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Bombardier reveals new Globals

by Kerry Lynch

Bombardier rolled out two new members of the Global family—the 5500 and 6500—during a celebration on the eve of the opening of EBACE 2018 in Geneva.

To enter service in late 2019, the new Globals present the "longest range, the clearest vision, the largest cabin, the sharpest entertainment, and the smoothest ride" in their class, combining improved performance with the Global DNA, said Bombardier Business Aircraft president David Coleal, standing alongside the Global 6500 flight-test vehicle parked at the TAG Aviation FBO at Geneva International Airport.

The newest models, to join the Global 5000 and 6000 models on the production lines rather than supplanting them, will be powered by new 15,125-pound-thrust Rolls-Royce Pearl engines (*see page 18*). Certified in February and in flight testing aboard Global 6500 and 5500 flight-test vehicles, the Pearl 15 engines offer one of the most advanced cores for fuel efficiency, reduced environmental footprint, and advanced engine health monitoring, Coleal said, calling the engines a "stunning feat of technology."

But beyond the engines, the new Globals incorporate "new features from tip to tail as well as from wingtip to wingtip," Coleal said. This includes a wing with a re-profiled trailing edge for better aerodynamics and high-speed performance, but with the characteristics of the traditional Global wing that provide a smooth ride, he said. The wing incorporates the same leading edge slats, flaps, and spoilers.

The combination of the new engine and redesigned wing produce faster models with a top speed of Mach 0.90, compared with Mach 0.89 on the Global 5000 and 6000. Fuel burn is also decreased by up to 13 percent, which Coleal notes make the aircraft not only

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Read Our **SPECIAL REPORT**

Completions

The cabin is the last frontier for improving comfort and performance, and OEMs and aftermarket providers are delivering what today's discerning owners demand. **AIN** looks at the developments of the last 12 months.

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FAA funding awaits action

by Kerry Lynch

As part of the Fiscal Year 2019 transportation, housing, and urban development appropriations bill, House and Senate lawmakers are setting aside up to $3.5 million in FAA funding to reimburse certain airports and service providers affected by disruptions surrounding Presidential temporary flight restrictions (TFRs).

The House Appropriations Committee approved its version of the FY'19 funding bill in May, followed by Senate Appropriations Committee sign-off of its own bill in June.

The $3.5 million would reimburse "airport sponsors that do not provide gateway operations and providers of general aviation

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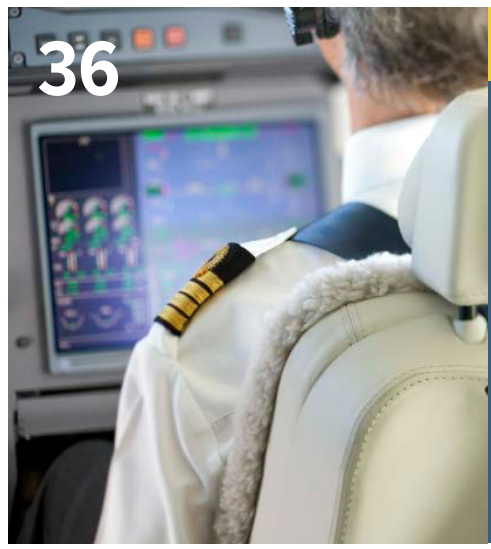

FEATURE

Pilot shortage

The long-discussed shortage has the industry looking for ways to attract and retain qualified pilots and the CFIs who train them.

Aviation International News

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PHENOM® 300E
BY EMBRAER

PHENOM 300: PERFORMANCE SECOND TO NONE

“That first feeling of the ramp presence was what really attracted me to the Phenom 300. I remember seeing the airplane and taking a bunch of pictures; I was just so struck by the presence of the plane sitting there. And then you start looking into its performance, and you sit in the cockpit and get familiar with the systems design and what it’s really going to be like flying the aircraft, and it just seemed like a natural fit for me – and, of course, my wife loved it too!

The engineers have done an incredible job. I really appreciate the Phenom 300’s modern design, and it just strikes me – week after week, month after month, as I own the plane – how well-thought-through things are: from how the redundancy works, to where things are placed, to the CAS messaging system when you have things that you need to work through in flight.

I have a lot of confidence getting in the airplane. The performance of the Phenom 300 is just second to none. It’s the biggest single-pilot machine you can fly in the sky, and I really like that.”

- Dan McGee, Technology Executive
Watch Dan’s story and request more information at
EmbraerExecutiveJets.com/Dan

The best-selling light jet in the world for six years running, Embraer’s Phenom 300 platform has achieved breakthrough status and dominates as the fastest, longest-range single-pilot aircraft on the market. And now, with the introduction of the brand-new Phenom 300E, a whole new standard in value and customer experience has been set. Designated “E” for “enhanced,” this modern, clean-sheet light jet delivers top-tier performance and next-generation avionics, along with a revolutionary new interior design for improved ergonomics, ease of maintainability, advanced connectivity and unmatched comfort and space. Add to that the industry-exclusive upper technology panel, plus a generous baggage compartment and low operating costs, and it’s easy to see why the Phenom 300E is truly in a class by itself.

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As We Go To Press

JETNET SEES SIGNS OF OPTIMISM IN BIZAV MARKET

Seventy percent of the 450 business aircraft operators surveyed by JetNet iQ in the second quarter believe the current market cycle is now past the low point, managing director Rollie Vincent said on June 20 at JetNet IQ Summit in White Plains, New York. "In seven and a half years of doing this work, we've never seen stronger numbers," he said. Paul Cardarelli, JetNet's v-p of sales, noted that the percentage of jets on the preowned market has declined from a high of nearly 18 percent in 2009 to just over 9 percent in the most recent data, indicating a switch from a buyers' to a sellers' market.

ENCOMPASS AVIATION SUES SURF AIR FOR $3.1M IN DAMAGES

Encompass Aviation filed a lawsuit against all-you-can-fly membership program Surf Air on June 19, seeking $3.1 million in delinquent payments and damages from breach of contract after the latter severed ties with the former on June 15. Part 135 operator Encompass had been flying 15 of Surf Air's PC-12s on its California routes since last April. Surf Air awarded this flying to Advanced Air on June 15. In the lawsuit, Encompass alleged that Surf Air is "financially distressed" and failed to pay for flights two weeks in advance, as required by the agreements, and "consistently was delinquent in paying following the provision of flight operations and maintenance." Surf Air contends the "claims are not accurate, the lawsuit is without merit, and Surf Air intends to defend itself vigorously. Surf Air is also considering counterclaims." According to documents filed with the California Secretary of State's office, Surf Air is also subject to $2.33 million in IRS liens for unpaid excise taxes in 2016 and 2017.

