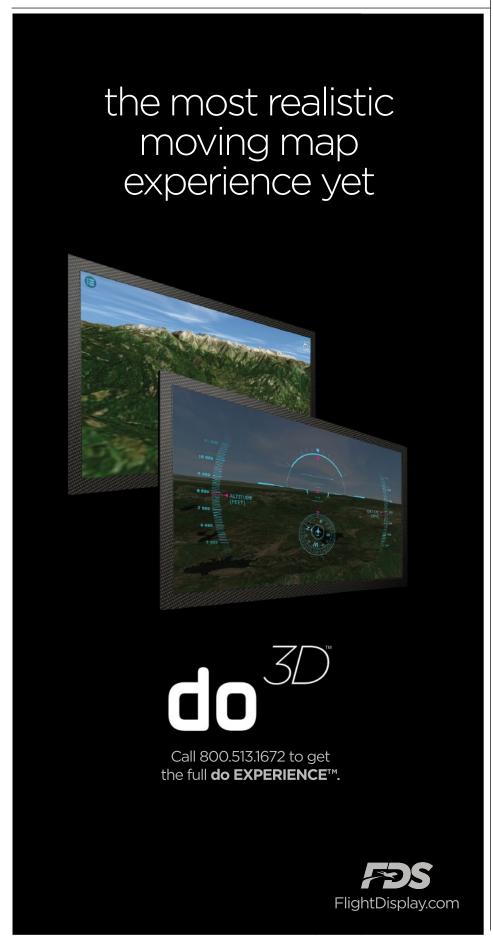
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With millions of lithium-ion-battery-powered personal devices in use, crews need to know the dangers they present and be prepared to extinguish the fire, warns one safety expert.

# Proliferation of Li-ion batteries creates growing aviation threat

by Curt Epstein

The recent recall of the Samsung Galaxy Note 7 cellphone after several fires has highlighted the threat posed by all lithium-ion battery-powered devices, and with millions of these devices in use, training crews on how to deal with this potential hazard is crucial. Since 1991 there have been 129 incidents involving lithium battery fires in aircraft (both in the air and on the ground), and 17 percent of them occurred in the last year alone, according to FAA statistics.

Industry safety expert and 25-year airline pilot John Cox, CEO of Washington, D.C.-based Safety Operating Systems, notes that the only two threats to aviation currently growing are lithium-ion battery fires and collision with drones. "Even the battery manufacturers acknowledge that their manufacturing process is not perfect and there is a one-in-10 million likelihood that the battery will self-ignite," Cox warned.

"That sounds pretty good until you know the number of batteries that we produce each year." Consider the proliferation of these devices in operation and it is easy to understand why such incidents are on the rise.

Impact damage, rapid discharge, overheating of gray-market batteries (which tend to have less stringent quality control) or even overcharging of OEM batteries by low-cost replacement chargers can all start a chain reaction. "It's all about heat; when you are discharging at a high rate or charging at a high rate you build heat," Cox told **AIN**.

#### **Significant Smoke Dangers**

While some batteries may just smoke, others can overheat neighboring cells and explode in a fireball with temperatures up to 1,000 degrees F, spraying molten copper from melted wiring and sticky gel hot enough to cause third-degree burns on contact, making it extremely hazardous, possibly even incapacitating, for the flight crew to deal with.

Even the smoke is harmful: an irritating and carcinogenic brew of burning plastic, hydrogen, oxygen and highly flammable ether vapor that will quickly reduce visibility in the cockpit. According

to FAA guidance, flight crews could experience 50 percent vision obscuration within five minutes of a fire.

Cox notes that aircraft are currently not certified for continuous smoke emergencies. Typically they are pumped full of smoke during testing and the smoke generator is then turned off to ascertain how long it takes for the aircraft's ventilation system to evacuate it. "If it clears it within a certain period of time, the aircraft is certified under Part 25," Cox said. Yet he cited a laundry list of commercial aircraft accidents in which flight crews could not see because of smoke. To ensure cockpit visibility in a continuous smoke emergency, he recommends the use of products such as VisionSafe's Evas (emergency vision assurance system).

While typical fire-suppression methods such as dry-chemical or Halon fire extinguishers may temporarily knock back the flames in a thermal runaway, they will not eliminate the threat because the overheated device will flare up again and burn until there is no more fuel for it to consume, even days later. Cox recommends dousing the device in water or other non-alcoholic liquid to lower its temperature below the ignition threshold of 180 degrees C (356 degrees F), and then securing it in an airtight containment device.

"If it is heating, particularly if you are starting to see smoke, even just wisps of smoke, it's going to go," said Cox. "The severity of the discharge is totally unpredictable, so you have to assume that it will be severe and cool it."

Cox, along with the Flight Safety Foundation, the Royal Aeronautical Society, the International Society for Safety Professionals, and the Honorable Company of Air Pilots, has submitted a document to the FAA advocating for replacement of inadequate or outdated guidelines and the adoption of guidance that better addresses the rising lithium-ion threat. Cox and the organizations want to see the implementation of specific crew training on the subject and revised protocols, as well as operators providing proper protective equipment for those who might have to deal with an exceptionally hazardous emergency.

### Ride-share site continues legal fight

by Kerry Lynch

The FAA last month asked the U.S. Supreme Court to deny Flytenow's request to review a case it filed against the agency over its flight-sharing website. Backed by the Goldwater Institute, Flytenow has asked for the Supreme Court to review its case to overturn an FAA legal interpretation that shut down the website. The Flytenow website was designed to connect pilots with potential passengers who would share expenses on pre-planned flights. It was shuttered after the FAA determined that pilots who solicit passengers using the site are "common carriers" and subject to commercial transportation requirements.

Flytenow filed a lawsuit, disputing the application of commercial requirements to flight-sharing arrangements and arguing that the website provided a means to communicate, similar to how pilots would via an airport bulletin board. But late last year the U.S. Appeals Court sided with the FAA's legal interpretations.

#### 'Common Carrier' Defined

Flytenow asked the court to determine whether the FAA "drastic[ally] depart[ed] from the common law definition of 'common carrier," but the FAA last month said the appeals court "correctly rejected" Flytenow's claims. The FAA asked the court to deny that request both on procedural grounds and also because "there is no disagreement" in the lower courts on the appropriateness of the agency's definition. The FAA further disputed Flytenow's argument that a pilot is not involved in commercial activity unless he stands to profit, saving other court cases have not backed this contention.

Goldwater attorneys Jonathan Riches and Thomas Gross reiterated their case in a Wall Street Journal editorial, saying, "Cost-sharing isn't a new thing. For over 50 years the FAA has allowed pilots and passengers to communicate about

#### **News Note**

Bliss Jet plans to start transatlantic service on shared private jets from New York La Guardia Airport to London Stansted Airport in January. Bliss Jet flights will use aircraft such as Gulfstream G450s and G550s operated by charter firms audited by Wyvern Wingman, Argus Platinum and IS-BAO, noted CEO David Rimmer, Seats on the 10- to 14-passenger charters are \$11,995 each way.

cost-sharing via email and phone as well as by posting notices on airport bulletin boards."

They restated that the agency is ignoring a key difference between commercial and general aviation:

"Commercial pilots provide services to the public for profit; Flytenow pilots merely share expenses."

NATA, however, also disputes the Flytenow contention. "Flytenow's attorneys continue

to try and use smoke and mirrors in an attempt to convince people it is now acceptable to allow the general public to 'ride share' with private pilots with potentially little flight time or training for challenging weather conditions," said NATA president Marty Hiller.

"Rather than admit that for safety reasons our laws prohibit air transportation by unlicensed operators, their lawyers argue the FAA is anti-technology and is banning pilots from using the Internet.

Hiller added that the association "will continue to educate lawmakers on how Flytenow is simply selling old wine in a new bottle to ultimately undermine the safety of the flying public."



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# Honeywell downsizes bizjet delivery forecast

by Curt Epstein

Honeywell Aerospace has lowered its annual 10-year business jet delivery forecast to 8,600 aircraft worth \$255 billion. The avionics and engine maker's 25th annual Global Business Aviation Outlook, released on the eve of NBAA 2016, is down 6 percent from last year's demand forecast of 9,200 jets.

"We continue to see relatively slow economic growth projections in many mature business jet markets," said Brian Sill, president of commercial aviation for Honeywell Aerospace. "While developed economies are generally faring better, commodities demand, foreign exchange and political uncertainties remain as concerns." For this year, the company estimates worldwide deliveries of 650 to 675 new private jets, down from last year's tally of 693. The report attributes the slide largely to fewer orders for mature models and stabilization in deliveries to fractional providers.

Honeywell forecasts a further slight decline next year before deliveries begin to pick up in 2018 on the strength of several new aircraft entering service.

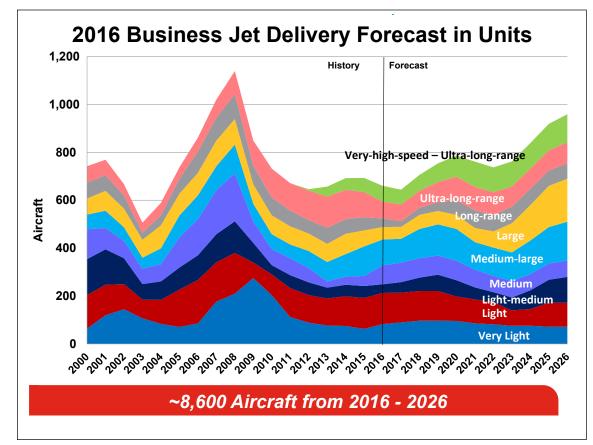
To build the foundation for the forecast, Honeywell surveys hundreds of business aircraft operators each year to gain insight into their buying plans for

the next five years. The forecast also relies on statistical models to look beyond the five-year window. "We ask them if they have a plan to buy a new airplane either to replace a current aircraft or expand their fleet in the next five years," said Charles Park, Honeywell Aerospace's director of market analysis. "If yes, we ask what model they would choose and what year they would most likely want to take delivery so we can get a timing factor on it. Usually when they time a delivery later in that five-year window there's less certainty associated

"The good news is that the operator surveys actually improved this year by several percentage points, showing pretty widespread improvement across the regions," noted Park. "Good strength in North America, improvement in Asia, improvement in Europe, even improvement in Africa/Middle East, and that's counter-intuitive given the geopolitical and economic climate that we find ourselves in."

#### **Growth in Later Years**

According to the survey, operators plan to make new jet purchases equivalent to 27 percent of their fleets over the next five years either as replacements or additions. Of those plans, 21



percent intend to purchase by the end of next year, while 18 percent expect to do so by the end of 2019. The responses suggest to Honeywell that supermidsize and larger aircraft will account for at least 85 percent of all new business jet expenditures over the next five years.

For the latter half of the forecast window, Honeywell projects a 3 to 4 percent average annual growth rate, despite the lower short-term outlook as new models and anticipated improved economic performance contribute to industry growth. Among the new models expected to be at or reaching full production around that time are the G500 and G600; Citation Longitude and Hemisphere; Global 7000; and PC-24.

"In the first five years there's a bit of a gap between airplanes that are being transitioned to new models right now, and the advent of those new models, and you have operator purchase plans that are timed in the latter half of that five-year window." Park told AIN

window," Park told AIN.

BRIC purchase plans rebounded off last year's lows, with 32 percent of respondents anticipating fleet replacements or additions. Those purchase plans, which exceed the overall world planned purchase rate of 27 percent, mark the first uptick for the BRIC countries in several years.

Brazil generated the highest new-aircraft purchase plans from a major market in the survey, while Honeywell also sees improvement in Chinese and Russian purchase plans. "It surprised me that BRIC strengthened as much as it did," noted Park. "This is probably reflecting some optimism about Chinese economic growth stabilizing and maybe moving beyond the country's current policies into a more relaxed business aviation environment."

#### Beyond BRIC

For the remainder of the Asia-Pacific market, new jet acquisition plans roughly doubled from last year's survey, with respondents planning on purchases equal to 28 percent of their fleet over the next five years.

Interest has also risen in the Middle East and Africa, despite "oil prices that have not recovered to anywhere near what they were before 2014; they have firmed somewhat, so we did pick up some improved interest rates out of the Gulf States this year," explained Park.

While Europe's purchase expectations in this year's survey rose to replace or add the equivalent of 30 percent of their current fleet with a new jet purchase in the next five years, a level in line with averages seen since 2009, the region's share of the estimated global five-year demand remained at 14 percent. The European fleet has not expanded in recent years largely because of the migration of aircraft to other regions.

Lastly, North America took a bigger share of global demand, moving up four points higher than in last year's survey, to 65 percent. New jet purchase plans rose five points in the industry's largest market, helping propel the world average of expected fleet replacement or expansion over the next five years to 27 percent.

The pre-owned aircraft market remains a concern as inventory, particularly among young business jets, has begun to creep up slowly. "The overall levels are at a reasonable and historically acceptable level: we're back down in the 10-percent range. If you look at 2009, they were as high as 16 percent," Sill told AIN. "What's noticeable is the number of recent models that are for sale. That could be a dynamic of people placing existing aircraft up for sale as they wait for the new models to come into play."

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#### PILOT SHORTAGE SEEPING INTO BIZAV, JSFIRM SURVEY SHOWS

A growing number of business aircraft operators are beginning to feel the effect of a shortage of qualified pilots, according to a recent survey from online aviation job marketplace JSfirm. The results of its 2016 Business Aviation Survey found that 43.12 percent of respondents answered "yes" to the question "Is the pilot shortage impacting your operations?" This is up from 31.53 percent in 2015, the first year JSfirm conducted the survey.

"This survey aligns with what we are seeing internally," said JSfirm manager Jeff Richards, who noted that job postings are up 30 percent this year.

The survey of more than 200 Part 91 and 135 operators also found a decline in flight hours and new and used aircraft acquisitions, when compared with last year. When asked what the estimated increase in flight hours was, 46.54 percent responded "no increase." This is up from 41.21 percent in 2015.

Those that did report increases in 2016 primarily estimated the increase to be by 20 percent or less. Roughly only 7 percent of the respondents increased their flight hours by more than that.

Those that planned to acquire new aircraft in the next 12 to 24 months dropped from 19.01 percent in 2015 to 15.32 percent. Used aircraft acquisition plans dropped slightly from 28.17 percent in 2015 to 27.93 percent of respondents this year. In addition, refurb plans are down over the next two years, falling from 34.86 percent that expressed plans for refurbishment of their existing aircraft last year to this year's survey showing 30.63 percent.

The majority of the respondents operate small flight departments with 10 or fewer employees. About half of the respondents have no more than two aircraft in the flight department and another 20.74 percent have between three and five aircraft. —K.L.



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## Bombardier lifted as Global 7000 flies

Continued from page 1

manufacturer's business aircraft fleets. Bombardier has been taking an "all hands on deck" approach to getting the Global 7000, the first of the program, to market by the second half of 2018. Unveiled in 2010, the 7000 has suffered delays as Bombardier struggled to manage cash flow among several research and development programs in recent years. The 8000, meanwhile, is waiting in the wings while Bombardier works to get the 7000 to market.

"First flight is a major gate to continue building the program's momentum, and will also trigger some much needed cash from deposits due from order holders," said industry analyst Rolland Vincent.

But despite those cash flow issues Ouellette said there has been no compromise on the aircraft. With four distinct living spaces and a 54-foot, seven-inchlong cabin, the 7000 will be larger than any other Global (and any other purpose-built business jet, for that matter), something that Ouellette said makes it "segment defining." It is also showing that it can meet the 7,400-nm range and a speed of Mach 0.925.

#### Strong Customer Base

The \$72.5 million jet has been a strong seller by all indications. Bombardier officials noted that the 7000/8000 program has contributed significantly to its backlog, which stood at \$17 billion at midyear.

While Bombardier does not disclose orders, Vincent, who is president of Rolland Vincent Associates, estimates that Bombardier has accumulated orders for about two hundred 7000/8000s, the vast majority being for the 7000. "I am sure they are keeping the 8000 on their long-term radar, but the market has clearly spoken that cabin trumps range when we are out at these numbers," he said, referring to the 8000's shorter cabin but longer range.

"The interior of the Global 7000 is pretty spectacular, and Bombardier has been demonstrating tremendous leadership in developing the cabins of the future. It has nicely leveraged its early-on experience with widebody Challengers to raise the bar in aircraft interiors." He cautions, however, that competitors are "fast following."

The Global 7000 customer base has held strong, even with the two-year delay in the program

announced last year. Bombardier has continually kept customers informed about the progress of the program, shoring up their loyalty.

#### **Flight-test Progress**

The program is "progressing well," Ouellette said. All safety-of-flight testing that led up to the first flight had been accomplished by mid-October. He noted the company had been methodical, ensuring complete ground testing to make sure that when the aircraft entered flight test, it would be "less in discovery mode and more in validation mode."

Bombardier moved FTV1, which is testing basic performance, into a dedicated hangar that focuses strictly on "everything we need to do from an experimental point of view," Ouellette said, adding, "It's a highly instrumented [aircraft]. It is loaded from tip to tail."

The program took a step forward this past spring when the GE Passport engine received certification. That also facilitated "going from discovery to validation," he said, and "gives us strong confidence...as we go into flight-tests."

In October, the Wichita-based flight-test team had been in Toronto, where the aircraft was assembled, to ease the handover into flight-test. Initial flights were to take place in Toronto, before the aircraft moved to Wichita to embark on the full flight-test program.

The flight-test program will use five aircraft. Ouellette emphasized that alongside FTV1 there has been "a lot of focus on subsequent FTVs." In fact all remaining FTVs are in various stages of production. FTV2, which will be used for engine testing, is nearly complete, with engines and landing gear installed and the floorboards beginning to close. The aircraft has already had initial power on.

FTV3, which will be used for avionics/electrical checks, has the cockpit installed, fuse-lage and wings joined and landing gear installed. FTV4, which will primarily test the interior, is also in final assembly with the wing joined and the center fuselage received. FTV5 "is on its way," added Ouellette. "It's a full pipeline."

Beyond the aircraft production, the company is taking special care to ensure that progress with the interiors matches the pace of the aircraft. With the 7000's four-zone cabin, he said, the company has a "strong focus on this program to do things differently on the interior."

Bombardier has received a complete shipset of furniture,

which Ouellette stressed "is not a mockup. It's a real one that passed flammability so it can fly." The components will undergo testing in a rig specifically designed to represent the aluminum fuse-lage of the 7000. "We reinvented the way we do this," he said. The cabinets will be installed for form, fit and function testing, including for natural movement and deflections of the fuselage. "Once that's done and we've ironed out all the

bugs, we can take that shipset and put it into FTV4 and go fly. The only thing we can't simulate on the ground is flying."

This testing is particularly important to ensure that the program remains on track for its timeline, he said, noting that Bombardier has folded "a lot of innovation into this. To meet the second half of 2018, lessons learned on the completion side have shown us that we want to

do this a year ahead."

While assembled in Toronto, the aircraft will be completed at Bombardier's center in Montreal that outfits other Globals and Challengers. Executives say they will share more detailed plans for support and maintainability as the flight-test program matures, but they have hinted that maintenance intervals will be longer than anything reached with current-production aircraft.

#### JET SCION OFFERS LOWER CHARTER RATES FOR MORE NOTICE

A new jet charter card called Jet Scion is promising preferential rates for customers who don't generally need to book flights at short notice. Flight-hour rates for the light and midsize jets offered through the U.S. company are priced at between 15 and 18 percent less if customers book with at least five days' notice instead of 24 hours ahead of time.

There are no membership fees and the minimum commitment is \$100,000. "Most jet card companies are built around the needs of last-minute flight bookers, and they are in the minority," founder Jon Mende told AIN. "With Jet Scion, the majority of customers are not subsidizing them by paying more for shorter notice periods that they don't need."

Jet Scion books flights with Argus-rated Part 135 operators that provide aircraft no older than around 15 years. In the midsize category, it offers jets such as the Citation Excel. The light category includes types

such as the Phenom 100 and 300 and the Citation CJ2. The new company is competing with jet card and membership programs such as Delta Private Jets, Wheels Up and Flight Options.

The five-days-notice flight hour rates (including taxes, fees and in-flight snacks) are \$4,600 for the light jets and \$6,300 for the midsize jets. These rise, respectively, to \$5,100 and \$6,800 for 48 hours notice and to \$5,600 and \$7,400 for 24 hours notice. International flights (mainly to the Caribbean) require a seven-day notice period with rates of \$6,250 for light jets and \$8,450 for midsize jets, and a peak day hourly surcharge of 10 percent and a daily minimum of 1.5 hours.

Since its launch this summer, Jet Scion has sold \$10 million worth of cards, said Mende. Most customers are based east of the Mississippi River and each is assigned a dispatcher to make their flight bookings.

—C.A.



#### Cirrus Vision OK'd

Continued from page 1

importantly a lot of big dreams, 32 years ago," Cirrus CEO and co-founder Dale Klapmeier said at the show. "A decade ago we announced that we were going to build a jet. Today, we are there. We are a jet company."

Customer deliveries of the \$1.96 million aircraft are slated to begin this month, and Cirrus plans to ramp up to one aircraft delivery per week next year, said Pat Waddick, Cirrus president for innovation and operations. Cirrus currently has 10 SF50s in final assembly and is already planning for SF50 production expansion in Duluth and completing the training, design and delivery center in Knoxville, Tenn.

The SF50 has a top cruise

speed of 300 knots, a maximum altitude of 28,000 feet and a maximum range of 1,250 nm at 240 knots.

The cockpit has the Cirrus Perspective Touch avionics system, based on the Garmin G3000 suite, and is powered by an 1,840-pound-thrust Williams International FJ33-5A with dual-channel Fadec. The SF50 is the first jet to be equipped with a whole-airframe parachute recovery system.

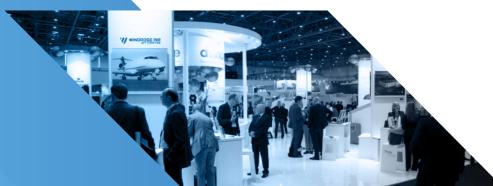
Cirrus initially announced plans for the SF50 in 2006, but the program was subject to several starts and stops as the company went through ownership changes and the industry experienced depressed delivery levels. It currently claims to hold deposits for 600 SF50s.

Initially, customers will receive

company-conducted type rating training in company-owned aircraft before a certified level-D simulator comes online during the third quarter of next year. The initial type rating course is designed to take 10 days; however, customers begin preparing for it up to 12 months in advance with a basic flight skills assessment, followed by online learning and avionics familiarization closer to the actual coursework. After completion of type rating training, Cirrus will make mentor pilots available consistent with customer needs and insurer requirements.

Cirrus is also rolling out a customer support program for the aircraft that initially will have 12 service centers in the U.S., mobile support teams and the Jet Stream ownership program.







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# European business aviation clings to signs of optimism

by Guillaume Lecompte-Boinet & Charles Alcock

Having endured a seemingly interminable climb back from the dark days of the 2008/09 financial crisis, Europe's business aviation community must view 2016 as yet another demoralizing year. Factors such as the UK's Brexit vote to leave the European Union, sluggish economic growth and rising political tension would appear to be negative undercurrents, and this mood would seem to be reflected in the latest declining bizav traffic figures from WingX Advance, which showed a 2.8-percent year-on-year decline in the month of October.

Country

But looking forward, Honeywell's recently published annual forecast (see page 48) points to a brighter future bolstered by reported operator purchase plans to acquire more new aircraft over the next five years. With 30 percent of respondents signaling buying plans, this index was back to averages not seen since 2009. Nonetheless, Europe's overall share of the worldwide jet fleet remained stalled at 14 percent (still second only to North America).

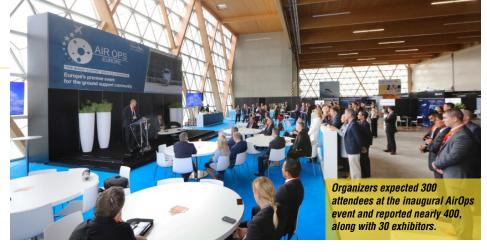
Operators and service providers gathered for the mid-October Air Ops show

2012

#### **European Business Aircraft Fleet 2006-2016**

2006 2008 2010

Country	2000	2008	2010	2012	ZU 14	<b>ZUI</b> 0
Albania	N/A	N/A	N/A	N/A	N/A	1
Austria	161	256	270	255	239	201
Belarus	1	1	1	2	2	13
Belgium	62	83	103	101	97	101
Bosnia and Herzegovina	1	2	3	3	2	2
Bulgaria	8	22	28	26	19	20
Channel Islands	N/A	N/A	N/A	N/A	N/A	1
Croatia	2	8	9	9	12	13
Cyprus	11	10	15	15	15	15
Czech Republic	21	37	55	67	77	85
Denmark	67	90	102	95	88	76
Estonia	5	9	12	15	20	16
Finland	26	35	50	49	48	30
France	330	365	424	420	410	431
Germany	490	579	666	692	660	686
Gibraltar	1	2	3	4	3	1
Greece	35	51	61	55	41	36
Guernsey	N/A	N/A	N/A	N/A	N/A	3
Hungary	5	8	8	10	15	18
Iceland	7	10	7	7	7	9
Ireland	39	40	40	24	27	26
Isle of Man	N/A	22	63	65	53	41
Italy	193	218	247	235	197	179
Jersey	N/A	N/A	N/A	N/A	N/A	N/A
Latvia	7	9	10	10	10	9
Liechtenstein	2	3	3	3	2	2
Lithuania	3	5	5	5	9	12
Luxembourg	60	71	75	91	94	91
Macedonia	2	2	2	2	2	2
Malta	1	2	14	34	72	136
Moldova	1	1	1	1	2	0
Monaco	1	3	6	1	4	6
Montenegro	N/A	5	5	5	4	3
Netherlands	59	69	92	83	77	75
Norway	43	50	55	46	42	40
Poland	14	23	38	40	38	50
Portugal	138	194	194	165	135	129
Romania	9	15	19	19	17	15
Russian Federation	51	97	143	165	186	181
San Marino	1	3	4	4	13	33
Serbia	14	16	24	25	24	22
Slovak Republic	3	14	17	20	11	16
Slovenia	10	15	16	16	10	9
Spain	155	196	183	179	160	157
Sweden	79	92	97	97	94	81
Switzerland	230	285	332	305	275	257
Ukraine	13	34	43	43	44	26
United Kingdom	423	557	673	614	545	515
Total	2,784	3,609	4,218	3,735	3,902	3,871



in Cannes, organized by the European Business Aviation Association (EBAA), exhibited a stoicism and cautious optimism that they have had ample chance to develop during the frustrations of the past decade. By some measures, Europe's industry seems to have atrophied in recent years but this negative impression isn't completely supported by data.

For instance, according to statistics from bizav data specialist Jetnet, the number of aircraft based in European countries grew by 40 percent between 2006 and the end of October 2016, to 3,871 from 2,784.

The numbers that jump out from the Jetnet statistics are those showing how Europe's highest rates of national fleet growth have been in the east. Russia—though stalled now—saw its turbine business aircraft fleet grow to 181 this year from 51 in 2006. The fleet based in the Czech Republic quadrupled in size, to 85 aircraft from 21.

In the Mediterranean, Malta has benefitted greatly from joining the European Union to become a favored base for air operator certificate holders owned by companies outside the EU. In the process, the island's fleet has risen from just one to 136 over the past 10 years.

As it prepares for the uncertainty of leaving the EU after June's so-called Brexit vote, the UK (including Scotland and Northern Ireland for these purposes) remains Europe's second largest fleet with 515 aircraft. Germany is in the number-one slot with 686 and France is third with 431.

Addressing the Air Ops Europe conference, WingX indicated that, before October's decline, aircraft utilization rates had been showing some signs of stabilization in Europe with an average increase for jets of 1 percent in the 12 months from September last year. Turboprop activity declined slightly over the same period.

According to WingX managing director Richard Koe, the more positive trend has been among light jets, which showed an increase in flight hour levels of 2.5 percent as of the end of September. By contrast, activity for large jets is static and for the midsize category is in decline. Charter flying activity was rising at 3 percent month-on-month at the time of the show.

Consulting group Rolland Vincent and Associates partnered with Jetnet to survey 12,000 business aviation professionals worldwide. The results found that 44 percent of Europeans believe that the market cycle has now reached its low point, which was around the same proportion as North American respondents with the same perspective.

More specifically asked about the anticipated outcome of Brexit, three-quarters of all respondents said that they expect this to have little or no impact on business.

In the short term, the British pound's collapse in value against the euro and the dollar has boosted the UK's industry competitiveness. "But Brexit has also caused uncertainty and hesitation over investment in Europe," commented Nick Rose, director of business aviation at London City Airport, indicating that for his company much will depend on whether or not the UK capital's position as a leading financial center is affected by the move.

"It's certain that Brexit is not good news for the business environment in Europe, which was already not great," said Dan Bull, European sales director for fuel distributor Avfuel.

Adam Twidell, CEO of charter booking platform Private Fly, echoed that sentiment and indicated that trading conditions could get harder for UK operators.

#### **EBAA Perspective**

EBAA chief executive Fabio Gamba concluded that while the business environment in Europe is far from excellent, it is not catastrophic. "The FBO market closely follows that of business aircraft in general," he stated. "For 2016 we expect to see a slight [0.5 percent] increase in traffic, with 700,000 movements."

Swissport Executive Aviation, which has six FBOs and provides handling in 22 countries, reported a 20-percent drop in Swiss traffic over the past three years and an 11-percent decline at its FBO in the French city of Nice. "That's recovered a bit lately, but we're still not back to the levels seen in 2008," said Swissport Executive vice president Rebecca Durer-Bolle. She pointed to a decline in charter demand as being part of the problem.

Another reported factor in the charter market is the largely downward impact on pricing of new online charter booking platforms that seek out empty-leg capacity. "The larger jets are doing OK, but pricing for small jets is susceptible to these booking platforms," said Jet Aviation strategic planning and new business development director Monica Beusch.

For the most part, Air Ops showgoers exhibited a glass-half-full attitude to Europe's situation. "The long-term market is still positive because the need to travel for business is not diminishing," reflected Pascal Matha, manager of the Aviapartner FBO at Nice. From his perspective, large companies may have somewhat reduced the number of flights they take, but they have not abandoned the use of business aircraft.

### Honeywell to introduce first Chinese aural cockpit alert

by Charles Alcock

Honeywell Aerospace is preparing to introduce the world's first aural cockpit alerts in Mandarin Chinese, following the FAA's recent approval of the software upgrade for its Mk XXII enhanced ground proximity warning system (EGPWS). Subject to approval by the Civil Aviation Administration of China, the modified system could enter service in the helicopters of several Chinese operators next year.

The U.S. avionics manufacturer decided to focus first on the rotorcraft segment of the Chinese market because its pilots tend not to be quite as comfortable with English as those flying larger aircraft for airlines. At Airshow China in Zhuhai in the first week of last month, several operators were said to have shown strong interest in the Mandarin language option, and one of them will be selected for the first application of the new system.

According to Andy Gill, Honeywell's Shanghai-based senior business and generation aviation director for Asia-Pacific, giving pilots EGPWS aural alerts in their own language will improve safety by reducing their cognitive workload. "We're always looking at ways we can customize products to meet local needs," he told AIN. "We have great research and development resources in China with around 500 local engineers, and among them there are some really good English speakers who helped us to make sure that from a technical point of view we used just the right words. We sought input from customers and spent a lot of time developing which Mandarin words we should use to avoid confusion.'

Now Honeywell is looking at options for expanding the use of Mandarin for other aural alerts, such as Teas, and also for text used for functions such as checklists and non-critical warnings. The company said that, in theory, it could make the same changes for any other language.

#### **GARMIN ANNOUNCES EXCEL/XLS G5000 FLIGHT DECK MOD**

Competition in the market for modern flight-deck upgrades in earliergeneration jets is heating up, with Garmin announcing an STC upgrade to install a G5000 touchscreen-controlled flight deck in the Citation Excel and XLS. FAA approval is planned in late 2018.

The upgrade installs Garmin's digital automatic flight control system with emergency descent feature, coupled Waas/SBAS approaches (PBN/RNP 0.3 with LPV/APV approach capability), vertical navigation and flight level change modes as well as optional underspeed protection and fully coupled go-around. The G5000 avionics replace the Excel/XLS's Honeywell Primus 1000

Three 14-inch high-resolution displays in landscape orientation are managed by indications are displayed on the center MFD. The displays offer Garmin's multipane layout, which can be customized by each pilot to show maps, charts, checklists, Taws, Tcas, flight plan information and weather, according to Garmin. Buyers can opt for ChartView (Jeppesen) terminal charts: Garmin's FliteCharts and SafeTaxi diagrams are standard. ADS-B OUT is also standard, as is Taws-A alerting

Buyers can add synthetic vision; Connext wireless cockpit connectivity; turbulence detection and ground clutter suppression digital weather radar; wind-shear alerting; SiriusXM weather: global weather and text/voice via Iridium satcom; active and passive traffic surveillance using Tcas II/Acas II technology; SurfaceWatch runway advisories; and Data Comm with Link 2000+



#### **AVIONICS SALES NUMBERS DROP IN** THIRD QUARTER

Through the third quarter of this year, avionics sales reported by companies participating in the Aircraft Electronics Association Market Report reached \$1,664 billion, down by 6.2 percent from \$1.774 billion for the same period last year. Third-quarter sales for 2016 were \$549 million, down 5.7 percent from last year's third quarter at \$582 million.

Twenty one avionics manufacturers reported during this latest period, and the dollar amount includes components and accessories in cockpit/ cabin/software upgrades/portables/certified and noncertified aircraft electronics; all hardware (tip to tail); batteries; and chargeable product upgrades from the participating manufacturers.

Third-quarter 2016 sales broke down to 53.2 percent, or more than \$884 million. forward-fit (installed in new aircraft) and retrofit sales of 46.8 percent, or more than \$779 million. For the first nine months of this year, North America (U.S. and Canada) accounted for 66.6 percent of sales and the remaining 33.4 percent elsewhere, according to AEA.

"It is disappointing that total worldwide sales have fallen in each of the first three quarters of the current year compared to those same time frames one year ago," said AEA president Paula Derks. "Although the U.S. market has seen the equipage pace pick up slightly for avionics installations to meet the FAA's ADS-B OUT mandate, it has not translated into an uptick in overall avionics sales. Last year, the strongest period for sales was the fourth quarter, so it will be interesting to note whether that late-year surge continues again this year."