WITH UNION BATTLE OVER, FLEXJET PLANS FOR EXPANSION

Flexjet chairman Kenn Ricci called the May 30 union decertification vote at OneSky, the combined pilot groups at Flight Options and Flexjet, "an epic opportunity" for the company and its employees. "We now remove the barrier of the union and can directly interact with employees," he said. "It also makes acquisitions easier going forward since we won't need to get union approval." Meanwhile, the company is in the process of forming a pilot committee to "fairly integrate" the seniority lists of Flexjet and Flight Options pilots, Ricci said. In addition, he plans to expand its Red Label program. To gear up for further expansion, Flexjet is also hiring more pilots; it has already added 57 year-to-date and expects to hire another 100 by year-end.

NEW YORK-AREA AIRPORTS FACE SEA-RISE RISK

A recent report on the future of the metro-New York Airports by the Regional Plan Association paints a somewhat gloomy picture, particularly for New Jersey's Teterboro Airport (TEB). New York Harbor could see at least one foot of sea level rise by 2050, and possibly as soon as 2030, according to estimates from the New York City Panel on Climate Change. By the end of the century that total could be as high as three feet. According to the report, "TEB would be partly flooded at one foot, and could be fully inundated with three feet of sea level rise," leading the group to suggest phasing out the airport over the coming decades and spreading its operations to other area airports.

AIRSPACE, AIRPORT ACCESS TOP CHALLENGE FOR BIZAV

With airline efforts to privatize air traffic control vanquished for now, NBAA president and CEO Ed Bolen identified access to airspace and airports "at the top of the list" of challenges now facing business aviation. He singled out Santa Monica and East Hampton Airports for their ongoing efforts to restrict business aviation access, as well as Dallas Love Field, where plans call for assessing landing fees on all aircraft.

GPS INTERFERENCE CONCERNS ARISE OVER CELLULAR NETWORK

A group of 11 aviation organizations, including NBAA, HAI, and AOPA, have expressed concern about potential GPS navigation signal interference from a proposed broadband cellular communications network operating within frequency bands currently used by GPS. A prior attempt to implement a high-speed nationwide cellular network by Ligado Networks, formerly known as LightSquared, revealed signals from its cellular towers significantly disrupted aircraft navigation systems. This caused the U.S. FCC to deny LightSquared's plans in February 2012. Ligado now claims it has limited GPS signal disruptions to within a 500-foot diameter around transmission towers. However, the aviation groups said this has not yet been validated.

FIRST PRODUCTION GLOBAL 7500s BEING OUTFITTED

Production Global 7500s have started arriving at Bombardier Aerospace's Montreal facilities for completions, in anticipation of the aircraft's service entry later this year. Meanwhile, workers at Bombardier's completions center of excellence in Dorval, Quebec, have been building and assembling complete interior sets for the new Global, including kitchens, stateroom beds, dining furniture, and Nuage seats, since last year.

Industry leaders pushing for Hill action on FAA bill

by Kerry Lynch

The fate of long-term FAA reauthorization remained up in the air last month. There were conflicting reports from Capitol Hill, ranging from the possibility that it could be held up by election-season politics to glimmers of hope that a shortened congressional break in August may provide time to move the bill.

The Senate Commerce Committee approved the bill a year ago, but it had been held up by a provision regarding a measure that would alter the 1,500-hour requirements for commercial pilots, as well as by a lack of consensus with the House over the U.S. air traffic control organization.

The House, which passed its version of the comprehensive FAA bill in April, dropped the controversial ATC measure, and Senate Commerce Committee chairman John Thune (R-South Dakota) has long indicated a willingness to drop the 1,500-hour measure.

Even so, the Senate bill has not been scheduled for a vote. Industry leaders, hoping to see some sort of action, have been pressing lawmakers to complete work on the legislation.

GA Groups Weigh In

The General Aviation Manufacturers Association (GAMA) and the Aerospace Industries Association (AIA) recently wrote Senate leadership, urging the chamber to bring its version of the FAA reauthorization bill, S.1405, to the floor for a vote as soon as possible.

GAMA president and CEO Pete Bunce told attendees of the National Air Transportation Association (NATA) 2018 Annual Meeting and Aviation Business Conference last month that the focus has been to "get 'er done."

If the bill does not pass this year, Congress would need to sign off on another FAA extension and then go back to the drawing board with new FAA reauthorization bills next year, he noted. And

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Signature Flight Support's parent company, BBA Aviation, plans to purchase aviation fuels supplier Epic Aviation, which provides fuel and other services to more than 200 FBOs. Together, the two companies' networks encompass more than 400 locations worldwide.

BBA Aviation buying Epic

by Curt Epstein

BBA Aviation, parent company of Signature Flight Support, announced May 23 that it will purchase privately held Epic Aviation for $88.1 million. The transaction is subject to government and regulatory approval, and BBA expects it could be wrapped up by the third quarter.

Texas-based Epic provides aviation fuel supply, logistics, transaction processing and, through its QT Pod subsidiary, self-service fueling devices. It currently provides fuel and fuel-related services to 205 privately owned, independent FBOs, 185 of them Epic-branded and the remainder under the UVAir umbrella

According to BBA (Booth O104), Epic will act as a separate operating business within its portfolio. The addition of Epic's locations will complement the existing Signature Select affiliate program, which will operate alongside Signature's owned FBO network, bringing it to more than 400 locations worldwide.

"We are pleased to have reached an agreement to acquire Epic," stated BBA CEO Mark Johnstone. "This acquisition fully supports the strategic development of Signature through increasing our network relevance, extending the range of fuel and non-fuel services we offer our customers across our FBO network and continuing to establish a competitive cost structure through investment in technology and economies of scale."

The purchase also expands the existing relationship between the two companies, which saw the development of the Epic/Signature Multi-Service Aviation Card, which is accepted for payment at more than 8,000 locations worldwide, through U.S. Bank's Multi Service Aviation Network. ■

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The Global 7500 boasts a 300-nm range increase and remains on pace for certification this year.

@ EBACE18

Bombardier's flagship Global gets new name, longer legs

by Kerry Lynch

As Bombardier nears the completion of the flight-test campaign of its flagship Global 7000, the Canada-based aircraft manufacturer has a new name for the very-long-range, four-zone clean-sheet business jet: the Global 7500. The name signifies its recently confirmed longer range of 7,700 nm, which makes it the longest-traveling purpose-built business jet. But it also falls in line with the nomenclature of the newest members of the Global family, the Global 5500 and the 6500.

Keeping the naming in line with the new Globals provides "clear visibility" into the product line, said Brad Nolen, vice president, marketing, and product strategy.

Bombardier announced the 300-nm range increase in April, saying the change opens up new routes such as New York to Hong Kong and Singapore to San Francisco nonstop. Stephen McCullough, vice president, integrated product development, Global 7000 and Global 8000, underscored the importance of this to the aircraft's customers. People may ask what's the difference between 7,400 and 7,700 nm, he said, but stressed that it matters for routes such as New York to Hong Kong that are at the edge of 7,400 nm or 7,500 nm. The 7,700-nm range makes those city pairs practical and can be guaranteed to customers. "This makes the aircraft very, very usable," he said.

The company ensured the routes not only through analysis but also through the use of multiple flight-test vehicles, he added. "We were very clear to validate these performance [figures]. These numbers are good in the bank."

With that range, Bombardier ensured the wing design and fly-by-wire system provide for a smooth ride. "This aircraft is designed for customers," he said. "We have a lot of real design...and focus to manage the smooth ride." When a passenger flies the distances that the Global 7500 is capable of, a smooth ride is increasingly important, McCullough added.

Along with the range change, the flight-test program has confirmed improved takeoff and landing distance parameters. McCullough said the company was careful not to sacrifice this with the additional range, noting the importance of having access to a greater number of airports. "This aircraft is a very balanced aircraft," he said.

The flight-test program verified a new published takeoff distance of 5,800 feet at full fuel in standard operating conditions. In addition, the landing performance is 2,850 feet, and Bombardier officials already have begun paving the way for steep approach approval to airports such as London City. Bombardier expects this approval soon after the aircraft enters service, benefiting from experience it had with the fly-by-wire system on the C Series, McCullough said.

Behind these changes is a flight-test program that has involved five aircraft that have amassed about 2,000 hours, along with static and motion simulators.

"We really are in the final throes of flight testing. We are weeks away," McCullough said.

On the ground, the company has completed the first full fatigue cycle of the airframe, and plans to have the second accomplished before entry-into-service. The company is planning three such tests. The ultimate wing-load test further has been completed and fully met expectations, he said.

Modular or Customizable Interior

A lot of attention and detail is being paid to the interior of FTV 4, which with a 54-foot, 7-inch cabin provides four distinct living spaces plus crew rest area. McCullough called the crew rest area a must, given the length of time the aircraft can fly. The 7500 also incorporates a full kitchen, better equipped than many found in an apartment, he added.

While the cabin is highly customizable, right down to the incorporation of artwork at a customer's request, the company is taking a modular approach to completions, which will help cut down the time it takes. Nolen said the company is finding a number of customers are opting for an aft stateroom that includes a fixed bed. Other spaces could include an entertainment area, dining and/or office suite, and typical club-seating area.

The cabin management system was designed in concert with Lufthansa Technik, with a range of communication and entertainment amenities. And the seating features Bombardier's new patented Nuage seats that are designed to ergonomically adapt to the passenger.

The $72.8 million 7500 will be completed at Bombardier's Montreal center, currently where the Global 5000s and 6000s are completed. G5000 completions, however, are shifting to Wichita and 6000 work to another Bombardier facility in Montreal. The center is currently running at near full capacity with three shifts operating and the angle of the aircraft slightly shifted to accommodate more stations. Bombardier has expanded and incorporated a number of enhancements to the center in anticipation of the ramp up on Global 7500s, investing between $55 million and $60 million in the facilities.

The initial backlog stands at three years, the manufacturer estimates. ■

Winglet STC boosts Sovereign performance

Winglet Technology received FAA STC approval for mtow and maximum zero fuel weight increases for Cessna Citation Sovereigns equipped with the company's Transitional winglet designs. The FAA STC nod permits a 475-pound increase in the Sovereign's mtow and a 200-pound increase in maximum zero fuel weight.

The winglet specialist initially obtained FAA STC approval for installation of the winglets on the Sovereign in June 2017. The winglets provide a gradual transition from the horizontal wing surface to the vertical winglet surface to improve the wing's aerodynamics.

The result enables higher maximum cruise speeds at altitude, greater range, and improved weight, altitude, and temperature performance, Winglet Technology said. Flight-testing has confirmed a 35-ktas increase at FL450, and the ability to climb direct to FL450 in 28 minutes at the higher mtow, the company said.

The winglets add 90 pounds to the empty weight, which results in a 385-pound useful payload increase. **K.L.**

News Briefs

Dassault Sees Improving Business Climate

Dassault Aviation chairman and CEO Eric Trappier is encouraged by a stronger business aviation climate and growing worldwide demand for Falcon business jets. This improving picture for business aviation coincides with Dassault logging the first sales in its latest jet program, the Falcon 6X, which was unveiled in February. The introduction of the 6X coincided with a much-improved preowned market, which is evident in a significant drop in 7X preowned inventory. Demand for used 7Xs in the Asia-Pacific region is especially strong, as is the case in the rest of the world, Trappier said.

Aerion Beefs Up Team on Trek To Supersonic Flight

Aerion, the U.S.-based developer of the AS2 supersonic business jet (SSBJ), remains on pace to make its first flight in 2023. It will build five flight-test vehicles en route to certification, projected for 2025. In December, Aerion signed an agreement with Lockheed Martin to develop the aircraft, and last year announced a deal with GE Aviation to develop engines to power the AS2. The engine will use the core of an unidentified existing GE Aviation engine in the 18,000-pound-thrust range—likely the CFM56. A low-bypass turbofan engine will be built around the core for the AS2. Aerion also announced two units of TAG Aviation as sales consultants. TAG's UK division will handle Europe, Africa, and the Middle East, while TAG Asia will cover China, Hong Kong, and other parts of southwest Asia.