#### **NEWS UPDATE**

#### **■ FalconEye Is First Certified Combined-vision HUD**

The head-up display (HUD) that was recently certified in the Dassault Falcon 2000S/LXS and is the first EASA- and FAA-approved application of a combined-vision system (CVS) is manufactured by Elbit. Called FalconEye in the Dassault installation, the CVS places synthetic vision (SVS) and enhanced vision system (EVS) imagery together on the HUD. FalconEye's EVS uses multispectral imagery from six sensors mounted in a camera fitted to the jet's upper nose section, and these sensors detect thermal (infrared), LED lights and other spectra.

#### **■ Ruag Aviation Receives** Falcon 2000 ADS-B Approval

The EASA has approved Ruag Aviation's STC for ADS-B OUT in the Falcon 2000/2000EX. The STC, which meets the latest DO260B standards, is for aircraft equipped with Rockwell Collins GPS 4000S and Pro Line 4 and 21 flight decks. Ruag Aviation can install the STC package at its facilities in Lugano and Geneva, Switzerland. Ruag recommends scheduling the ADS-B upgrade during the next C Check to meet the 2020 mandates in the U.S. and Europe.

#### **■ Columbia Avionics Certifies** ADS-B OUT for 560XL

Garmin dealer Columbia Avionics & Aircraft Services has added STC approval for installation of Garmin GTN series GPS/com navigators and ADS-B OUT in the Citation 560XL. This STC can include combinations of the GTNs, Garmin GTX mode-S transponders, GDL-69/A weather datalink and marker beacon receiver.

In the installation, the GTN 750 and GTN 650 provide "full autopilot-coupled Waas LPV approaches with vertical guidance," according to Columbia.

Columbia also announced that it received FAA STC approval for an ADS-B OUT package, using Garmin GTS 8000 Tcas II and GTX 3000 mode-S transponders in the Citation S550. This STC features the GTN-series navigator as the required position source for ADS-B out. Columbia expects to receive FAA approval for installation of this package in the Citation 500, 550, 560 and 560XL "later this year."

#### ■ Garmin Improves Pilot App Features

Garmin has added features to its Pilot app, which is available for both iOS and Android devices. Version 8.4.4 for iOS provides Flight Stream 510 integration, Jeppesen chart display and chart overlays, among other enhancements.

The Flight Stream 510 is an SD-card-size MultiMediaCard that installs in the card slot of a Garmin GTN-series com/navigator with no wiring changes. Available for \$1,495, the 510 contains Wi-Fi and Bluetooth wireless capability, enabling communication between the GTN 650/750 and two Apple or Android devices running Garmin Pilot.

The Flight Stream 510 enables Garmin's Database Concierge, which uses the 510's Wi-Fi capability to automatically transfer databases from Garmin Pilot to the GTN.

Display of Jeppesen charts is enabled in Version 8.4.4, and this allows users to view approach charts and arrival and departure procedures. The Jeppesen approach charts and airport diagrams can also be overlaid on the Garmin Pilot map, which is another new feature in the app and also works with Garmin's FliteCharts. - Matt Thurber

#### NEWS UPDATE

#### **AAG Gets Three More S-76s**

Sikorsky's Associated Air Group (AAG) helicopter service expanded its S-76 fleet to 11 with the addition of three aircraft. The S-76s will serve customers from the airports at Trenton and Teterboro in New Jersey and Dutchess County in New York. AAG provides helicopter service in the Washington, D.C.; Philadelphia; New York City; Hartford; and Boston markets.

#### First U.S. R44 Cadets Delivered

Robinson Helicopter recently delivered the first two R44 Cadets to a U.S. customer. Garland, Texas-based Sky Helicopters, a Part 141 flight school and Robinson dealer, took delivery of two IFR-equipped Cadets with fully integrated glass cockpits built around the Garmin G500H system, GTN 750 navigator, GTX 345 transponder with ADS-B OUT/IN, Bluetooth, Genesys Aerosystems' HeliSAS autopilot, Spidertracks real-time tracking and air conditioning.

#### X2 Heads to Air & Space Museum

Sikorsky has donated the X2 compound helicopter technology demonstrator to the Smithsonian's National Air and Space Museum at the Steven F. Udvar-Hazy Center. The rigid coaxial main rotor X2 first flew in 2008 and unofficially broke the rotorcraft speed record on Sept. 15, 2010, by flying faster than 250 knots. That year the X2 was awarded the 100th Collier Trophy "for the greatest achievement in aeronautics or astronautics in America, with respect to improving the performance, efficiency and safety of air or space vehicles, the value of which has been thoroughly demonstrated by actual use during the preceding year."

#### **■ Jail for Blade Runner**

The former chief pilot of the Nevada Department of Wildlife has been sentenced to 30 days in jail and three years' probation for purloining and then peddling nearly timed-out main rotor blades from the state's Bell 206 and pocketing the cash to pay the mortgage. Robert Anthony Lloyd sold the blades to Peregrine Helicopters for \$42,000, falsely claiming they had 2,121 hours of useful life remaining, an exaggeration of some 1,000 percent. Under a plea deal, in addition to his sentence, Lloyd reimbursed Peregrine. He may still face federal action and/or charges.

#### **■ Drunk Driver Collides with EMS Helo**

Another suspected drunk driver has ignored police barricades and plowed into an EMS helicopter picking up a patient, this time outside Gallup, N.M. No one was aboard the 2013 AS350B3, N855MB, when a 26-year-old male rammed his Jeep into the helicopter, knocking it over. The driver was charged with aggravated DWI, resisting arrest and other infractions. The landing zone had been set up to transport a patient injured in a traffic accident nearby. That patient was subsequently transported without further incident. The helicopter was registered to Guardian Flight of South Jordan, Utah, and being operated by the Air Medical Resource Group as Gallup Med Flight, A similar accident occurred in Orlando in April. The driver in that accident registered a blood alcohol content of 0.1. That crash damaged the helicopter's fenestron. - Mark Huber

### Bell 525 will certify with four test aircraft

by Mark Huber

Bell will certify the 525 using four test aircraft, and a senior Bell executive maintains the company retains confidence in the super-medium twin's original design. The program has stood down flying since the fatal crash of the first prototype, FTV1, N525TA, on July 6.

The NTSB is continuing its investigation as to why the main rotor blades struck both the tailboom and the nose during the in-flight break-up sequence that destroyed the helicopter and killed both test pilots. FTV1 was one of three 525 prototypes in the flight-test program, which at the time was budgeted for five aircraft. FTV1 is believed to have been conducting tests at or near VNE when main-rotor rpm dropped off and the main rotors significantly "departed their normal plane of rotation," according to an NTSB spokesman.

Bell is continuing assembly of the next two flight-test aircraft and beginning construction of the first several customer aircraft, according to Larry Thimmesch, vice president of 525 sales. Thimmesch said FTV4 is heavily kitted with search-andrescue equipment and more flighttest instrumentation than originally planned. It should be ready to fly early next year. FTV5 will have a lot of the oil and gas kits on it. Between those two aircraft, some 50 kits will be certified as part of the initial flight-test program. Aircraft six through nine are in structural subassembly. "We are moving forward. We understand our production configuration," Thimmesch said.

Thimmesch said Bell has been spending the downtime modifying the test aircraft to the latest production configuration and continuing non-flight testing as well as making continued progress with certification authorities in Canada, the U.S. and Europe. Bell is using its Fort Worth Systems Integration Lab to continue to work software updates into the aircraft's Garmin G5000H avionics and fly-by-wire control system. "We have 40 software packages on this aircraft and [the 525 Relentless Advanced Systems Integration Lab] is a great platform to mature them and validate the latest software drops and to integrate some of the improvements in the system," Thimmesch said. "The fly-by-wire system was mature at first flight. The inner control loops were perfect. The only thing we had to change were some of the outer loops because of some of the contour changes we made on some of the overhead cowlings" to improve airflow. He called the 525's FBW system "rock solid."

Bell is continuing design work on add-on kits that will be part of future configurations, Thimmesch said. "The only thing on the program that has not moved forward is actually flying the aircraft. Before the accident we had flown the envelope of the aircraft and understood it.' Thimmesch said Bell and the NTSB are working together "aggressively" to get the 525 back in the air. "We have a return-to-flight team working with the FAA hand in hand. That has been productive," he said.

The confidence in the aircraft within Bell is as strong as it has ever been," Thimmesch said, adding that when the NTSB concludes its investigation Bell will have "clear messaging to the industry about the helicopter."





#### **ERICKSON FILES FOR BANKRUPTCY PROTECTION**

Add Erickson to the growing list of oil-and-gas industry helicopter companies seeking financial reorganization: it filed Chapter 11 bankruptcy November 8 in the U.S. Bankruptcy Court Northern District of Dallas, listing \$561 million in debt. The move comes after Portland, Ore.-based Erickson missed scheduled November 1 debt interest payments and days after the resignation of former chairman Quinn Morgan from Erickson's board. Companies controlled by Morgan bought Erickson in 2007, took it public in 2012 and engineered its 2013 acquisition of Evergreen Helicopters and Air Amazonia, which loaded down Erickson with \$355 million in debt at the same time the global oil-and-gas market was collapsing.

Erickson subsequently lost major defense support and a critical fire-suppression contract from the U.S. Forest Service, leading it to post large quarterly losses over the last several years. Erickson characterized the bankruptcy filing as "consensual" and said the company is negotiating to receive \$60 million in debtor-in-possession financing from lienholders to finance continuing operations as it navigates court-supervised reorganization from which it plans to emerge next year. Erickson employs 700 people worldwide and operates a diverse rotorcraft fleet that includes the S-64 AirCrane, for which it holds the type certificate.

The \$60 million debtor-in-possession financing "will provide sufficient liquidity to fund operations in the ordinary course during our restructuring," said Erickson CFO David Lancelot.

Erickson president and CEO Jeff Roberts said, "Unfortunately, Erickson is not immune to the numerous business challenges currently facing the helicopter industry that have placed downward pressure on operating results and asset values. Operational integrity and safety continue to be our top priority, and this restructuring will in no way interfere with our performance and commitment to customer satisfaction. We have examined a number of alternatives and are convinced that a formal restructuring is the most effective path forward. We anticipate a controlled process that better positions us to serve our customers. We appreciate the work of our largest creditors, board, investors and employees who are committed to transparent and timely communications with our customers, prospects, vendors, suppliers, partners and key regulatory agencies."

# GE begins full Fate engine tests

GE Aviation has begun full testing of a new generation of rotorcraft engines, initially for the military but possibly with implications for the civil market. The Future Affordable Turbine Engine (Fate) program is a partnership between GE and the U.S. Army. The engine is designed to meet some aggressive goals, among them a 35-percent reduction in specific fuel consumption, 80-percent improvement in power-to-weight ratio, 20-percent improvement in design life and 45-percent reduction in production and maintenance costs relative to currently fielded engines. The technology advancements are expected to improve hotand-high payload and performance and extend range and endurance for existing and new rotorcraft.

The first full engine test follows the completion last year of Fate compressor, combustor and turbine rig tests. The combustor tested makes extensive use of ceramic matrix composites (CMCs) that withstand high temperatures and weigh less than conventional materials. The Fate turbine rig was built using additive manufacturing techniques for faster construction and lower development costs. These rigs followed Fate inlet particle separator tests completed in 2014.

In 2011, GE was awarded the Fate cooperative program to design a 5,000- to 10,000-shp turboshaft that demonstrates technologies applicable to existing aircraft and future rotorcraft requirements such as the Department of Defense's Future Vertical Lift (FVL) program. GE maintains that these technologies can be incorporated into new and existing engines, including the GE 3000, which was demonstrated in the Army's Advanced Affordable Turbine Engine program, or upgrades to the T700 (which powers the Sikorsky UH-60 and the Boeing AH-64), or the T408 in the Marine Corps CH-53K heavy-lift helicopter.

"With the T408, GE3000 and Fate programs, we have a multigenerational product plan that shares technologies across our military rotorcraft efforts, incorporates commercial engine technologies and fuses them together in a low-risk manner to drive high-performance and affordable engines applicable to both military and commercial aircraft," said Jean Lydon-Rodgers, v-p and general manager of GE Aviation's military systems operation. -M.H.

#### **SAFETY TEAM IDS TOP FATAL HELO ACCIDENT CAUSES**

Loss of control in flight, unintended flight into IMC and low-altitude operations accounted for half of the 104 fatal helicopter accidents in the U.S. between 2009 and 2013, according to an analysis by the United States Helicopter Safety Team.

The USHST has begun developing safety recommendations to address these three causes. A recommendations list and action plan will be completed by early next year. The USHST has also begun to enhance its outreach to key helicopter industry groups where the largest number of fatal accidents occurs: personal/private sector, helicopter air ambulance, commercial helicopter operations and aerial applications. Ad hoc outreach groups from the USHST will identify points of contact within these industry segments, engage key populations in seminars and industry meetings, and attend conventions and gatherings relevant to these identified sectors. Outreach will be a continuing process for the next 3.5 years.

From 2016 through 2019, the USHST is focusing sharply on reducing fatal accidents within the U.S. civil helicopter community. The industrygovernment partnership is targeting a reduction by 2019 to 0.61 fatal accidents per 100,000 flight hours. The fatal accident rate goal for 2016 is 0.73 or lower. For the first six months of 2016, the fatal accident rate is 0.54, 47 percent better than it was in 2013 but up slightly from the rate of 0.52 for all of last year.



# Battery-powered R44 tested for organ delivery

by Mark Huber

Tier 1 Engineering flew a battery-powered, manned Robinson R44 in September at Los Alamitos Army Airfield, Calif. The flights were made under a special airworthiness certificate in the experimental category issued by the FAA's Los Angeles MIDO. The flights were part of a project under contract from Lung Biotechnology PBC to produce an electrically powered semi-autonomous rotorcraft for organ delivery (Epsarod). They were piloted by Ric Webb of OC Helicopters.

Over the course of several flights between September 13

and 21, the modified R44 performed hover, hover taxi and a record five-minute cruise flight to 400 feet altitude with a peak speed of 80 knots.

"I'm very pleased to achieve this historic breakthrough in aviation," said Glen Dromgoole, president of Tier 1 Engineering. "Never before has a conventionally manned helicopter performed a vertical takeoff, cruise and landing solely on battery power, and we are thrilled to have further achieved 400 feet altitude and 80 knots during our first full test flight."

The Tier 1 Engineering team designed and integrated all of the helicopter sub-systems, which included 1,100 pounds of Brammo lithium polymer batteries, twin electric motors and a control system from Rinehart Motion Systems. The five-minute flight on September 21 drained approximately 20 percent of the battery energy.

Tier 1's is not the first electric helicopter project. In 2011 France's Solution F achieved a two-minute flight in a manned ultralight untethered electric helicopter. The flight was piloted by Pascal Chretien, an aerospace engineer from the firm. In 2010, Sikorsky unveiled the Firefly project, a modified Sikorsky-Schweizer S-300C fitted with a U.S. Hybrid Technologies electric motor and two lithium ion battery packs, capable of flying for 12 to 15 minutes.

The Tier 1 Engineering R44 carries 1,000 pounds of lithium batteries.

Lung Biotechnology PBC intends to apply the Epsarod technology to distributing manufactured organs for transplantation to major hospitals with much less noise and carbon footprint than current technology. Tier 1 Engineering is an aircraft design and development company with

operations in Costa Mesa, Calif., and Victoria, Australia. Major clients are BAE Composites, Goodrich Aerostructures, Zodiac Aerospace, Composite Horizons, EAM Worldwide, Mecaer Aviation Group, ATK Aerospace, Panasonic Aviation, Janicki Industries and Lung Biotechnology.

### Bell streamlines ops at TN center

Bell Helicopter's new maintenance and completion center became fully operational earlier this year in Piney Flats, Tenn. The 150,000-sq-ft facility handles the company's light, intermediate and medium helicopter lines—the 206L4 through the 412EPi—under one roof, employs 130 direct labor customizing technicians and 34 engineers and is located across the street from Bell's Aeronautical Accessories components company.

Bell provides regular service for 85 regional aircraft customers in Piney Flats and is also the company's component repair and overhaul facility as well as its completion facility for aircraft from its Mirabel, Quebec plant for aircraft delivered worldwide.

#### Lean Organization

"The positive thing with this building is that all of our customizing activities are under one roof—including all the back shops, machining and tooling areas—so the technicians can stay in that single area without having to move around campus to do any special processing," said Chad Nimrick, general manager for Bell Helicopter's U.S. sites.

"We could also lay out the facility in a truly lean customizing organization. Before, we used our existing maintenance facilities and there were some limitations there. The aircraft were tightly stacked together and there wasn't as much room around the aircraft. Today we have a lot more room and all of the components that were removed from the aircraft and all the parts that will be installed on that aircraft

are located in that bay. The technician essentially doesn't have to leave that workspace," he said.

The Piney Flats facility has large back shops and Wi-Fi throughout, allowing employees to connect to its enterprise resource planning system (ERP). "We integrated an ERP system campus wide," Nimrick explained. "Now we can order a part from Aeronautical Accessories in the customizing environment and the order goes into a single procurement organization and there is essentially no paperwork. That is probably one of the biggest benefits," he said.