OneSky Pilots Vote Out Teamster Union

OneSky pilots have voted 318 to 220 to reject union representation by International Brotherhood of Teamsters (IBT) Local 1108. The May 30 vote ended a long battle over union representation, following the 2013 merger of the Flexjet and Flight Options fractional ownership companies under OneSky. After the results, company chairman Kenn Ricci announced that all pilots would receive a $1,000 bonus check in "celebration" of the vote. He also outlined some immediate changes: reinstating longevity for transfer pilots; increasing first officer compensation for better retention; increasing Phenom pilot compensation; increasing voluntary overtime compensation; and reinstating individual employment agreements.

HondaJet for Sale in Japan

Honda Aircraft has expanded sales to Japan with the appointment of Marubeni Aerospace as HondaJet Japan, which will provide sales, service, and maintenance of the light twinjet in the region. The company submitted an application for Japan Civil Aviation Bureau type certification in May, and the first HondaJet Elite is expected to be delivered there in the first half of 2019.

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HondaJet Elite enhances performance and comfort

by Matt Thurber

Honda Aircraft unveiled a new version of its light jet at EBACE 2018, the HondaJet Elite. More than just a cosmetic upgrade, the Elite expands the light jet's performance envelope while adding interior improvements and significant updates to the Garmin G3000-based flight deck.

While the amended type certificate for the HondaJet Elite was issued by the FAA on May 2 and it is also EASA certified, Honda Aircraft engineers have been working on the improvements since the jet first achieved certification in December 2015, according to company president and CEO Michimasa Fujino.

"The HondaJet Elite represents Honda Aircraft's continued commitment to performance, efficiency, and environment creating new value in business aviation," he said. "The result of innovation, design, and engineering, our new aircraft features several performance and comfort enhancements that, once again, set a new standard in aviation."

Thanks to additional fuel capacity and aerodynamic improvements that include removal of vortex generators on the empennage and winglet leading edges and a slightly wider elevator, the HondaJet needs less runway for takeoff and can fly further. NBAA IFR range with four passengers is now 1,437 nm, up 17 percent from 1,223 nm.

On the empennage, in addition to removal of the vortex generators, the improvements came from extending the horizontal stabilizer tips slightly and tightening up hinge gaps. The improvements eliminated the need for the vortex generators, allowing energized flow over the stabilizer without the devices. "It's much sleeker looking now," Fujino said.

Maximum takeoff weight is up 100 pounds, but some weight-shaving measures carved about 107 pounds from the empty weight, for a more than 200-pound payload increase. Weight reduction came from removal of the vortex generators and small but cumulative tweaks to systems and structure. The additional fuel amounts to 16 gallons, achieved by redesigning the aft fuselage fuel tank to fill some unused available space in the aft fuselage.

Next to the fuel filler, a lighted push switch has been added, and when pushed before fueling begins, it warns the fueler to slow the fuel flow when the fuel starts to fill the aft tank. This avoids fuel spillage, because at that point the fuel flow must be slowed for the tank to fill properly without overflowing. The fuel neck was also redesigned to make it easier to insert the fuel nozzle.

Interior and exterior noise have been lowered significantly with a unique design feature, a perforated aluminum-honeycomb sandwich engine inlet engineered to cut fan blade passage noise. This technology is based on NASA noise-reduction research, although Honda Aircraft's application of this technology is proprietary and it has applied for a patent. The noise reduction also contributed to the reduction in weight, by allowing removal of some insulation in the fuselage.

The engine inlet close to the fan features thousands of holes positioned "to mitigate fan noise," Fujino explained. While the HondaJet's unique over-the-wing engine mounting reduces low-frequency vibrations significantly because they aren't transmitted into the fuselage, fan passage noise is generated at a higher frequency. Honda Aircraft engineers conducted sophisticated testing to isolate this noise and design the specific perforation pattern to mitigate the high-frequency vibrations. The result is a significant reduction in high-frequency noise, although Fujino didn't want to specify a number due to the patent application."In the cabin, during climb and takeoff, the difference is distinctive," he said.

Improvements to the G3000 flight deck include faster display processors, performance planning for all phases of flight and takeoff/landing distance computation for runway length, V-speeds, climb/approach gradient, and more.

The autopilot now offers stability and protection with roll and angle-of-attack functions and coupled go-arounds with underspeed protection.

Cabin Enhancements

Buyers have new interior options such as a Bongiovi audio system with speaker-less transducer-based immersive audio, which weighs less than the preview four-speaker sound system. The 24 transducers are calibrated to provide a 3D immersive audio experience, and this signal processing technique also delivers a surround-sound experience when wearing headphones.

The lavatory seat now is available for takeoff and landing with its own seatbelt, preserving the seven-seat capacity when the galley is installed. The optional galley is fitted with a coffee maker, and the galley replaces the side-facing seat opposite the cabin entry door.

Thicker carpets are part of the Elite interior, and buyers can now opt for two-toned executive leather seats.

On the outside, "premier signature" paint options are available in colors that deliver greater depth using a new three-layer paint process. The colors are Ice Blue, Ruby Red, and Monarch Orange.

First deliveries of the Elite will take place this fall. ■

Sino Jet opens Guangzhou office

Sino Jet, China's third largest business jet operator, opened its new base at Guangzhou's Baiyun airport on June 14, adding to its existing bases in Beijing, Hong Kong, and Shanghai. The facility is riding on the government's 88 billion yuan (US$13.75 billion) investment in the Great Bay Area, which consists of the major Pearl River Delta cities like Guangzhou, Shenzhen, and Zhuhai, as well as Hong Kong and Macau.

Jenny Lau, president of the Sino Jet Group, said that the company wishes to be closer to its clients in the Shenzhen and Guangzhou region, which has seen some demand. She added that the city is strong in aircraft maintenance and has the talent pool to allow Sinojet to establish a MRO service there.

Lau said Sino Jet is planning to further increase its capability in Chengdu and Shenzhen, and open new offices in Xi'an and Xinjiang in the near future. **C.C.**

News Briefs

Chao: Privatized ATC Proposal Will Come Back

While conceding that the concept of removing the nation's ATC system from the FAA lacks political will on Capitol Hill, Transportation Secretary Elaine Chao believes that the fight for such reform is far from over. Speaking during a *Washington Post* forum last month, she called the proposal for an independent ATC timely and said, "this idea is going to come back."

VNY To Deploy CPDLC

Los Angeles-area Van Nuys Airport (VNY) has been added to the list of U.S. airports at which controller pilot datalink communications (CPDLC) is deployed. Pre-departure clearance (PDC) operations began June 12 and full departure clearance (DCL) capabilities will begin on August 20. NBAA said its direct involvement in connecting the FAA and Harris Corporation with operators aided in the selection of VNY as a site for CPDLC expansion. CPDLC-DCL shifts routine exchanges between pilots and air traffic controllers from voice to data. VNY is one of the busiest general aviation airports in the world and the addition of PDC and DCL capabilities is expected to further implement NextGen technologies there.

Nick Fadugba Is AfBAA Chair

Nick Fadugba, CEO of African Aviation Services, has been appointed chairman of AfBAA, the African Business Aviation Association. He replaced Tarek Ragheb, the founding chairman of the association. Fadugba established African Aviation Services in 1990 and has provided consultancy and advisory services to international and African aviation organizations and governments over the years. He is a former secretary general of the African Airlines Association and an advisor to the Association of African Aviation Training Organizations.

FAA Begins Next Round of Remote Tower Ops at JYO

The next phase of the FAA's remote tower program at Leesburg Executive Airport (JYO) in Virginia began on June 25 and will run for about 30 days. The agency is working with the Virginia Small Aircraft Transportation System Laboratory on the pilot project, which involves a mobile ATC tower at JYO and Saab Sensis technology to test the remote tower concept.

CBAA Launches Young Professionals Initiative

To attract young professionals to business aviation careers, the Canadian Business Aviation Association (CBAA) launched the BizAv Young Talent Initiative (BizAv YTI). BizAv YTI plans to reach out to flight schools and post-secondary institutions, organizing presentations that explain business aviation and its career opportunities. The first BizAv YTI meeting is planned in Alberta later this year.

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Signature Flight Support acquired its FBO at Asheville Regional Airport in its 2016 purchase of Landmark Aviation. It is the lone aviation services provider on the field. Last year, AOPA filed a Part 13 complaint about FBO pricing at the airport, and the FAA has now disputed those arguments.

FAA issues response to AOPA FBO pricing complaint

by Curt Epstein

The FAA has issued a conclusion in response to the Aircraft Owners and Pilots Association's Part 13 complaint against Asheville Regional Airport and its sponsor the Greater Asheville Regional Airport Authority (GARAA), refuting AOPA's arguments. The complaint filed last August alleged "egregious FBO pricing practices" at the North Carolina airport and asked the FAA to investigate if its agreement with Signature Flight Support, the lone service provider on the field, was in violation of Grant Assurance 22 (Economic Nondiscrimination) and 23 (Exclusive Rights).

In the June 7 letter to AOPA general counsel Kenneth Mead, the agency noted that airport sponsors collect the bulk of their revenue via two sources: aeronautical users (aircraft operators) paying airfield fees (usually collected by FBOs) for use of runways, taxiways, ramps, and aprons, which the FAA decrees should be based on cost; and second, from airport concessionaires (such as FBOs) who pay rent and charge their own fees for all other aeronautical facilities and services, such as terminals, hangars, cargo space, and maintenance. The agency permits the FBOs to use fair market value in setting those fees.

AOPA argued that FBO fees for services rendered in the leased area should be regulated in the same manner as runway usage, to which the FAA responded that such a standard would not be applied to similar fees levied directly by an airport sponsor. While AOPA claimed that overnight parking, or tie-down, triggers fees from the FBO, the FAA countered that "the sponsor may use direct charges, such as tie-down fees, to charge aeronautical users for the use of airport facilities." The agency also noted that if such services were provided directly by the GARAA, the airport sponsor would be in violation of its grant assurances if it did not charge for them."

AOPA's argument asserted that Signature's pricing model is unreasonable, in that it requires transient operators to pay for services that they may not want or need as a condition of engaging in the aeronautical use of the facility. The pilot organization called the FBO's fees unreasonable. The FAA found AOPA's "assertions to be unpersuasive," as "comparing Signature's rates and charges to those of surrounding airports does not reflect Signature's total costs at the airport."

It described the substantial infrastructure investment the FBO chain was required to make at the airport, such as a new terminal, a hangar complex, maintenance facility, office space, fuel farm, and a self-service pump and fueling area for avgas. In addition to the initial investment, the FBO was required to spend another $750,000 on leasehold improvements to its ramps and has other future financial commitments.

"The fact that Signature charges transient operators for services it provides at its leasehold is not unreasonable," stated Heather Haney, the airport compliance specialist in the FAA's Southern Region, which issued the decision. With Signature assuming a certain level of risk in its investment, the FAA ruled, the company is entitled to pursue a business model that provides a return on its investment.

Questions about Access

AOPA also contended that "the combination of Signature's pricing model and its exclusive control over all transient parking at [the airport] presents unreasonable conditions and terms for transient operators to access the airport." In the FAA's opinion, AOPA's argument does not represent a denial of access for its members as much as an inconvenience, stating it "fails to establish how the pricing and transient parking services are so unreasonable as to deny access in violation of Grant Assurance 22(a)," as it had the requirement to demonstrate.

The FAA added AOPA's complaint does not meet the burden of proof with regard to how GARAA's decision to allow Signature to provide transient parking is unreasonable. The airport sponsor has pointed out pilots are allowed free access to a self-service fueling area, as non-badged pilots are required to remain with their aircraft due to security concerns. Any pilot using FBO services or facilities, however, would be assessed a ramp fee, which is waived with a minimum fuel purchase.

Lastly, as to AOPA's argument that GARAA has granted Signature an exclusive right to all transient tie-down activities as the lone FBO, the airport sponsor responded that it has 50 acres of available land to accommodate a second FBO at Asheville, if needed, but as AOPA itself noted, "the current demand for [the airport] is unlikely to support a second FBO."

The FAA concluded that GARAA, therefore, is currently in compliance with Grant Assurances 22 and 23 and that no further review of this matter is warranted.

"We believe the FAA Southern Region decision is incorrect and inconsistent with the ruling in Orange County [California] and the guidance FAA headquarters issued as recently as December 2017," Mead responded. "We will continue to fight for reasonable access, transparent and public pricing, and competition. It also is fundamentally offensive for the FAA to imply that it is an acceptable business practice to make pilots pay for services they don't request or need."