Customers who choose to have their helicopters completed, refurbished or modified at Piney Flats benefit from its proximity to Aeronautical Accessories and the shared intellectual property between it and Bell as well as Bell's familiarity with the avionics packages available for its helicopters, Nimrick said. "All of our processes, all of our certification, all quality, all airworthiness, all engineering can be done in one location and we have access to all of the intellectual property and access to the functional Bell helicopter engineering organization and the follow-up flight test and [FAA] ODA [organization designation authorization] organization all housed under one organization. We don't have to go out and get the engineering data; we have

access to it here. We don't typically ask for third-party integration but when we do we already have all of our contracts already in place, so it is a smooth transition for the customer."

Piney Flats can handle a variety of projects. "We can basically do anything the customer wants, from a basic private aircraft to a complex law enforcement aircraft. Approximately 70 percent of the aircraft we complete here are delivered outside North America, so we have a large international customer base. We are proud of that because there is a lot of work in getting particular features certified in different countries," Nimrick said. Customers in North, Central and South America typically pick up their aircraft and fly home, while more distant deliveries ship out of seaports in Baltimore or Los Angeles or via air freight.

Most customers make their buying decisions before visiting Piney Flats with the help of Bell demonstration or other customer aircraft or via computerized renderings generated by the Bell sales team in Fort Worth. However, there is a "mini design studio" in Piney Flats where they can do look and feels or leathers, veneers and other materials.

Additionally, the old 429 maintenance hangar is being converted into a dedicated customer acceptance and delivery facility with private offices and restrooms, secure high-speed Wi-Fi, fax machines and break areas. The build out will be completed early next year. —M.H.

#### AW169 ORDER BOOK BUILDS

Leonardo has continued to build sales for the AW169 medium twin with orders that have pushed the total to nearly 150. The latest contracts are for five from Lease Corporation International and Helikorea for delivery late this year and next and Specialist Aviation Services for six more AW169s for delivery through 2019, starting next year.

The two Helikorea AW169s will be configured for EMS and will join a military and parapublic fleet of 50 AW helicopters currently flying in the Republic of Korea. The three LCI helicopters are slated for delivery in the middle of next year. LCI has already taken five AW169s and will take delivery of 15 medium-category AW helicopters this year. The SAS helicopters will be used for EMS missions in the UK and for wind farm support and will bring the number of AW169s ordered for UK customers close to 20.

The new sales were announced against a backdrop of sharply overall lower helicopter

sales and disadvantageous foreign exchange rates that combined to contribute to a 10-percent revenue drop at parent company Leonardo-Finmeccanica for the quarter ending September 30. The industrial defense conglomerate and custodian of the AgustaWestland brand said quarterly revenue dropped to  $\{2.62 \text{ billion from } \{3.028 \text{ billion} \}$ 



The latest round of orders for the Leonardo AW169 pushes the order book for the medium twin to nearly 150.

from the year-ago period and had declined to €8.03 billion from €9.001 billion for the first nine months of the year from the same year-ago period.

Reflecting continued softness in both the military and civil helicopter sectors, new helicopter orders fell to €580 million for the quarter from €624 million from the year-ago period and dropped to €1.538 billion for the first nine months of the year from €2.881 billion from the year-ago period. The helicopter order backlog has also fallen, down to €9.669 billion for the first nine months of this year, from €11.7 billion from the year-ago period. Helicopter earnings margins have declined, too, slipping to 9.7 percent for the quarter and 11.1 percent for the year. Overall, Leonardo-Finmeccanica saw its earnings margin for the first nine months climb to 9.3 percent and its backlog swell to €35 billion, thanks to a €8 billion order from Kuwait for 28 Euro-



### UK government approves Heathrow expansion

by Gregory Polek

In what it called a major boost for the British economy, the UK government in late October announced its support for a new runway at Heathrow International Airport, effectively ending decades of debate about how to solve capacity shortages at one of the world's most important hubs for international air transport. The next phase of the plan will take the form of a draft "National Policy Statement" (NPS) for consultation, said the government in a statement.

The government's decision on its preferred location, which will be consulted on in the new year, underlines its commitment to keeping the UK open for business now and in the future and as a hub for tourism and trade," it said. "Today's decision is a central part of the government's plan to build a global Britain and an economy that works for everyone. This is just one of a series of major infrastructure investments that will create jobs and opportunities for every part of the UK.'

The UK estimates that a new runway at Heathrow will generate up to £61 billion in monetary benefit to passengers and the wider economy. Ministers say they expect the creation of up to 77,000 new jobs over the next 14 years. Meanwhile, the airport has committed to creating 5,000 new apprenticeships over the same period.

"A new runway at Heathrow will improve connectivity in the UK itself and crucially boost our connections with the rest of the world, supporting exports, trade and job opportunities," said Transport Secretary Chris Grayling. "This isn't just a great deal for business; it's a great deal for passengers, who will also benefit from access to more airlines, destinations and flights."

In a gesture to opponents of the third runway, Grayling added that the government would open the plan to "full and fair public consultation" and that it would allow it to proceed only "on the basis of a world-class package of compensation and mitigation worth up to £2.6 billion" designed to ensure community support, insulation and respite from noise.

As part of the agreement with Heathrow Airport, the government said it will propose the introduction of a six-and-a-half-hour ban on scheduled night flights and make more stringent night noise restrictions a requirement of expansion. It said it also proposes new legally binding noise targets, which it insists will encourage the use of quieter airplanes and a more reliable and predictable timetable of respite for those living under the final flight path. The airport has also pledged to provide £700 million for noise insulation for residential properties.

Meanwhile, the Airports Commission, chaired by Sir Howard Davies, said it expects the new runway not only to add capacity but also to stimulate competition and reduce airfares despite its private funding. "It will be for the Civil Aviation Authority [CAA], as the independent industry regulator, to work with Heathrow Airport and airlines operating at the airport on the detailed design and costs to ensure the scheme remains affordable," said the government statement. "The government expects the industry to work together to drive down costs to benefit passengers. The aim should be to deliver a plan for expansion that keeps landing charges close to current levels."

### **Bombardier C Series** makes Chinese debut

by Reuben F. Johnson

Bombardier made its mark in the Middle Kingdom at the 11th China International Aviation and Aerospace Exhibition in Zhuhai by showcasing the C Series CS300 for the first time ever at the biennial show. The aircraft on display last month in Zhuhai was the program's second flight-test aircraft, but bears the livery of the aircraft's first operator, Air Baltic.

The company's "footprint in China continues to grow with 150 aircraft in service at present," Bombardier Commercial Aircraft vice president of sales, marketing and asset management Colin Bole told a press gathering at the Zhuhai Aerodrome during the early November event. "Overall the demand for passenger/cargo aircraft in China is projected to be second only to North America in the coming years. Forecasts predict 2,450 aircraft in the 60- to 150-seat rangethe segment of the market that we at Bombardier cover—in the next

Bole reported "a substantial backlog" for the C Series, citing specifically an order and options for 75 CS300s from Air Canada and an order for 125 CS100s-convertible to CS300s-from Delta Air

Lines. "We have secured orders for 300 of this model, which is optimal for launching a new design of this type," he said.

Bombardier believes China will account for 15 percent of the total world demand for 100- to 150seat aircraft over the next 20 years. "The Chinese government wants to make air travel available to all its citizens, with a major emphasis on the regional market," noted Bole. "Many people are living in Midwest regions of China, and they have to take regional flights to gain access to major air travel hubs. This government support—along with the rapid plans for overall economic and infrastructure modernizationwill prompt significant growth in these regional markets."

Bombardier claims the CS100 and CS300 can operate more effectively than other models when flying Continues on next page ▶

#### **NEWS UPDATE**

#### **■ MH370 Report Suggests Steep Dive**

A new report issued on November 2 by the Australian Transport Safety Bureau updating the progress of the investigation into the disappearance of Malaysia Airlines Flight MH370 indicates that the most recent analysis of satellite data shows a "high and increasing rate of descent" as the Boeing 777 plunged into the Indian Ocean, effectively discounting theories of a controlled descent. Separately, analysis of debris from MH370 that washed ashore in Tanzania indicates that the wing flap remained in its retracted position when it broke from the airplane, further debunking theories that the pilots tried to ditch the jetliner as it approached the water. Meanwhile, drift analysis based on recovered debris has further narrowed the area of the likely crash site in the southern Indian Ocean. Scientists continue their drift analysis work and expect to refine their results before the investigation ends.

Australian authorities said they expect crews to finish their 46,000-square-mile search early next year, at which time they will officially suspend the effort if no new evidence points to a specific location of the aircraft.

#### **■ UPS Orders 14 Boeing 747-8s**

Boeing's slow-selling 747-8 received a huge boost in late October with a firm order for 14 freighter versions of the big quad-jets from UPS. The contract, which includes options for 14 more 747-8Fs, raises the program's order backlog to 29 from 15 and potentially extends the type's production run for better than two years at the current rate. Boeing now builds six 747-8s per year.

The 14 new aircraft will be delivered between next year and 2020. UPS said the 747-8s will allow it to begin a "cascade" of aircraft route reassignments meant to add capacity to the company's busiest routes, optimizing cargo volume beyond the effect of adding new jets.

#### **■** Boeing, Comac Agree To Extend **Environmental Work**

Boeing and China's Comac have agreed to expand their collaboration in the field of so-called sustainable growth of commercial aviation. The agreement, signed at last month's Air Show China in Zhuhai, builds on an initial agreement signed in March 2012 under which they have engaged in research on biofuels and air traffic management efficiency.

Under the new agreement, the companies will further collaborate on technologies dedicated to sustainable aviation fuel; ATM technologies and applications; environmentally sustainable manufacturing, including recycling of materials; technologies aimed at creating an environment in aircraft cabins more suitable for aging populations; adopting new standards in energy conservation and emissions reduction; and workplace safety improvements during cabin and ground operations.

Separately, Boeing and Comac continue to advance plans revealed last year to open a joint venture facility in Zhoushan, China, to install interiors and paint 737s before delivery to Chinese customers. The timing of the plant's opening and first deliveries remains subject to final agreements with the Chinese government and Comac. - Gregory Polek

### **UAC** and Comac to team on widebody

by Reuben F. Johnson

Russia's United Aircraft Corporation (UAC) and the Commercial Aircraft Corporation of China (Comac) will form a joint company to produce a new widebody dubbed the C929, a joint Russian-Chinese delegation headed by Russian Minister of Trade and Industry Denis Manturov announced last month at the China International Aviation and Aerospace Exhibition in Zhuhai.

The delegation also unveiled a scale model of the C929 design concept carrying both the UAC and Comac logos on the forward fuselage. Both Russian and Chinese representatives present also made brief statements from the center of Comac's Olympic-size stand in the middle of the main airshow exhibition hall, most of which were rendered inaudible

by the din of the flying display at the aerodrome.

The exhibition, more commonly known as Airshow China, presented many new programs this year. However, almost all the programs from Chinese industry remain obscured by a lack of detail about their actual status or whether they even remain active, making the C929 one of the few Chinese programs of record and with a concrete set of timelines. Russian aerospace officials in Zhuhai called the announcement "a necessary first step toward formalizing the status of the project."

"Work has already been under way to design this new airplane; it continues up to today and the different entities understand their responsibilities," one UAC official told AIN. "What will now

happen is that a joint company to run the project will officially be registered, with Comac and the Russian side each assuming partial ownership."

Schedules call for the 280seat widebody to enter service in 2027, some two years later than the partners had planned when they released preliminary information early last year.

Russian commentators familiar with the two nations' industries said that the program will support efforts to revive Russia's flagging commercial aerospace sector. At the same time, Comac will receive the benefit of a large body of Russian experience in airliner design and materials development, specifically those needed for large capacity loads but within limitations on empty weight.

"The Chinese, of course, have unlimited resources to throw at this program and have been expending them at a considerable rate," said a representative from one of the component companies that compose UAC. "Those who make comparisons between their push to create an airliner industry in this country and the 1960s' U.S.-USSR race to the moon are not exaggerating.'

The C929 announcement comes amid questions about when Comac's other major program, the single-aisle C919, will fly. Previous plans called for the airplane to fly by year-end, but officials have now pushed back that projected date to some time next year.



Production next year is set to slow to seven per month.

### Critical months ahead for Boeing and Airbus

by Gregory Polek

Boeing and Airbus each face their own sort of challenges leading to the end of 2016: the U.S. airframer looks to win enough 777 sales campaigns now under way to maintain that model's production rates; and the European company scrambles to accelerate deliveries to meet its target of 670 and last year's earnings tally of €4.1 billion.

During the third-quarter earnings call with analysts in late October, Boeing CEO Dennis Muilenburg again raised the prospect of a pullback in 777 delivery rates in reaction to continuing market "hesitation," notwithstanding October's deal with Qatar Airways, which raised this year's net order count for the existing 777-300ER to 16 from six. Now building 8.3 of the widebody twins per month, Boeing has already announced a rate reduction to seven next year to compensate for weakening demand for the legacy 777 as the company prepares to transition production to the new 777X.

Muilenburg said the company would need to win several more campaigns over the coming months to maintain the sevenper-month production rate, which effectively translates to a 5.5-airplane delivery rate with its plan to "fire blanks" down the line as part of a "Lean" implementation and dedicate some airplanes to 777X flight-testing. He assured analysts that any further cuts would not go beyond "one or two" airplanes per month, meaning the company doesn't intend to drop below a delivery rate of 3.5 per month in 2018.

The CEO noted that assuming a continuing delivery rate of 5.5, Boeing has already sold 85 percent of its slots for 2017 and 60 percent in 2018. "We painted a number of scenarios around

that baseline for the future," he said. "One of those scenarios would be to take that baseline plan and drop it by two aircraft a month in 2018. If we were to do that, with no additional sales, we're already more than 90 percent sold out against that profile, that skyline, in 2018.

#### **Airbus Plans**

While Boeing considers the prospect of slowing production, Airbus faces pressure to complete enough airplanes in the fourth quarter to meet delivery goals for this year. The company must manage heavily "backloaded' A350 and A320 production lines as it continues to struggle to unravel kinks in the supply chain.

To meet this year's 50-aircraft delivery goal for the A350, Airbus would have to ship 24 airplanesnearly as many as it has delivered since Oatar Airways took the first production aircraft in December 2014. Speaking during his company's third-quarter earnings presentation, Airbus Group CFO Harald Wilhelm nevertheless expressed encouragement with the progress Airbus made on the A350 program in late summer/early fall.

Further challenges involve the A320neo, more than 20 of which awaited installation of their Pratt & Whitney PW1100G engines at the end of the third quarter, said Wilhelm. Although Pratt & Whitney has found a solution to the "rotor bow" problems that led to longer than acceptable restart times, PW1100G deliveries remain behind schedule, leaving Airbus with a disproportionate delivery undertaking for the fourth quarter and the prospect of further backloading next year.

In all, Airbus plans to deliver 670 airplanes by the end of the year, more than 200 of them in the fourth quarter alone.



### C Series makes Chinese debut

Continued from preceding page

from challenging airports and in climatic conditions in locations like Lhasa, Tibet. "The aircraft will also carry more cargo than any other model in its size or class," said Bole, who made note of Bombardier's flexible cabin configuration, which allows for

40 percent more carry-on luggage than its previous models.

He and other Bombardier officials asserted that the CS100 and CS300 address a market that the company's competitors do not. Bombardier's models do not compete headto-head with current indigenous Chinese programs such as the Comac C919, because the Canadian aircraft are smaller. "[The C919] could be a fine



Bombardier projects a 20-year demand in China for 2,450 airplanes in the size category occupied by the CS300.

aircraft, but the CS100 and CS300 will act as complementary aircraft" for any potential C919 applications, said Bole.

Separately at Zhuhai, Bombardier revealed Industrial Bank of China's leasing arm, CIB, as the customer for 10 CRJ900s, the order for which it previously made public under the condition the customer would remain undisclosed. One of the company's other customers, Chongching-based China Express Airlines, concentrates on service to China's small to medium-size cities.

Analysts of China's market told AIN that if Chinese homegrown aircraft programs fail to produce useful or practical solutions on time, then firms like Bombardier will reap the benefit with an ability to offer an off-the-shelf product that satisfies a need in the region. Moreover, Bombardier maintains a current and expanding infrastructure in the country to support its product.

### **Letters** and Opinions

#### **BOEING'S DEPARTURE FROM WICHITA**

In "Despite economic uncertainty, Wichita GA continues to evolve" (AIN, October, page 1) Kerry Lynch made the statement that "Since the downturn...and Boeing has moved manufacturing out of the city." This, of course, is totally incorrect. Boeing sold its manufacturing operation in Wichita in 2005 to what became Spirit AeroSystems along with 90 percent of its workers. This, of course, was the commercial aviation division that at that time was mostly manufacturing components for Boeing airliners, but it included most of the 737 as well as major parts of the 747. Boeing was mostly doing conversion and modification work, which was dwindling every year until the final closeout in 2015 when they were down to fewer than 250 employees, many of whom moved to do similar work in Oklahoma City and San Antonio.

I am certain that Wichitans made similar noises when Stearman was sold to United Aircraft and later became Boeing Wichita. Stearman has gone; woe betide Wichita. It seems that Boeing's exit from Wichita has been mischaracterized by many who should know better.

> John M. Davis Wichita

Lynch responds: I agree, that was poorly worded. Boeing moved out, but it was military modification and support that it took with it. As you no doubt are well aware, that decision, announced in 2012, was a major one for the city because it involved 2,100 jobs at a time when the city was trying to rebound from the thousands already lost at the general aviation manufacturers. It also drew ire from state and local leaders, who believed they had expended political capital to back military program awards for Boeing. Those jobs whittled down over the next three years as they went to Oklahoma City, San Antonio and Seattle. Boeing was once the largest aviation employer in the state, providing 35,000 jobs. But none of that changes the fact that I linked Boeing's decision to leave the city "after the downturn" to "manufacturing."