The letter also sparked a response from the National Air Transportation Association, the FBO industry association.

"NATA and its aviation business members are pleased that the FAA took the necessary time and steps to understand the complexity of the issue and to consider the views of all stakeholders," said Marty Hiller, the organization's president and a principal in North Shore Holdings, which owns FBOs Marathon Jet Center, Marathon General Aviation, and Harbour Air Services. "The FAA's complaint review letter illustrates the profound role of airport sponsors in upholding their federal obligations, and ensuring fees are reasonable and access to the airport is available to all users." ■

NEWS note

Gulfstream is rebranding its Product Support organization to Customer Support, a move that the Savannah, Georgia manufacturer says better emphasizes its focus on the customer. "This shift underscores the tremendous degree to which we prioritize and value our customers," said Derek Zimmerman, president, Gulfstream Customer Support.

The organization encompasses more than 4,700 people, 30 factory-owned and authorized maintenance facilities worldwide, and a spare parts inventory valued at more than $1.6 billion.

Gulfstream notes its continual expansion in the product support arena with new products, pointing to the recently introduced Aircraft Ownership Service maintenance and operations program. This program is tailored to the customer's requirements, and could include support, operations, and maintenance. ■

News Briefs

Cessna Working on First Denali Flight-test Articles

Fabrication of the nose section, fuselage, wings, and tailcone of the first three flying prototypes of the new Cessna Denali 12-seat turboprop single is now under way in Wichita. Textron Aviation launched the airplane at EAA AirVenture 2015 and is working toward first flight early next year. It had initially targeted first flight in third-quarter 2018 and certification in 2019.

GE's Catalyst Readies for Certification Testing

GE Aviation is preparing to begin certification testing for its new Catalyst turboprop engine. Since December, the powerplant has run for 60 hours, recently advancing from idle to full-power testing, generating critical data. The manufacturer said component certification is imminent and will be followed by whole-engine certification testing, starting with ingestion and altitude tests. "The engine is running well, and the hardware looks great," said Brad Mottier, president and general manager of GE's business/general aviation unit and integrated systems organization. The second engine is nearly complete and it is expected to make its first run this summer.

BACA, EBAA Unite Against Gray Charter

BACA-The Air Charter Association is teaming up with the European Business Aviation Association (EBAA) to fight illegal charter. Under the joint effort, the organizations will collect data on the breadth and scope of "gray charter" practices—those involving the transport of paying passengers in aircraft that have not been approved for commercial operations. The goal is to gather as much evidence as possible on where gray charter is most prevalent and who are the frequent offenders, they added. According to the associations, the extent of gray charter is unknown because it is frequently not reported. By building a database, they hope regulators will have more ability to deal with this activity.

Av8 Sees Pent Up Demand for PMA Parts in Bizav

Av8 PMA said parts manufacturer approval (PMA) items are set to become far more popular and widespread as aircraft operators realize that an alternative exists to OEMs, PMA parts are acceptable, and there are small engineering companies that can produce them. Because of this, it has opened a new dedicated engineering facility in Dallas to act exclusively as a facility for the engineering and certification work on PMA parts. Soon the center will have "laser scanners, a 3D printer, and other high-powered equipment that will increase efficiencies related to the reverse engineering process of parts and prototype development," said the company.

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EBACE18

GAMA updates Brexit paper, raises concerns about future

by Ian Sheppard

The General Aviation Manufacturers Association (GAMA) has updated its White Paper on Brexit, the decision by the UK to leave the European Union, focusing on its impact on aviation. The paper was first published in November 2017.

Pete Bunce, GAMA president and CEO, told **AIN** at EBACE 2018 that despite the "Notice to Stakeholders" EASA issued on April 13 this year being "draconian" with little explanatory detail, it was a necessary first step and at least notified aerospace entities in the UK that any EASA approvals would cease to be valid from March 30 next year. He noted that GAMA had been among industry representatives lobbying the European Commission agency hard for many months on communicating the implications of Brexit, so they had sufficient time to prepare their businesses.

Although GAMA is based in Washington, D.C., Bunce said, "There is a special reason we put an office in Brussels and not Cologne [where EASA is based]. It's where the key policy decisions are made. As soon as the Brexit vote was taken we [approached] our contacts at DG MOVE (The EC Directorate Generate for Mobility and Transport) and were thinking of what things it might affect."

GAMA approached Pete Sorensen, EU policy officer international relations, aviation safety, to "work out the limits within which he was able to work with us, and how we should proceed." GAMA, on its members, "started to push for guidance on the best case, worst case, those kind of things." He added that GAMA represents aerospace manufacturers around the world along with MRO providers and suppliers.

Bunce told **AIN** that 460 entities in the UK have EASA approved repair station status (Part 145), with 172 being FAA approved as well. There are also 165 companies with Part 21 Design Organisation Approval under EASA. "So [Brexit has] a tremendous impact, in a situation where we still don't have any clarity."

He said that some are already preparing on the basis of a "worst-case scenario" whereby the UK would leave the EU without a deal that would keep it in the EASA system. "If the 'Notice to Stakeholders' is implemented as stated," said Bunce, "the impact would be dramatic."

"We're in May now, and the UK negotiating paper is due to be in place in the next few weeks. We can't have any more delay, given everything that has to happen [to prepare]." Bunce is nervous that politicians think the industry is able to "pick up the pieces" once they decide on the final shape of Brexit, with very little time to the leaving date. In addition, there is still no agreement on a possible Transition Period to the end of 2020.

"Companies big and small are all being held hostage to what happens at the political level," said Brian Davey, GAMA's Brussels-based director for European and international affairs.

Meanwhile "the EC is being silent on contingencies," he added. Bunce said it's clear the EC and EASA don't want to appear "weak in their position" should it propose "workarounds" to help aviation firms with Brexit, such as a fast-track process from Part 145 approval to Part 145 Third Country Operator (TCO) approval.

"We don't see anything from the [UK] CAA that they have a contingency plan [either]," said Davey. The CAA has estimated it would take seven years to transition to a state where it had all the capabilities EASA has now established covering the UK. Bunce added that the UK is a totally different scale to the likes of Norway and Switzerland, which have arrangements with the EU and EASA.

On EASA's agreements with the FAA Bunce said, "It takes a really long time to negotiate bilateral safety agreements but if the CAA takes seven years to get to that level [of competency], how can we have an agreement?" This is despite the FAA stating that there is an "old bilateral" that it can fall back on, if necessary. Bunce said that would still require a lot of time to "organize and implement."

Kyle Martin, GAMA director of regulatory affairs, said, "Nothing can move forward until the bigger picture moves forward." He added that the June EC Council meeting was the next chance, with the UK presenting its negotiating paper. "But we're not too optimistic."

Bunce said, "GAMA wants to give its members clarity" but they are still waiting, despite it being on agenda items at several GAMA board meetings already.

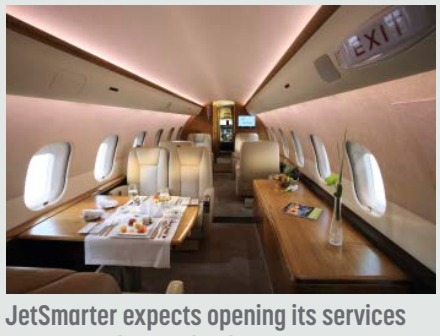
In conclusion, Davey commented: "Even if there is a transition period [to the end of 2020], we still need a lot of time and there is still a cliff edge at the end of it." ■

JetSmarter opens bookings to non-members

JetSmarter has begun offering its flight services to non-members. Without the commitment and annual fee of membership with the company, users of the JetSmarter app will be able to click a pay-as-you-go option to book individual seats at market non-member rates. Non-members will also have the ability to create shared and private flights. According to JetSmarter, flight availability is dependent upon the number of people crowdsourcing flights and it expects the new booking model to drive flight frequency and route creation.

Sergey Petrossov, founder and CEO of JetSmarter, explained what the pay-as-you-go option means for current members. "With more users to initiate custom flights, the JetSmarter community will continue to grow, ultimately driving the creation of new routes and flight frequency. With JetSmarter's flight inventory determined by the flying community, both members and non-members alike will benefit from the increase in flight creation. The pay-as-you-go access will enable more users to create flights which will infuse the community with more supply. This will also enable hundreds of thousands of users to crowdsource flights, and in time, millions will have our app," said Petrossov.

Flight creation, a capability previously only offered to members, will now be available to non-members, giving them the freedom to select aircraft, departure time, and the number of seats needed. According to JetSmarter, this helps save thousands compared to traditional private travel and Petrossov said the price would be guaranteed at the time of creation for all shared flights. When asked for an estimate of non-member market rates, Petrossov provided an example of $1,500 to $2,100 per seat for a flight from New York to Florida.



JETSMARTER

JetSmarter expects opening its services to nonmembers to lead to route creation and increased flight frequency.

The JetSmarter app supports crowdsourcing of flights with a "share" button feature allowing users to share their created flight with members and non-members alike. Flight credits are awarded to users who refer other non-members to book seats. Membership starts at $4,950 per year and entitles members to significant seat discounts, priority flight availability, concierge service, and other advantages. **A.R.**

News Briefs

Piaggio Hopes To Double Avanti Evo Production Rate

Italy's Piaggio Aerospace said its new five-year plan unveiled in December has already led to positive results. In fact, sales and production of its $7.7 million Avanti Evo turboprop twin are picking up, following a few years of sluggish performance. A change of mindset is seeing a focus on customization to suit demand, including special-mission variants and options such as a large cargo door, company CEO Renato Vaghi told **AIN**. More than 230 P.180 Avantis are now in service worldwide, 10 of which are Evos. "If you order one now, you should have it by mid-2019," he noted. "We are hoping to double the production rate in a very short period of time."

Textron Upgrades Warranty Claims Website

Textron Aviation launched its upgraded warranty claims processing website to provide a simple experience for customers. The website's upgrades include improved claims processing and post-purchase support. Textron worked with a board of 14 members—among them directors of maintenance, owner-operators, international customers, and representatives from aircraft management companies and flight departments—to develop the site upgrade. The website features improvements on streamlining claims processing and post-purchase customer support.

Viasat, Embraer Offer Ka-band for Legacy 450/500

Viasat has developed a high-speed Ka-band satellite communications system that fits on midsize jets and announced that Embraer will be offering the Viasat system on its Legacy 450 and 500. The Viasat Ka-band satcom requires just three LRUs, a compact 12-inch G-12 antenna, antenna control unit, and modem, and it works with any type of router. Total system weight is 51.4 pounds, and the G-12 antenna weighs 26.4 pounds. "This is a first for a midsize jet," said James Person, director of global business development for business and VVIP aviation. The Viasat Ka-band satcom will also be available as a retrofit for in-service Legacy 450s and 500s. Person said the "the addressable market for the Ka-band satcom is about 5,000 aircraft."

Jetex To Lead Honda Aircraft Middle Eastern Sales

Honda Aircraft has appointed Jetex Flight Support an authorized sales representative to the Middle East, representing HondaJet sales in the UAE, Saudi Arabia, Bahrain, Oman, Qatar, Lebanon, Pakistan, Jordan, Turkey, and Kuwait. Honda Aircraft president and CEO Michimasa Fujino said there is "tremendous interest" in the Middle East for the new HondaJet Elite.

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GE readies for Passport debut

by Curt Epstein

GE Aviation continues to provide support for Bombardier as the airframer counts down to certification on the recently renamed Global 7500 (*see article on page XX*). According to Shawn Warren, the engine manufacturer's regional engines and services director for Bombardier programs, the company is continuing to build up hours on the Passport engine, which was certified in April 2016 and represents GE's first purpose-built business aviation powerplant.

MARK WAGNER

The Passport engine is slated for EIS this year.

"We've talked about having 4,000 hours and 8,000 cycles by the time we get to entry-into-service," he told **AIN**. "We're right now around 4,700 cycles and about 3,600 hours but [are] continuing to run engines, so we do expect to be at that target by the time we get to EIS later this year."

GE is currently ramping up Passport production at its facility in Strother, Kansas. While the location was initially tapped as an overhaul facility on the new engine, the decision was made to center production there as well.

"We've been moving more new production in the facility as well. For Passport, it's great because it's a one-stop shop," said Warren. "One part of the plant is doing production, and the other part is setting up for overhaul, so they can leverage expertise, people, and tooling—back-and-forth." In addition to assembling units for Bombardier's production line, the facility is developing a pool of lease units, as well as provisioning its service centers and its parts distributor Aviall.