#### **RENO REMINISCENCE**

I enjoyed Nigel Moll's article on the Reno Air Races (AIN, November, page 64). It reminded me of a note I sent out a few years ago at Christmas...

Several weeks ago while searching some old files I found a folded brown paper bag. On the bag was the recipe for Reno Air Race Punch, written and given to me by one of the legendary Air Races executives who had been involved with the event since the 1970s, about 10 years after they were started in 1964. I failed

to register his name. I was there exhibiting a business jet I had for sale.

The legend behind the punch is that in the early swashbuckler 1960s, on the evening before the actual flying races were to start, all participants and crews would assemble at the hangar for a few good luck and good wishes beverages. The regaling, bragging and boasting about great moments of flying heroics were told and enjoyed by all, as only highperformance aircraft jockeys can relate...when well oiled. The secret was to get your competitor to hoist just one too many so that tomorrow's decisions during the race might be done through a haze and with reactions just a fraction of a second slower.

To mix the punch, legend had it they would take a 55-gallon drum that previously held engine oil, put in a couple of gallons of avgas and have a line boy swash it around for a while to remove the oil residue. Then it would be hosed with water and declared sufficiently sanitized for mixing Reno Air Race Punch.

Here is the recipe as written on the paper bag.

1 quart Maraschino cherries

1 gallon rum

3 quarts red wine

2 pints gin

3 quarts strong tea

1 pint brandy

1 lb. brown sugar

1/4 pint Benedictine

3/4 quart orange juice

3/4 quart rye whiskey 3/4 quart lemon juice

This should be mixed 24 to 48 hours before the party and allowed to blend. On the evening of the party, add several large blocks of ice. Must be blocks because small cubes or crushed ice will dilute the elixir. Top it off with two or three bottles of chilled Champagne just as serving begins. This makes 64 eight-ounce cups of punch with no ice in the cup; or 128 cups with ice cubes in the cups.

Very tasty. More lethal than Long Island Iced Tea. After three cups the engine sounds the following morning are delightful. It appears to be a modified version of Artillery Punch, but no one knows who created the mod to become Air Race Punch...likely it is just what was available that first year.

I entrust this to you so that the legend and the authentic recipe are preserved. Enjoy.

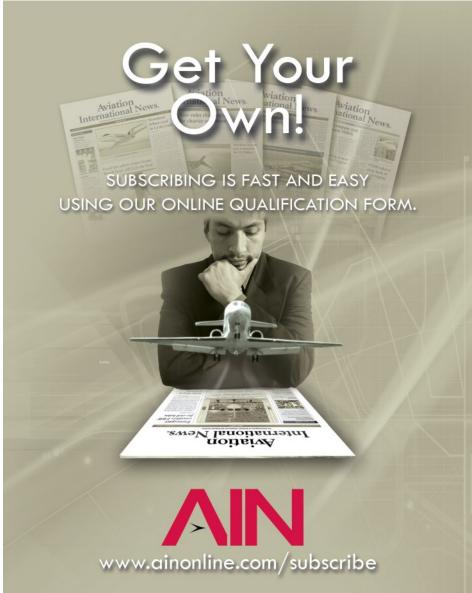
> W. Barry Smith Texas

#### Correction

In Reno Air Races (AIN, November, page 64), author Moll wrote that Sanders Sea Fury #114 Argonaut is powered by a Wright R-3350, when in fact the engine is a P&W R-2800 ("600 pounds lighter and \$80,000 cheaper," says Dennis Sanders). And at the event this year Brian Sanders was flying Dreadnought and Dennis was flying the Centaurus-powered #924.







#### **Maintenance News**



Jet Aviation St. Louis recently added Brazilian-registered aircraft to those it can maintain and modify.

### JET AVIATION ST. LOUIS GETS ANAC MAINTENANCE NOD

Brazil's National Civil Aviation Agency (ANAC) named Jet Aviation St. Louis an approved maintenance organization for aircraft registered in the country. Last month's certification announcement followed an on-site audit of the facility by ANAC officials earlier this year. The St. Louis location offers in-house design and engineering departments, on-site cabinetry, upholstery, composite, avionics, sheet metal and paint shops.

"This means we can immediately begin performing maintenance, modifications and repairs on aircraft registered in Brazil, which has been one of the fastest-growing aviation markets in the world," said Stan Wierciszewski, the location's senior manager for quality.

The facility at St. Louis Downtown Airport also carries maintenance approval from the EASA, as well as from agencies in Canada, Mexico, Aruba, Australia, Bermuda, Cayman Islands, Isle of Man and Switzerland. It is an Embraerand Gulfstream-authorized service center, as well as a Dassault Falcon and Hawker center of expertise. It is also an authorized service center for GE, Rolls-Royce and Honeywell turbine engines.

#### GENTEX WINDOWS DIM ELECTRONICALLY

Aircraft window manufacturer Gentex has unveiled enhanced electronically dimmable windows providing high-speed transition between clear



and dark; a new ultra-dark; low-end transmission; thin-film coating to eliminate harmful IR and UV light that can fade and damage interior fabrics; and lower maintenance and operation costs than traditional shades, according to the Michigan-based manufacturer.

The technology energizes an electrochromic gel placed between two sheets of conductive glass and provides Bluetooth-compatible wireless control through personal electronic devices or the aircraft cabin management system. The dimmable windows premiered on the 787 Dreamliner and King Air 350i.

### HEARST TO ACQUIRE MX TRACKING FIRM CAMP SYSTEMS

Media, information and services company Hearst is acquiring aircraft maintenance tracking provider Camp Systems from private equity firm GTCR. Merrimack, N.H.-based Camp said it serves 19,000 aircraft, 30,000 engines and 1,300 maintenance facilities globally. Terms were not disclosed, and the transaction is expected to close by year-end.

Hearst said the acquisition continues its diversification into data and information-based companies. It noted that Camp's tracking software "serves an essential market need" since business aircraft owners require maintenance tracking software to comply with global regulations and guidelines, ensure aircraft safety and improve operating efficiency.



Passengers can control the Gentex windows' opacity through their electronic devices or the aircraft's CMS.

### ST. CROIX-BASED BOHLKE EARNS PART 145 STATUS

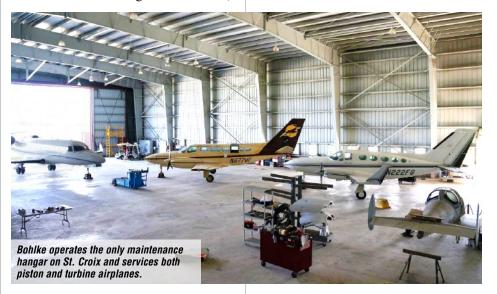
St. Croix-based FBO Bohlke International Airways has received FAA Part 145 certification for its repair station. The family-owned company, established in 1959, also operates a Part 135 charter fleet. "There is just more of a need to have this in the islands," said company president William "Billy" Bohlke. "It's baby steps first and then we can grow into ourselves over time. The next step will be avionics."

Bohlke says it is the first in the region to offer maintenance on the Astra/SPX, Cessna 400 series and Citation II. It also provides service for the G100 and King Air 200 series,

maintenance program with 40 OEM-trained inspectors and technicians and five authorized service locations globally. It also added nine mobile support teams. It has invested \$6 million in tooling and expects to have \$9 million in available parts inventory by year-end.

#### DUNCAN ON CONNECTIVITY: NO SERVICE NOW AN AOG ISSUE

Since Duncan Aviation was named Gogo Business Aviation's exclusive AOG service partner earlier this year, the majority of Gogo service calls it has received have been from Part 91 operators who use the system to keep their passengers connected, noted Duncan's avionics satellite



as well as hot-section maintenance on the ubiquitous P&WC PT6A turboprop.

This marks the establishment of a qualified maintenance presence at the most southern and eastern part of the U.S., offering convenient access to aircraft transiting between the mainland U.S. and South America.

### STANDARDAERO SHIFTS FOCUS TO HTF7000

StandardAero Business Aviation has completed 19,000 engine core zone and major periodic inspections on the Honeywell TFE731 turbofan, and now the MRO is turning its focus to the HTF7000. The TFE731 has been a constant revenue source for the company, but it can see the writing on the wall. "I think the biggest challenge with 731s is the age of the fleet," said Brian Campbell, v-p of global sales and customer service. "The question for StandardAero to figure out is what next engine project takes us on another good 40-year run like the 731 has, and that's the HTF7000."

In March, Honeywell authorized StandardAero as the only worldwide heavy maintenance provider on the engine, which powers the Challenger 300/350, G280, Legacy 450/500 and Citation Longitude. Currently 1,500 of these powerplants are in service.

The company has ramped up its

network manager Matt Nelson. "That proves that connectivity in the air has become a true AOG item, and a strong AOG program is a key factor in determining your Wi-Fi provider. People don't want to fly without it."

Duncan has provided 15 percent of the spare parts to Gogo's customer base through the AOG program since March, and the service provider has also tapped into its inventory to assist non-program operators with parts needed to restore connectivity. As part of the agreement, Duncan Aviation invested in Gogo system spares and distributed this inventory across 17 Duncan Aviation locations in the U.S.

#### WESTERN AERO TAKES AMERICAN JET UNDER ITS WING

Western Aero has completed the integration of Canoga Park, Calif-based American Jet Industries. It now comprises three parts, equipment and services companies—Western Aero Service, Western Aero Repair and American Jet—managed under a single administrative system with new branding.

"We are now able to provide bestin-class aircraft parts and equipment sourcing and aircraft repair services to all segments of the industry," said Scott Balfanz, co-owner of Western Aero.









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#### FBO and Airport News

#### MIAMI-AREA FBO TO UNVEIL DEVELOPMENT

Fontainebleau Aviation will debut a \$22 million FBO expansion at Florida's Opa-Locka Executive Airport this month. The new project, which took two years to build, includes a 15,000-sq-ft terminal with a 1,000-sq-ft pilots' lounge and four private crew lounges, gym with shower facility, two A/V-equipped conference rooms (seating eight and 16), a 50-person capacity training room, kitchen, package storage room, on-site car rental, crew cars, valet and concierge, along with 30,000 sq ft of office space.

The expansion also added a pair of 35,000-sq-ft hangars, capable of sheltering aircraft up to a BBJ, bringing the location's aircraft storage to 235,000 sq ft. The new 12,000-sq-ft arrivals canopy can also accommodate a BBJ. In all, the development brings the complex to seven acres, with plenty of room left for future expansion.

According to the company, its current 2,000-sq-ft terminal will serve as the flight department for parent company Turnberry Associates for the exclusive use of its based customers, providing more intimate service and "creating a country club experience" while at the FBO. Fontainebleau also offers a Part 145 repair service through sister company Precision Aircraft Maintenance, as well as aircraft detailing.

#### STERLING GROUP NAMES FBO CHAIN, ADDS WEST COAST LOCATION

Private equity firm The Sterling Group, which launched itself into the FBO consolidation arena in September with the purchase of Florida's Destin Jet Center, has unveiled the name of its new aviation services chain and acquired its second location. The Lynx FBO Network, as it is now known, is backed by Sterling, a middle-market investment fund that manages more than \$2.4 billion in assets. Its latest purchase is Aurora Jet Center, one of three service providers at Aurora State Airport, which serves the metropolitan Portland, Oregon area. The Avfuel-branded facility has access to approximately 70,000 sq ft of hangar space, capable of sheltering aircraft up to a Gulfstream G650.

#### AIR SERVICE HAWAII ADDS HONOLULU HANGAR

Air Service Hawaii has acquired a 24,000-sq-ft hangar at its flagship location at Honolulu International Airport. The \$3 million structure, which can accommodate multiple aircraft up to a Gulfstream G650, features a 28-foot-high door, fire suppression and secure street side parking. The new hangar adds to the 17,000 sq ft of aircraft storage space the company already owns. "Hangar space is always in short supply during our peak seasons,



and now for the first time in its 68-year history, Air Service Hawaii can offer secure aircraft storage to clients operating large business jets," said Mi Kosasa, the company's vice president of marketing.

Since taking over the hangar in October, the company has installed a security system with electronic access control and motion-sensing cameras.

The company also announced that it has significantly expanded its capabilities at Lanai Airport, where it is one of two service providers. It now offers jet fuel, full ground handling, USDA-approved catering and planeside access to ground transportation. The location accepts all major contract fuel programs, but limited supply requires advance notice to ensure fuel is available for planned departures.

The company also provides aviation support at Kauai, Maui, Kona and Hilo.

#### MERIDIAN RUNNING ON LEFT COAST

Meridian has expanded its Teterboro, N.J.-based aviation services company with the opening of a second FBO, at California's Hayward Executive Airport. The Epic Fuels-branded location is the second service provider at the San Francisco-area airfield. It offers a 6,300-sq-ft terminal and office building, with a passenger lobby offering a lounge, coffee bar, business center, conference room, pilots' lounge equipped with recliners, a snooze room, pilot briefing room, shower and locker facilities, kitchen, on-site car rental and crew cars.

The \$10 million facility, which will also serve as a West Coast base for the company's aircraft charter management fleet, has a 30,000-sq-ft hangar capable of sheltering big business jets and 3.5 acres of ramp. Aircraft maintenance support is available as the location has a full-time licensed A&P mechanic to service Meridian's charter aircraft as well as transients. The company has a 50-year lease on the Hayward property and is planning a second phase of construction

there to add another 12,000-sq-ft terminal, two 40,000-sq-ft hangars and more ramp space to bring the facility to 10 acres.

#### **ROSS COMPLETES ACQUISITION**

As its first purchase after the initial six FBOs that make up the reconstituted Ross Aviation, the Colorado-based service provider chain has acquired AirFlite, one of several service providers at California's Long Beach Airport/ Daugherty Field. AirFlite was the top-scoring FBO in AIN's Annual FBO Survey for the past three years and a

expands their general aviation footprints with new airport fuel supply locations for their contract fuel programs.

"This agreement is beneficial for our Avfuel contract fuel customers, granting them more locations in Europe and around the world for pricing and fuel services," said Avfuel vice president of eastern sales Joel Hirst. "It's a reciprocal fuel authorization agreement that allows both Avfuel and Air BP to take advantage of the other's footprint, expanding both networks in the U.S. and abroad."

Avfuel has added 89 international contract fuel locations from within the Air BP network, taking its roster to 3,000 locations worldwide, while Air BP's Sterling Card holders can now use the program at 20 new top airports in the U.S. Already accepted at 800 locations in 50 countries, the Sterling card will now provide access for international customers heading to popular U.S. destinations. More airports are planned for next year.

#### **SKYSERVICE ADDS OTTAWA FBO**

Skyservice has expanded its network to four locations in Canada, taking over operations at the former Esso Avitat facility at Ottawa MacDonald-Cartier



Ross Aviation has completed its acquisition of the AirFlite FBO at Long Beach Airport/Daugherty Field.

perennial top finisher for much of its more than quarter century of existence.

Previously owned by Toyota, the facility consists of a four-story terminal with pilots' lounge, conference rooms, VIP lounge, flight-planning room, passenger atrium lobby, crew rest area, business center and 132,000 sq ft of hangar space.

"We are excited about completing the purchase of the AirFlite FBO from Toyota Motor Sales," said Ross Aviation CEO Jeff Ross. He told AIN that his company was interested in retaining the FBO's name, but Toyota decided not to include it in the sale.

### AVFUEL, AIR BP INK MUTUAL ACCEPTANCE DEAL

Global fuel providers Avfuel and Air BP have launched a partnership that

International Airport. The facility was operated by JPD Aviation for a quarter century, and Skyservice vows to provide the Ottawa location's customers with the same level of quality support and service.

"We would like to welcome the Ottawa team to the Skyservice network of FBOs," said company CEO Marshall Myles. "We look forward to working together to expand our business and increase our impact on the Canadian business aviation landscape."

Skyservice also operates locations at Toronto's Lester Pearson International, Montreal's Pierre Elliott Trudeau International and Calgary International Airports.

#### UNIVERSAL EXPANDS LATIN AMERICAN FOOTPRINT

Universal Weather and Aviation has expanded its Latin American ground handling network with the opening of Universal Aviation Dominican Republic. Based at the executive aviation terminal at La Romana International Airport (MDLR), the location is Universal's 18th in the region and 65th worldwide.





The private terminal in the Dominican Republic expands Universal's footprint in Latin America.

"The Dominican Republic has a fast growing economy and is an increasingly popular destination for general aviation, both business and tourism, with a strong base of regional traffic in the Caribbean," said Adolfo Aragon, Universal's senior vice president for Latin America and the Caribbean.

#### SHELTAIR TAKING **NEW HANGAR RESERVATIONS**

With several hundred thousand square feet of hangar projects coming on line within months at several of its locations, Sheltair is offering customers "early bird" priority reservations. "We have said all along that while the industry forecast may call for new aircraft production to continue, no one is creating new airport property and the new large-sized hangar supply is in demand," said Todd Anderson, the Florida-based service provider's vice president for real estate and development. "Sheltair has secured the approvals to expand and build on that most precious of real estate, airport property. That allows us to offer preferred customers new facilities that meet their needs today and far into the future."

Locations set to receive new hangars are Florida's Orlando Executive Airport, Fort Lauderdale/Hollywood International and Tampa International Airports, along with Savannah, Ga., and New York's Republic and Westhampton Airports.

#### **HAWTHORNE BUYS BAMA AIR**

Charleston, S.C.-based Hawthorne Global Aviation Services has expanded its FBO network with the acquisition of Bama Air, one of two service providers at Alabama's Tuscaloosa Regional Airport. The facility provides a 5,000sq-ft terminal with a fireplace, crew cars, concierge, flight planning and briefing rooms, 10-seat conference room, pilots' lounge with shower facilities, on-site car rental, widescreen televisions and Wi-Fi. Its 75,000 sq ft of hangar space can accommodate midsize jets such as the Citation XLS.

The acquisition marks the fifth location for the chain, which also has facilities at New York's Long Island MacArthur, Chicago Executive, Atlanta Cobb County and Wisconsin's Chippewa Valley Regional Airports.

Hawthorne expects to embark on a major renovation of the facility in next year's first quarter, after this year's college football championship concludes.

#### JET AVIATION RUNNING AT VNY

Jet Aviation has begun aircraft servicing operations at California's Van Nuys Airport. In January, the company was awarded a 30-year lease for a 17-acre site at the Los Angeles-area business aviation hub. Operating from the former Pentastar/ Basenet facility on the north side of the airport, the company is providing line services and 24/7 guarded entry to the airport and ramp.

By 2018, that should be replaced by a 20,000-sq-ft environmentally friendly Leed Silver-certified passenger terminal along with a pair of 40,000sq-ft hangars with accompanying shops and offices. The new-build facility will offer domestic and international handling, conference rooms, a crew lounge, flight planning room and a business center.

#### **CHARTER NEWS NOTES**

- > Jet Aviation Flight Services, the company's U.S. charter/management operation, added 11 aircraft to its now 150-strong fleet in the past five months. Seven of the 11 jets are available for charter (G650, Chicago; GIV-SP, GV, G550, Teterboro; Global Express, G200, G450, Burbank, Calif.). Another 150 aircraft are operated by Zurich-based Jet Aviation Business Jets, which added nine aircraft: five in EMEA and four in Asia.
- > Solairus Aviation added two Gulfstreams to its fleet, a GIV-SP in the San Francisco Bay Area and a G450 at Teterboro.
- > A GIV-SP has joined the fleet at Silver Air's Van Nuys, Calif. base. Equipped with Gogo Business Aviation airborne connectivity, the jet has a galley stocked with Central California wines and Dean & Deluca snacks.

- > West Coast Aviation Services added a Henderson, Nev.-based Citation M2 to its charter fleet.
- > FAI rent-a-jet was awarded a one-year contract to operate two Learjet 60s based in Algiers, Algeria, for passenger transport and air-ambulance services. FAI now operates 11 Bombardier jets, among them a recently added Learjet 60 that will replace its last Learjet 35A.
- > Sun Air Jets of Camarillo, Calif. added a Gulfstream G500 (a shorter-range version of the G550, not to be confused with the new wide-cabin G500 in flight-test at Savannah) to its charter fleet.
- > Charter/management company ExcelAire has opened a base at Teterboro Airport. The company plans to add a Citation Latitude and Legacy 600 and open bases in Chicago and Atlanta, where parent company Hawthorne Global Aviation Services has FBOs.

### FBO PROFILE: Gary Jet Center

#### **INDIANA AIRPORT OFFERS EASY ACCESS TO CHICAGO**

While the Chicago Cubs' winning the World Series for the first time in 108 years was an answer to the prayers of many in the Windy City, for the local business aviation service providers, the conquest of the Cleveland Indians in the seven-game fall classic proved a bonus. "Our biggest bump was for the Cleveland flights, people leaving to go to those games," said Lynn Eplawy, managing partner of the Gary Jet Center, one of two FBOs at Gary/Cleveland International Airport (GYY).

The family-owned Gary Jet Center is celebrating its 25th year in operation this year. A former Million Air franchise, the FBO was purchased in 1991 by Wil Davis, who manages it today.

another 43,560-sq-ft hangar complex, which is leased entirely to one company. Its 4,000-sq-ft terminal is part of the facility's original hangar and features a pilots' lounge, flight-planning room, quiet/snooze room, a pair of A/V-equipped conference rooms (seating eight and 14 people), crew cars and onsite car rental.

While the company has kept up on the 40-year-old facility, it is planning to break ground next year on a \$2 million terminal attached to hangar three. At 7,000 sq ft, it will be nearly twice the size of the existing terminal, which will be kept for tenant offices, and expansion of the maintenance department.

The location has two Part 145 certificates, one for its Boeing maintenance division. "We have 19 employees who



GYY itself has experienced something of a renaissance of late. Located just across the state line in Gary, Ind., the airport last year completed a \$174 million runway expansion that was 15 years in the making and required the relocation of a major railway line. The project saw the airport's main runway extended to nearly 9,000 feet from 7,000 feet, making it more attractive to international operators heading to the Chicago area. For now, arriving international aircraft must first clear at other airports, yet that should change next year with the anticipated opening of a U.S. Customs facility.

Since the expansion, the airport, which is situated in Class D airspace, separate from the congestion of O'Hare and Midway, has noted a 15-percent climb in traffic, according to airport officials.

Gary Jet Center has 40 based turbine aircraft, ranging from a Global to a Meridian. It is also home to the first Hondalet delivered in the United States, and another is expected soon.

The facility is open from 5 a.m. to 10 p.m. seven days a week, with call-out service available at no fee to based customers. It has 115,000 sq ft of heated hangar space, which can accommodate the latest class of ultra-long-range business aircraft. The newest, 40,000 sq ft "hangar three" was certified to Leed gold standard in 2014. The company recently purchased

work entirely for the Boeing Company's Executive Flight Operations teams on their fleet of BBJs and Challengers," said Eplawy. The other certificate covers the location's transient traffic as well as its managed fleet, which encompasses 11 jets ranging in size from a GIV to a Citation Mustang, most of them enrolled on Gary Jet's Part 135 charter certificate.

The Avfuel-branded FBO pumps two million gallons of fuel a year. It has a 92,000-gallon tank farm capable of storing 80,000 gallons of jet-A. In addition to 100LL, the location became a distributor for Swift Fuels' new unleaded avgas in July, with a 1,500-gallon truck dedicated to the fuel. The remainder of its tanker fleet consists of four jet fuel tankers ranging from 8,000 to 2,400 gallons, and a 1,500-gallon 100LL refueler, operated by the location's NATA Safety 1st-trained line staff. The facility has also held a U.S. government fueling contract for the past two decades.

Located just half an hour from downtown Chicago, the airport also provides a direct train link to the city, with a station just off the airport property.

Other benefits to Chicagoland travelers include low fuel prices (Indiana does not charge sales tax on aviation fuel) and landing fees, as well as a provision in Indiana law barring sales tax on aviation parts installed by the state's Part 145 repair stations.

# Deliveries slide in third quarter

Continued from page 4

Honda, which received certification for the HondaJet at the end of last year, delivered 16 copies of the aircraft in the first nine months.

In the bizliner segment, **Boeing** deliveries year-over-year were down by 75 percent; the company handed over a BBJ and a private 777-300ER during the first three quarters of this year. **Airbus** did not deliver any ACJs during the first nine months.

#### **Rebound among Turboprops**

While jet deliveries continue to spiral, the high-end turboprop sector saw some improvement year-over-year. OEMs delivered 187 pressurized turboprops in the first three quarters, compared with 181 in the same period last year, a gain of 3.3 percent, outpacing the overall turboprop market (which was up by 1.3 percent).

Pilatus led the segment, logging 57 percent more PC-12 deliveries year over year. The manufacturer said last month that it is on track to deliver 90 PC-12 NGs this year, 22 percent better than last year's performance. The Swiss airframer was the only OEM in the pressurized turboprop market to show a gain.

While Textron's **Beechcraft** delivered the same number of King Air 350s as last year, it handed over three fewer of both the C90GTx and 250, a 7-percent slide. **Daher** posted an 11-percent decline, delivering four fewer TBMs, and Piper handed over five fewer turboprops for a 22-percent drop year-over-year. **Piaggio** delivered just one Avanti Evo in the first nine months of this year, no change from the same period last year.

#### **Rotorcraft Deliveries Stumble**

Given the persisting trough in oil prices, the rough times for the rotorcraft market continue, with deliveries of turbine-powered helicopters down 16 percent between the first nine months of 2016 and 2015. Airbus Helicopters (which adopted the practice of combining its commercial and military helicopter delivery numbers earlier this year), saw a 9-percent climb over the adjusted numbers from the first three quarters of last year, while recently renamed Leonardo Helicopters (formerly AgustaWestland), which also now no longer separates its commercial and military deliveries, eked out a gain of 1 percent over its adjusted third-quarter 2015 deliveries.

**Enstrom** more than doubled output of the 480B, to seven in the first nine months of 2016.

Textron subsidiary **Bell Helicopter** saw declines across the entire product range, with overall deliveries off by 43 year-overyear. The 407 series experienced a 37-percent slump.

**Robinson Helicopter** cut deliveries of the R66 by half, handing over 47 of the aircraft in the first three quarters of the year, compared with 94 a year ago.

**Sikorsky** saw commercial helicopter deliveries fall to just eight in the first nine months this year from 29 in the same period last year.

"We look forward to working

with the incoming administration and the new Congress... Indto highlight the importance of a vibrant general and business aviation industry with manufacturing, maintenance and overhaul jobs at its core," Bunce said, noting a degree of industry optimism with all the new product development projects under way.

"We also welcome a focus on making critical infrastructure investments, particularly airports and heliports, to support a safe and growing global aviation system. We stand ready to work with elected and appointed officials on policies that facilitate certification reform and product innovation, and improve the validation and acceptance of products worldwide."

### **Turbine Helicopters Worldwide Deliveries First 9 Months 2016 vs. First 9 Months 2015**

Mfr./Model	9 Mos. 2016	9 Mos. 2015	% Chg.
Airbus Helicopters*			
H120	4	1	
AS350B2	3	5	
H125/H125M	67	60	
H130	44	49	
AS355NP/AS555AP	4	3	
H135/H135M	18	19	
H145/H145M	71	41	
AS365N3+/AS565Mbe	4	5	
H155	0	4	
H175	4	1	
H215/H215M	4	2	
H225/H225M	5	19	
AS332	0	1	
Total	228	209	+9.1%
Bell			
206L-4	8	9	
407/407GX/407GXP	45	71	
429/429WLG	20	30	
412EPI	3	9	
Total	76	119	-36.1%
Enstrom			
480B	7	3	+133%
Leonardo Helicopters (formerly AgustaWestl	and)*		
AW119Ke/Kx	7	10	
AW109Power	0	2	
GrandNew	14	8	
AW139	38	51	
AW169	13	0	
AW189	3	6	
SW4	3	0	
W3	0	0	
Total	78	77	+1.3%
Robinson			
R66	47	94	-50%
Sikorsky			
S-76	4	13	
S-92	4	16	
Total	8	29	-72.4%
Grand Total	444	531	-16.4%

\*Airbus Helicopters and Leonardo Helicopters no longer separate commercial and military helicopters in their quarterly reporting.

#### Turbine Business Airplanes Worldwide Deliveries First 9 Months 2016 vs. First 9 Months 2015 Pressurized airplanes only

1 1035411200	ranplanes only		
Mfr./Model	9 Mos. 2016	9 Mos. 2015	%Chg.
Airbus	2010	2010	
ACJ318*	0	1	
ACJ319*	0	1	
ACJ320*	0	0	
ACJ321*	0	0	
ACJ330*	0	0	
Total	0	2	-100%
Boeing			
BBJ*	1	1	
BBJ2*	0	0	
BBJ3*	0	0	
777-300ER*	1	1	
787-8*	0	2	
787-9*	0	2	
Total	2	8	-75%
Bombardier			
Learjet 70/75	13	21	
Challenger 350	43	50	
Challenger 605/650	15	11	
Global 5000/6000	38	52	
CL850/870/890	0	125	10.00
Total	109	135	-19.3%
Daher TPM 000/020	20	26	110/
TBM 900/930 <b>Dassault**</b>	32	36	-11%
Falcon 900LX, 2000LXS, 2000S, 7X	15	18	-16.7%
Embraer	13	10	-10.7 /
Phenom 100E	10	10	
Phenom 300	38	47	
Legacy 450	6	0	
Legacy 500	12	8	
Legacy 600/650	8	9	
Lineage 1000	0	1	
Total	74	75	-1.3%
Gulfstream			
G150/280	21	27	
G450/550/650/650ER	67	89	
Total	88	116	-24%
Honda			
HondaJet	16	0	n/a
One Aviation			
Eclipse 550	5	5	0%
Piaggio**			
Avanti Evo	1	1	0%
Pilatus			
PC-12	58	37	+56.8%
Piper			
Meridian/M500/M600	18	23	-21.7%
Textron Aviation: Beechcraft			
King Air C90GTx	10	13	
King Air 250	23	26	
King Air 350i/ER	45	45	7.10/
Total	78	84	-7.1%
Textron Aviation: Cessna	7	7	
Mustang			
M2 CJ3+	26 15	24 17	
CJ4	23	22	
Citation XLS+	16	14	
Citation Sovereign+	6	13	
Citation Latitude	24	4	
Citation X+	3	5	
Total	120	106	+13.2%
. 0.001			-4.7%
Grand Total Jets	499	40(3:1	
Grand Total Jets Grand Total Turboprops	429 187	465 181	+3.3%

\*Denotes green aircraft deliveries \*\*Dassault and Piaggio report their delivery totals twice a year.



### **2017 REGIONAL FORUMS**

West Palm Beach, FL January 26, 2017 Fort Worth, TX March 23, 2017 Morristown, NJ September 7, 2017







These industry events bring together local business aircraft owners, operators, manufacturers, and other aviation professionals for one-day at some of the most accessible business aviation airports in the nation. As an attendee you can visit with exhibitors, view business aircraft side-by-side on the static display and take part in education sessions throughout the day. Save the date and visit the website to learn more.

**LEARN MORE:** www.nbaa.org/forums/ain

### Compliance Countdown by Gordon Gilbert

### Within 6 Months

► Jan. 1, 2017 and **COMPLIANCE DUE** Jan. 1, 2018

Russia Requires Glonass Equipment Non-Russian-built aircraft, including those registered abroad, put onto a Russian AOC, weighing more than 12,500 pounds mtow and used for commercial transportation, will be required to install Glonass satellite navigation equipment by Jan. 1, 2017. The mandate is Jan. 1, 2018, for GA aircraft. The Russian Federation says it does not intend to prohibit the use of other GPS constellations in Russian airspace.

#### Jan. 5, 2017

#### **Professional Pilot Development NPRM**

An FAA NPRM would require air carriers to provide new-hire pilots with an opportunity to observe flight operations to become familiar with procedures before serving as a flight crewmember; revise the upgrade curriculum; provide leadership and command and mentoring training for all PICs; and establish pilot professional development committees. Although this proposal is directed at Part 121 and 135 scheduled carriers, some elements of the new rules would also apply to Part 91K and Part 135 on-demand operations requiring two pilots and that voluntarily chose to train and qualify pilots under Part 121. Comments are due Jan. 5, 2017.

#### ▶ Jan. 9, 2017

#### **EASA Proposal To Reduce Runway Excursions**

A Notice of Proposed Amendment (NPA) from the European Aviation Safety Agency aims to reduce runway excursions by addressing several performance requirements for commercial air transport operations. The NPA proposes standards for runway surface condition reporting, airworthiness standards for landing performance computation at time of arrival, an in-flight assessment of landing performance at time of arrival as well as reducing required landing distances for Part 135 and 91K business aircraft operations. The proposed changes are also intended to improve harmonization with corresponding FARs and to ensure alignment with ICAO recommendations. Comments are due on Ian. 9, 2017.

#### Feb. 2, 2017

#### Australian ADS-B Mandate

The Civil Aviation Safety Authority of Australia is implementing new regulations and aircraft equipment mandates to align the nation's operations with global standards set by ICAO. The new rules contain a number of equipment mandates that culminate on Feb. 2, 2017. After that date IFR-rated pilots and aircraft must comply with ADS-B equipment and operational requirements to fly in Australia.

#### ► April 24, 2017

#### **Part 135 Rotorcraft Radio Altimeters**

Under new Part 135.160, rotorcraft must be equipped with an operable FAA-approved radio altimeter, or an FAA-approved device that incorporates a radio altimeter, after April 24, 2017. Deviations from this requirement may be authorized for helicopters in which radio altimeters cannot physically be installed in the cockpit. The request for deviation authority is applicable to rotorcraft with an mtow no greater than 2,950 pounds.

#### ► April 30, 2017

#### **Estimated Finish for Southern Calif. ATC Redesign**

From November 2016 through April 2017, the FAA will phase in the Southern California Metroplex (SoCal Metroplex) Project, which involves replacing dozens of conventional ATC procedures with new satellite-based procedures. Before publishing the procedures, however, the agency will conduct public meetings to inform people about the changes. Dates for these meetings will be announced on the FAA's NextGen Community Engagement webpage for the SoCal Metroplex project. The project will affect instrument arrivals and departures for 21 airports in Southern California.

#### **Beyond 12 Months**

#### **Jan. 1, 2018**

#### Deadline for European 8.33-kHz Spacing Starting Jan. 1, 2018, aircraft might not be

able to operate in any EU member states' controlled airspace unless they are equipped with communications systems that have 8.33-kHz voice-channel spacing. Eurocontrol says extending 8.33 kHz below FL195 down to ground level is important, as "Europe has a known shortage of voice communication frequencies." The 8.33-kHz requirement for higher altitudes in controlled airspace has been in effect for some time. According to Eurocontrol, the consequences should this shortage of com frequencies not be addressed are "significant: there will be more air traffic delays; it will be harder to implement safety improvements; and we will lose flexibility in introducing operational enhancements."

#### Nov. 8, 2018

#### ICAO Adopts 15-min. Position Reporting

The International Civil Aviation Organization Council adopted a tracking standard for certain international flights that requires crews to report their aircraft's position at least every 15 minutes. It will become applicable Nov. 8, 2018. The new requirement will be made formal as Amendment 39 to Annex 6— Operation of Aircraft, Part I. The new standard is the outcome of recommendations stemming from the disappearance of the 777 operating as Malaysia Airlines Flight MH370 while en route from Kuala Lumpur to Beijing, China, on March 8, 2014. The search for the 777 continues.

#### Dec. 31, 2019

#### Taiwan ADS-B Compliance Delayed

The Republic of China will postpone from December 31 this year to Dec. 31, 2019 compliance with ADS-B OUT equipment within the Taiwan FIR above FL290. China is forced to delay compliance because too few aircraft are equipped to render the original ADS-B plan achievable. However, the new deadline for Taiwan essentially coincides with the Jan. 1, 2020 U.S. mandate for ADS-B OUT compliance. Europe's ADS-B OUT mandate remains June 7, 2020.

#### Jan. 1, 2020

#### U.S. ADS-B OUT Mandate

ADS-B OUT equipment must be operational starting Jan. 1, 2020, in aircraft that fly in the U.S. under IFR and where transponders are currently required, namely class A, B and C airspace. 🗖







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### Dassault adds Bordeaux mx facility

by Charles Alcock and Guillaume Lecompte-Boinet

Dassault Aviation boosted customer support with the inauguration of a new Dassault Falcon Service (DFS) facility at Bordeaux-Mérignac Airport on November 10. Located beside the French airframer's final assembly line, the new complex adds 527,448 sq ft (49,000 sq m) of space for Falcon maintenance, repair and overhaul (MRO) support, including a 77,502 sq ft (7,200 sq m) hangar. It will be able to accommodate up to six of the largest Falcons (the 7X, 8X and 5X) at the same time.

"This additional capacity will permit DFS to keep up with the steady growth in the Falcon fleet, which currently numbers 2,100 aircraft worldwide and is expected to expand significantly with the arrival of the Falcon 8X," said Dassault Aviation chairman and CEO Eric Trappier. The Bordeaux service center will supplement the existing facility at Paris Le Bourget Airport, as well as those at Wilmington, Del.; Reno, Nev.; Little Rock, Ark.; and Sorocaba, Brazil.

The Bordeaux center can handle C checks (due after between seven and eight years of service) on the 7X. DFS general manager Jean Kayanakis said that the first 7X arrived for service on October 17 and was returned to its owner on October 28.

#### **Expanding Mx Share**

In 2015, DFS generated €176 million (\$189 million) of revenue, with 80 percent of this coming from MRO activities. Trappier indicated that he wants DFS to expand its market share of worldwide Falcon support work, which currently stands at around 35 percent.

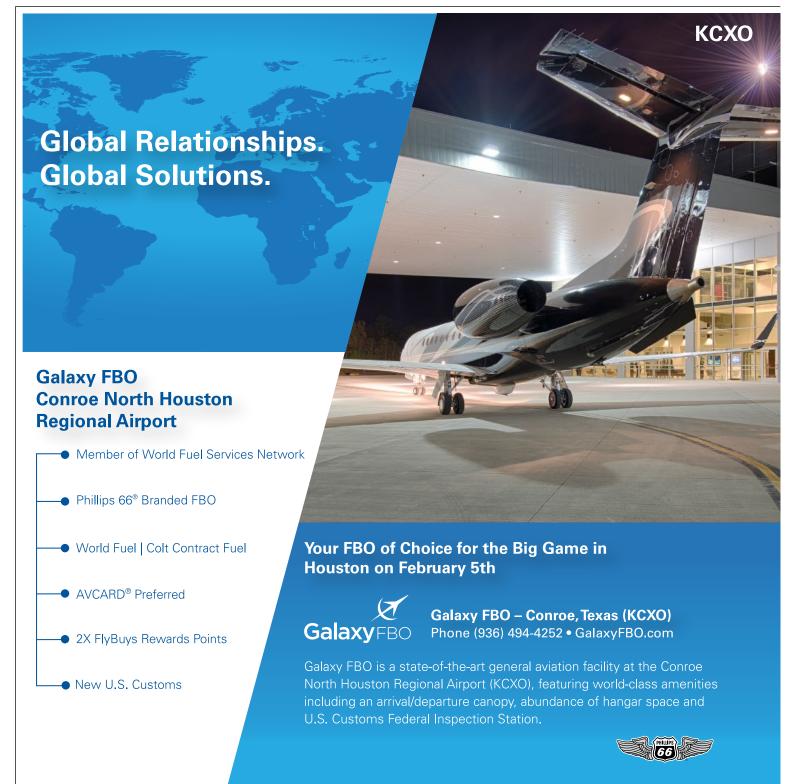
The Le Bourget center, the main one in the DFS network, can handle 25 Falcons at the same time in its 979,500-sq-ft (91,000 sq m) space.

Since 2004, Dassault has increased the number of regional distribution centers around the world to 15 from two. Over the same period, the DFS network has doubled the number of service centers from 26 to 49. The company is now planning to add to more—one in Russia and the other in the Austrian capital Vienna.

Dassault also has boosted the number of front line field service representatives to 104 (up by more than 25 percent since 2010) and they are spread across 35 offices in 14 countries. Each DFS customer relationship manager oversees support for 25 Falcons on average.

With this network, DFS expects to improve its dispatch reliability rate to 99.7 percent, or fewer than three delayed or cancelled flights per 1,000 planned departures.







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USAIG chairman and CEO David McKay plans to retire on April 3 after four decades with the company. Upon his departure, John Brogan, president and COO at parent company United States Aviation Underwriters, will become president and CEO at USAIG. Brogan currently serves on the Flight Safety Foundation's business advisory committee and is a certified aviation insurance professional.

Shawn Vick has taken the role of CFO for Global Jet Capital. Previously executive director and chairman of the executive committee of Global Jet Capital, Vick has been and will remain a partner at AE Industry Partners. He has held senior positions with Gulfstream, Bombardier, British Aerospace, Hawker Beechcraft and Landmark Aviation. The company also appointed Graeme Shanks sales director for Northern Europe and sub-Saharan Africa. Most recently Shanks was v-p for sales, Business Aircraft Finance for CIT, where he was responsible for sales and origination activities across the Middle East and Africa.

Inmarsat named Jason Smith COO. Smith joins Inmarsat from Rolls-Royce, where he had been COO and president for the nuclear business and president of the submarine business.

Quest Aircraft promoted Jason Eddy to the newly created position of COO. Most recently senior v-p of operations, Eddy worked for Intel before joining Quest in 2009.

Jeffrey Lee has joined FlightSafety International as executive director, business aviation development. Lee has spent his career managing large flight departments, most recently as v-p of aviation for American Express. He has served on the NBAA board of directors for 12 years, including a stint as chairman from 2007 to 2009. The company also named Ted Bowlds chief information officer (CIO) and Joe Warakomski deputy CIO. Bowlds joined FlightSafety with three decades of experience leading strategy, planning, administration and organizational development for commercial and military organizations. Warakomski joined FlightSafety in 2005 as business systems security manager and has led FlightSafety's technology and digital strategy as executive director of information technology since 2014.

In addition, FlightSafety International promoted Brady Peikert to assistant manager of the training facility in Orlando, Fla. The company also promoted Willy Vargas to director of sales for Latin America and

The General Aviation Manufacturers Association (GAMA) elected Simon Caldecott, president and CEO of Piper Aircraft, as its chairman for 2017. Phil Straub, managing director of aviation and v-p of Garmin International, will become vice chairman. The GAMA board further named Nicolas Chabbert, senior v-p of Daher's airplane business, as chairman of the association's Safety and Accident Investigation Committee.

L-3 Communications appointed Charles (C.R.) Davis senior v-p of strategy for the company's Aerospace Systems business. Davis, a retired U.S. Air Force lieutenant general, brings 30 years of aerospace and defense experience to his new role.

Synergy Aviation added Dave Edwards and Tom Wells to its board of directors. Edwards was formerly executive v-p of Qatar Airways and managing director for the Middle East and Asia at Gama Aviation. Wells was formerly managing director for Europe at Gama Aviation.

Professional Resources In System Management (Prism), a wholly owned subsidiary of Argus, named John Illson senior v-p of certification services and regulatory assistance.

Gulfstream Aerospace appointed Robert Glasscock v-p and lead Organizational Designation Authorization (ODA) administrator. Glasscock has worked for Gulfstream for 10 years, leading the certification activity on the G650 as well as the G500 and G600, and also has held roles with the FAA, Piper and Bombardier Aerospace. Gulfstream also named Thomas Anderson v-p and general

manager of its service and completions centers in Long Beach, Calif.

FDS Avionics named Jerome Conway v-p of engineering. Conway has 25 years of aerospace, defense and technology experience, most recently as senior director for independent research and development at L-3 Communications Display Systems.

West Coast Aviation Services appointed **Laura Trenerry** v-p of flight operations. In addition, Jerry Hansen returned to West Coast as director of operations.

Mike Harkins has joined Jet East Aviation as v-p of sales development. Harkins has 30 years of aviation industry experience, including stints with the U.S. Air Force, a turbine engine repair and overhaul company and a major charter operator.

Jet Aviation St. Louis appointed Shannon Adams as a regional sales representative for the Western region of the U.S. and Canada and Mike Meglio as a regional sales representative for the Mid-Atlantic region in the U.S.

Richard Pearson launched Avion Law, a Newport Beach, Calif. law firm specializing

Air 7 hired Michelle Morrison to serve as accounting manager. Morrison has held controller and senior accountant positions with Channel Islands Logistics, New Indy Containerboard and Cal Amp Technologies.

Andrew Thorson has joined Executive AirShare as senior sales director for Kansas, Nebraska and Missouri.

TAG Aviation Geneva appointed Adelaide Rispoli area sales manager for Southern Europe (the South of France, Monaco and Italy).

Duncan Aviation promoted Travis Grimsley to manager of customer service at its facility in Battle Creek, Mich. Grimsley ioined Duncan Aviation in 2005 as a line service representative and more recently was manager of FBO services.

Priester Aviation has expanded its sales team with the additions of Michael Giordano as vice president of Northeast charter sales and Wade Beyer as vice president of charter sales for the Southwest.

AirMed International named Steven McNeely as safety and security executive officer. McNeeley has 40 years of aviation and safety experience, including 26 years in the U.S. Air Force and Navy, and most recently served with Era Helicopters and Jet Metro Aviation named Lee Johnston regional aviation manager for the Midwest.

Lindsay Allmon joined Blackhawk Modifications as marketing coordinator. Allmon, will be responsible for the coordination of day-to-day marketing activities.

### Awards & Honors

Bombardier recognized National Transportation Safety Board member Robert Sumwalt with the 2016 Safety Standdown Award. Sumwalt was honored for his "outstanding commitment to aviation safety and his continuous efforts to develop more robust safety programs within the aviation industry," Bombardier said. He has served as a member of the NTSB since August 2006, and spent two years as vice chairman.









### Final Flights

Theodora (Teddy) Edelman, an icon in the design world and co-founder of aircraft interior leather producer Edelman Leather, died October 4 in Ridgefield, Conn. She was 88. Born Theodora Joffe in 1928 in Brooklyn, N.Y., Edelman attended Sarah Lawrence College, where she met her husband, Arthur. After school, the couple joined her father's tannery business, Fleming-Joffe, which made leathers for the fashion industry. While there, the Edelmans became known for their creations and designed leathers for Clarence House, Jack Larson and Karl Springer. They also hired then-unknown artist Andy Warhol. In the 1970s they moved on to work for Dupont and started a shortlived business, Lighthouse Footwear. But in 1981 they returned to their roots of producing high-end leathers, founding Edelman Leather. The company has expanded across multiple industries, including aircraft interiors. Teddy and Arthur Edelman retired in 2010.

William Watt, an aviation pioneer who co-founded one of the earliest aircraft management firms, died on October 3. He was 97. Watt, who became a pilot as a teenager in Oregon, trained North American B-25 bomber pilots during World War II. After the war he became International Telephone and Telegraph's first chief pilot and test flew the company's radar and ILS equipment. In 1949 he flew a Douglas DC-3 on autopilot from San Francisco to White Plains. That is believed to be the first transcontinental hands-free flight, NBAA said. He later became chief pilot for Hoover, AT&T and Atlantic Aviation. In 1965 he joined forces with Matthew Weisman to found Executive Air Fleet. an aircraft management firm based at Teterboro Airport in N.J. Watt was active in industry advocacy, becoming involved in NBAA in the 1960s and serving on its Associate Membership Advisory Council.





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—Booker T. Washington

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#### PRELIMINARY REPORTS

### MD500 LOSES FIREFIGHTER ON RESCUE RUN

MD Helicopters MD500, Sept. 2, 2016, Honolulu, Hawaii—An MD500 registered to and operated by the city of Honolulu was completing a hiker rescue mission near the Diamond Head state trail when a ground-based firefighter participating in the sortie was thrown from the rescue net and fell 25 feet to the ground, sustaining serious injuries. The flight, which originated from Honolulu International Airport, was in VMC. The crew had been scrambling to rescue an injured hiker. Local ground-based firefighters had reached the scene first and stabilized the hiker for transit. The hiker and a firefighter were lifted into a rescue net that was attached to the helicopter by a 75-foot line. Video evidence from the rescue showed that as the helicopter climbed away from the scene the net struck a pole, and the firefighter was ejected.

### CONQUEST II ENCOUNTERS POWERLINES

Cessna 441 Conquest II, Sept. 5, 2016, Coorabie Airport, South Australia—The twin turboprop encountered powerlines on approach to Coorabie Airport in South Australia. The crew continued the approach to a successful landing with no injuries. The Australian Transport Safety Bureau is investigating.

#### MD500E LOSES BLADE TIP

MD Helicopters MD500E, Oct. 4, 2016, Waimea, Hawaii—A commercial pilot and two passengers were uninjured after an MD500E operated under Part 135 by Volcano Helicopters on a VFR flight sustained substantial damage to the main rotor while climbing out from a remote location in the Kohala Mountains near Waimea, Hawaii.

The pilot reported that he had just transported an external load to a remote location and retrieved two passengers to head back to a staging area. Before takeoff he jettisoned a 20-foot longline used to transport a load from the cargo hook by pressing the hook release switch.

During the initial climb, at about 75 to 100 feet agl, the pilot experienced a moderate anomaly in the feel of the cyclic control, followed by a significant vertical vibration, and saw that the main rotor blade track had a substantial blade spread. The pilot performed a precautionary landing in a suitable area nearby.

Inspecting the blades after the landing, the pilot noted that a portion of the tip was missing from one of the main rotor blades, and that the blade was bent aft. Three blades exhibited scratch marks on their leading

edges. The longline was not found in the helicopter or at the site. The helicopter has been recovered for further investigation.

### SHORT SHERPA NOSE GEAR COLLAPSES

Short SD3-60 Sherpa, Oct. 13, 2016, Missoula, Mont.—Two airline transport-rated pilots completing a VFR ferry flight from Kingman Airport, Kingman, Ariz., were uninjured after the nose gear of a Short SD3-60 Sherpa collapsed during landing at Missoula International Airport (KMSO) in Missoula, Mont. The United States Department of Agriculture (USDA) airplane supports the U.S. Forest Service.

The pilots reported that before landing they had an unsafe nose gear indication. After multiple unsuccessful attempts to get the nose gear to extend and indicate that it was down and locked, they landed and the nose gear collapsed on contact with the runway. Once the airplane came to a stop the flight crew evacuated. The underside of the fuselage near the nosewheel sustained minor damage.

### CESSNA 525 RUNS OFF THE RUNWAY IN PAWTUCKET

Cessna 525, Oct. 13, 2016, North Central State Airport (KSFZ), Pawtucket, Rhode Island—A Cessna 525B was substantially damaged when it overran the runway after an instrument approach at North Central State Airport (KSFZ), Pawtucket, Rhode Island. The crew—a commercial pilot and an airline transport pilot—and four passengers were not injured. The eight-seat twinjet was manufactured in 2014.

The flight departed from Allegheny County Airport (KAGC), Pittsburgh, Penn., in IMC, operating under Part 91. The flight crew told the FAA after the accident that the weather was below approach minimums; however, as was their right they elected to continue the approach and descended below the clouds about 800 to 850 feet msl. The airplane was flying at 130 to 135 knots on the final approach leg to Runway 05, the crew told the NTSB.

Airport surveillance video showed the airplane touching down midfield on Runway 05, a 5,000-foot-long asphalt runway. Intermittent skid marks on the final 2,000 feet of runway were followed by marks where the airplane ran off the end of the runway and hit the localizer antenna, 300 feet beyond. The wings, fuselage and nose gear were substantially damaged.

Initial examination by an FAA inspector did not reveal any issues with the braking system. Weather at KSFZ about the time of the accident was reported as 200-foot overcast, three statute miles visibility with mist and calm wind.

#### **FINAL REPORTS**

### PREFLIGHT TEST WITH COLLECTIVE UNLOCKED SUSPECTED IN HELO FATAL

Airbus Helicopters AS350B2, March 18, 2014, Seattle—A pilot and his cameraman were killed and the occupant of an automobile was seriously injured when an Airbus AS350B2 news helicopter powered by a Turbomeca (Safran) Arriel 1D1 appeared to lift off and go out of control from a rooftop helipad in downtown Seattle. The NTSB determined that the loss of tail rotor and main rotor control was caused by a loss of hydraulic boost, possibly the result of a standard preflight check performed with the collective unlocked.

Because the helicopter was not equipped with a flight recording device there is no way to ascertain for sure what the pilot did during the preflight hydraulic checks or the status of the hydraulic system when the helicopter lifted off. Video footage from the helicopter pad showed that the helicopter lifted off and immediately yawed left, indicating a loss of tail rotor control. It completed one 360-degree rotation to the left in a near level attitude while climbing. As it continued to spin it pitched nose down and banked right, indicating a loss of main rotor control. The helicopter moved away from the rooftop helipad, lost altitude and hit a car on the street below. A postcrash fire consumed most of the fuselage and the forward section of the tailboom. All major structural components of the helicopter were found at the accident site, and there was no evidence of an in-flight failure of the airframe. Examination of the engine, main rotor and tail rotor systems revealed that they were all producing power/thrust at impact.

Unable to confirm flight control continuity because of fire and impact damage, the NTSB based its probable cause finding on a series of deductions. Logically it is most likely that the hydraulics lost pressure during the preflight hydraulic system accumulator check on activation of the HYD TEST button with the collective unlocked. If the collective was not locked during this check and the cyclic movements depleted one or more of the main rotor accumulators, the collective would have moved up rapidly. This uncommanded collective movement is caused by a design characteristic of the main rotor system in the AS350. Engaging the collective lock as per the preflight checklist prevents the uncommanded movement. If the pilot did not lock the collective and performed the accumulator check with the FFCL in the FLIGHT detent per an older version of the operator's checklist that interviews with other company pilots indicate might have been on board, he might have experienced an uncommanded increase in collective and a marked heave of the helicopter. The pilot might have reacted by manually increasing collective pitch, resulting in an unplanned takeoff. Once airborne, the lack of hydraulic boost to the pedals would have resulted in an uncontrolled left yaw, and, as all three main rotor accumulators became depleted, the main rotor controls would have lost hydraulic boost. resulting in a rapid loss of control.

### PILOTS, AIRPORT STAFF, ATC IMPLICATED IN FALCON FATAL

Dassault Falcon 50EX, Oct. 20, 2014, Vnukovo International Airport, Moscow, Russia—Russia's Interstate Aviation Committee (IAC) has determined that the fatal crash of a French-registered Dassault Falcon 50EX that hit a snowplow during takeoff from Moscow Vnukovo International Airport—killing three crewmembers and a passenger—was caused by

airport workers, air traffic controllers and the jet's pilots. Criminal charges were levied against seven controllers and airport workers, among them the snowplow driver, who was believed to have been intoxicated at the time of the collision.

The accident happened shortly before midnight in drizzle and mist. Two snowplows were working under the command of a supervisor who was in a car in the area. The supervisor lost sight of one of the snowplows. At the same time, the Falcon 50 was cleared for takeoff. Ten seconds after the crew had received permission to take off, the surface movement radar in the control tower showed one of the snowplows moving toward the active runway, and 14 seconds after the aircraft began its takeoff roll the crew saw a "car" crossing the runway (according to the CVR). The crew continued the takeoff and the jet lifted off the runway at about 134 knots. But the right wing and right landing gear collided with the snowplow, the airplane rolled inverted, hit the ground and burst into flames.

While the report blames airport workers and controllers for violations of procedure, failure of supervisory responsibilities, a breakdown of communications, lack of proper equipment on the snowplows and loss of situational awareness, it also accuses the flight crew of negligence, criticizing the pilots for continuing the takeoff when the captain saw the vehicle on the runway. The Falcon 50EX nosewheel steering, which can be controlled only from the left seat, was also implicated because it forces a transition of control amidst the already high workload of takeoff. Investigators added that the long wait for departure clearance and a desire to get home might have influenced the crew's decision-making.

#### **ENGINE FAILED ON SIKORSKY S-76C**

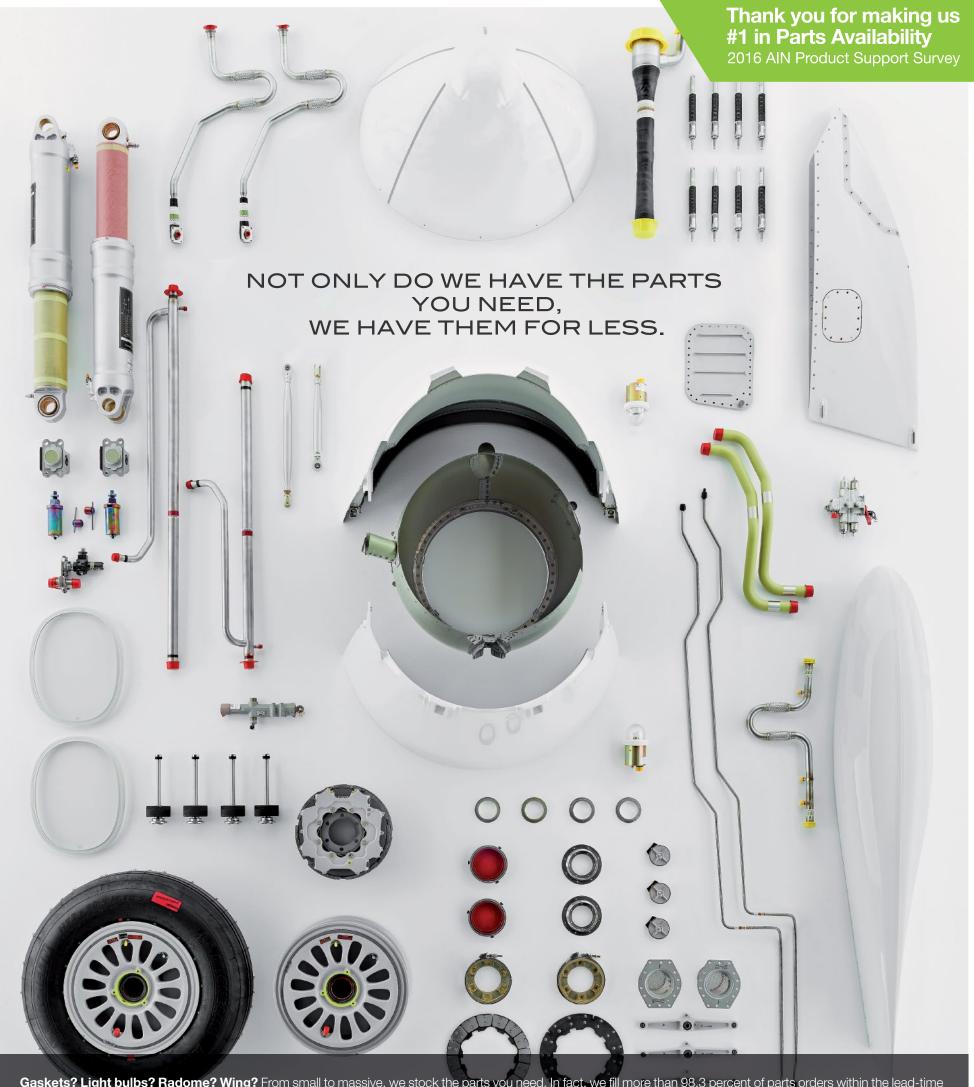
Sikorsky S-76C, July 11, 2013, Longford, Victoria, Australia—An S-76C passenger ferry departing the Snapper platform in the Bass Strait oil and gas fields for a return to Longford, Victoria, lost power from the number-two Turbomeca Arriel 1S1. The failure was attributed to the fracture of a second-stage high-pressure turbine blade that damaged adjacent blades, causing power loss and vibration. The helicopter descended rapidly to within 30 feet of the sea surface as the crew secured the failed engine. A positive rate of climb was established at that point and the helicopter flew back to Longford, escorted by other company helicopters, for a single-engine landing.

The engine manufacturer concluded that the failure was caused by a combination of metal fatigue, blade creep and oxidation deposits. While a definitive cause for the blade fracture has yet to be determined, blade material, dimensional and quality assurance checks have ruled out any deficiencies. The manufacturer reported that blades with more than 2,000 operating hours or 2,300 cycles can be more susceptible to failure. The manufacturer is in the process of identifying potentially affected blades. Given the number of similar blades in service and the number of hours flown, the failure rate is low. The Australian Transport Safety Bureau regards the associated safety risk as low.

In the absence of a conclusive cause of the blade fracture and remedial information, the operator imposed a service life limitation on its helicopters' turbine assemblies fitted with the same blades. In addition, the engine manufacturer issued notifications to operators and introduced specific inspection requirements relevant to potentially affected turbine assemblies.

The material on this page is based on the NTSB's report (preliminary, factual or final) of each accident or, in the case of recent accidents, on information obtained from the FAA or local authorities. It is not intended to judge or evaluate the ability of any person, living or dead, and is presented here for informational purposes.





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#### **DECEMBER**

#### NATA EMERGENCY RESPONSE PLAN WORKSHOP...December 5-6,

NTSB Training Facility, Ashburn, VA. Info: 202-774-1535: http://nata.aero/Events/ERP-Workshop-for-Aviation-Businesses.aspx.

◆ ● MEBAA SHOW...December 6-8. Dubai. Dubai World Central, United Arab Emirates. Info: www.mebaa.aero

OHIO BUSINESS AVIATION TRAINING STANDDOWN...December 7, Sinclair Community College Conference Center, Dayton, OH. Info: www.orbaa.org/event-2364746.

#### **JANUARY 2017**

#### REGIONAL FORUM...

January 26, Palm Beach International Airport, West Palm Beach, FL. Info: www.nbaa.org/events/forums/2017PBI/.

#### **FEBRUARY 2017**

#### EBAA SHORTAGE OF SKILLS WORKSHOP...

February 3, Brussels, Belgium. Info: www.ebaa.org/en/events-62/ ebaa-upcoming-events.aspx.

**▲ SCHEDULERS AND DISPATCHERS** CONFERENCE.

February 7-10, Fort Worth. Texas. Info: (800) 783-9000: www.nbaa.org.

#### LEADERSHIP CONFERENCE..

February 14-16, Hyatt Regency, Miami, Florida. Info: info@nbaa.org: www.nbaa.org/events/leadership/2017/.

OPPORTUNITIES IN BUSINESS

#### JETS 5TH ANNUAL CONFERENCE

February 22, Grand Hotel Excelsior, Valletta, Malta. Info: www.quaynote.com/conference/ opportunities-business-jets-2017/.

#### **MARCH 2017**

#### BUSINESS AIRCRAFT FINANCE REGISTRATION & LEGAL CONFERENCE...

March 5-7, Hyatt Regency Coconut Point Resort, Bonita Springs, FL. Info: (202) 783-9451; www.nbaa.org/events/ finance-registration-legal-conference/2017.

◆ ● HELI-EXPO...March 7-9. Dallas. TX. Info: www.rotor.org

ACSF SAFETY SYMPOSIUM...March 7-8, NTSB Training Center, Ashburn, VA. Info: www.acsf.aero/symposium/.

**AEA INTERNATIONAL CONVENTION & TRADE** SHOW...March 13-16, New Orleans, LA.

Info: www.aea.net/convention/2017. INTERNATIONAL OPERATORS CONFERENCE...

Info: (800) 783-9000; www.nbaa.org. REGIONAL FORUM...March 23, Fort Worth

Meacham Airport, Fort Worth, TX. Info: www.nbaa.org/events/forums/2017FTW/. INTERNATIONAL BRAZIL AIRSHOW (IBAS)...

March 29-April 2; Galeão International Airport, Rio de Janeiro, Brazil Info: +55 11 3032-5633; www.sators.com.br

#### **APRIL 2017**

March 13-16, Atlanta, GA.

**◆ ASIAN BUSINESS AVIATION CONFERENCE &** EXHIBITION...April 11-13, Shanghai Hawker Pacific Business Aviation Service Centre, Hongqiao Airport, Shanghai, China. Info: www.abace.aero.

#### **MAY 2017**

• • EUROPEAN BUSINESS AVIATION CONVENTION & EXHIBITION...May 22-24, Palexpo Convention Center, Geneva, Switzerland, Info: (202) 783-9000; www.ebace.aero/2017.

#### **JUNE 2017**

FLIGHT ATTENDANTS/TECHNICIANS CONFERENCE...June 12-15, Long Beach, CA. Info: www.nbaa.org/events/fa-ft/2017/.

2ND ANNUAL CARIBBEAN AVIATION MEETUP CONFERENCE...June 13-15. Saint Maarten. Info: cdrbud@caribavia.com, www.caribavia.com/.

◆ ● PARIS AIR SHOW...June 19-25, Exhibition Center of Le Bourget, France. Info: visiteurs@siae.fr: www.siae.fr/

#### SEPTEMBER 2017

REGIONAL FORUM...September 7, Morristown Airport, Morristown, NJ. Info: www.nbaa.org/events/forums/2017MMU/.

#### OCTOBER 2017

♦ • NBAA BUSINESS AVIATION CONVENTION & EXHIBITION...October 10-12, Las Vegas Convention Center, Las Vegas, NV. Info: (202) 783-9000; www.nbaa.org.

#### BOMBARDIER SAFETY STANDDOWN...

October 31-November 2. Wichita, KS. Info: www.safetystanddown.com/.

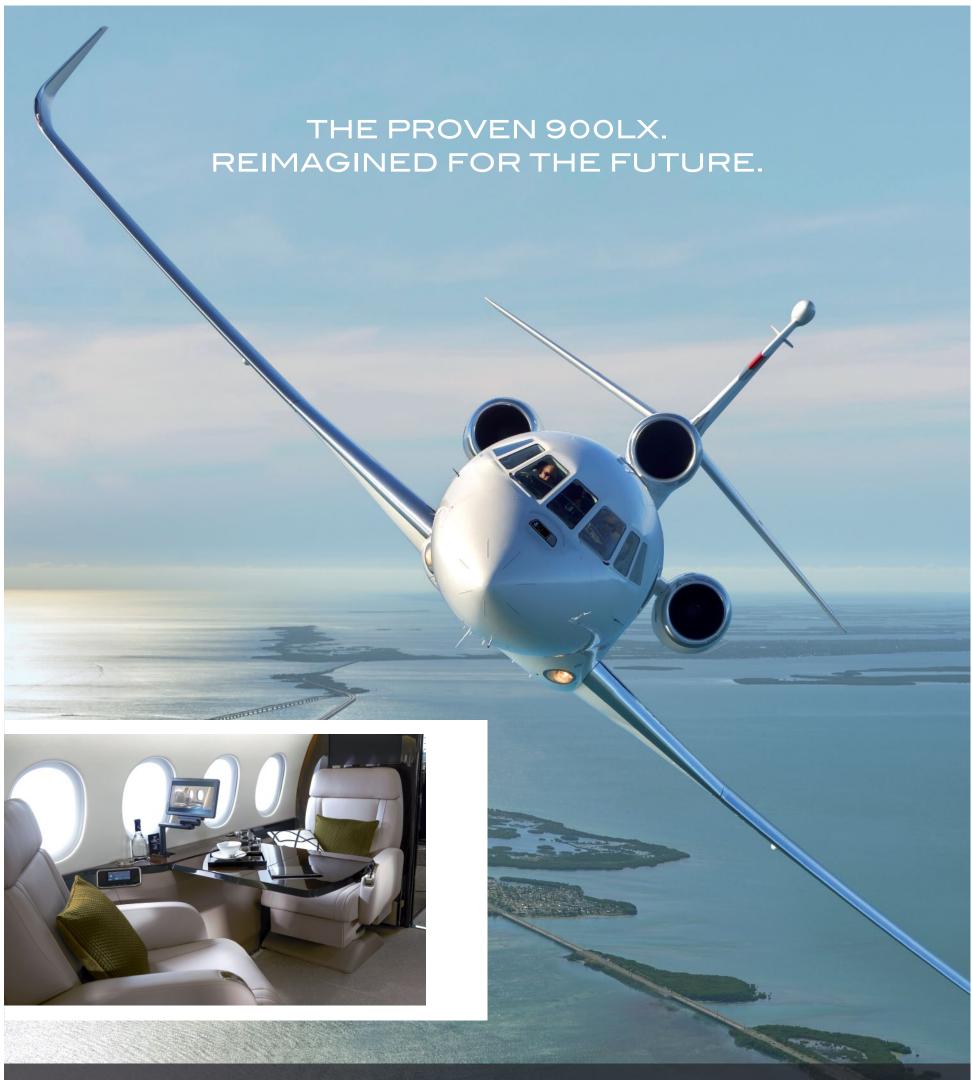
#### **NOVEMBER 2017**

◆ ● DUBAI AIRSHOW...November 12-16, Airport Expo, Dubai, UAE. Info: +97 1 4286 7755. www.dubaiairshow.aero.

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## Falcon 900LX