The company already has an established global service network based on its earlier business aviation engines, which were borrowed from commerical programs. But with the extremely long legs of the Global, it expects to add to that network. "I think we're expecting with the Global 7500, probably an even more global landscape of customers than we have today on the Challenger," said Warren. "So we're looking to continue to not just leverage that CF34 network, but also build out some new service centers as well."

He noted that the company is currently evaluating the scope of work that makes sense for each location based on its capabilities. Lufthansa Technik was selected to provide mobile repair team support for the program in Europe, Russia, and the Middle East.

As for technical training, the initial classes at its Cincinnati headquarters have focused mainly on GE employees, but the company is now beginning to bring in customers and the service center employees. "We've got the training material ready and now it's just working through the schedules with the different folks to...bring them in as we progress forward," said Warren.

While the company eagerly awaits the powerplant's entry-into-service, Warren believes this is just the start of the program. "We continue to look for new opportunities to go find other applications for the Passport, wherever those may be." ■

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CYYZ	Skyservice FBO -Toronto	Ontario, Canada
KABE	Lehigh Valley Aviation Services	Allentown, PA
KAFW	Alliance Aviation Services	Fort Worth, TX
KARR	**J.A. Air Center**	**Sugar Grove, IL**
KBED	Jet Aviation - Boston	Bedford, MA
KBFI	Clay Lacy Aviation	Seattle, WA
KBIS	Bismarck Aero Center	Bismarck, ND
KBOI	Jackson Jet Center	Boise, ID
KCMH	Lane Aviation	Columbus, OH
KCPS	Jet Aviation - St. Louis	Cahokia, IL
KCRQ	Magellan Aviation	Carlsbad, CA
KCXO	Galaxy FBO	Conroe, TX
KDAL	Jet Aviation	Dallas, TX
KDLH	Monaco Air Duluth	Duluth, MN
KIAD	Jet Aviation	Washington/Dulles, VA
KFLL	Jetscape Services	Fort Lauderdale, FL
KFNL	Fort Collins - Loveland jetCenter	Loveland, CO
KFTY	Hill Aircraft	Atlanta, GA
KGSP	Cerulean Aviation	Greer, SC
KHOU	Jet Aviation	Houston, TX
KJQF	Concord Regional Airport	Concord, NC
KLBE	Vee Neal Aviation	Latrobe, PA
KLEB	Granite Air Center	West Lebanon, NH
KLGB	Ross Aviation - Long Beach	Long Beach, CA
KLNK	Silverhawk Aviation	Lincoln, NE
KOAK	KaiserAir	Oakland, CA
KPBI	Jet Aviation	West Palm Beach, FL
KPHX	Swift Aviation	Phoenix, AZ
KPWM	Northeast Air	Portland, ME
KSEE	Circle Air	San Diego, CA
KSSI	Golden Isles Aviation	St. Simons Island, GA
KTEB	Jet Aviation	Teterboro, NJ
KVNY	Clay Lacy Aviation	Van Nuys, CA
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› continued from page 4

FAA reauthorization

the longer Congress waits, the less time it will have to complete the bill before FAA's authorization is set to expire at the end of September.

The joint letter between GAMA and AIA stressed the need for approval, citing key reforms in the current FAA bills, including in the areas surrounding certification and regulation, that they said "will benefit businesses large and small, as well as drive industry innovation and job growth." The bills will stimulate exports and jobs and increase global competitiveness, the associations added.

"With similar legislation already having passed the U.S. House of Representatives, we believe now is the right time for the U.S. Senate to decisively act to improve the FAA certification and regulatory process," the associations said in the joint letter.

Bunce further highlighted benefits of the FAA reauthorization bill during the NATA conference, pointing to language written to ensure the FAA takes full advantage of delegation authority.

Other GA leaders at the NATA conference also have been watchful of its progress.

In light of the ongoing certainty surrounding this and past FAA reauthorization cycles, NBAA COO Steve Brown emphasized a need to push Congress for the longest possible reauthorization period, to ensure stable funding for the FAA. He added that NBAA is pushing for concepts to help ensure steady funding.

Mark Baker, president and CEO of the Aircraft Owners and Pilots Association, also underscored important measures that support continued expansion of NextGen initiatives such as Data Comm, but also the need to ease small airports' access to funding. He noted that millions set aside for small airports go unspent because of regulatory barriers. That money then reverts to the general pot of funds for airports and will get used elsewhere. This is particularly important, he added, because a healthy airport system is necessary to encourage growth in the pilot population.

ATC Privatization Worries

Alongside the benefits of the House and Senate version of FAA reauthorization legislation, GA groups worry that continued delays could provide an opening for the resurrection of ATC privatization proposals. The push on Capitol Hill to privatize U.S. ATC has halted for now, but the GA leaders fully expect the concept to resurface.

"General aviation successfully defeated privatization of ATC, but I think everyone in this room...would agree that's a fight that will continue to go on over time. We're not sure that we'll ever actually kill that dragon," NATA president Marty Hiller told his conference attendees.

Speaking during a recent *Washington Post* forum, Transportation Secretary Elaine Chao called the proposal for an independent ATC timely and said, "this idea is going to come back."

Chao reiterated arguments that the concept should be considered because the ATC system faces delays and inefficiencies. "The Administration's proposal...would enable the air traffic control to address some of the delays and the congestions which so many passengers face every single day," she said. She also expressed concern about a "bit of conflict" that is present by having the safety regulator also manage ATC operations.

Having said that, she acknowledged that "We have been unable to get enough votes in the House and the Senate," and added, "We need to work on that." ■

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› continued from page 1

Newest Globals

"greener" but improve on operating costs.

These changes further boost the range of the Global 5500 to 5,700 nm (500 nm more than the 5000), and the Global 6500 to 6,600 nm (600 nm more than the 6000). The benefits are particularly notable in conditions such as hot and high. "Performance on a regular day is one thing, but the real test comes when conditions are different," Coleal said. The new Globals can fly 1,300 nm farther from Toluca, Mexico, than their predecessors. This reach is made possible by increased thrust, he said, which allows for short-distance takeoffs with more fuel.

The additional range enables the Global 5500 to connect São Paolo, Brazil, and Paris, as well as Moscow and Los Angeles; and the 6500 to connect Hong Kong or Singapore and London, as well as Toluca, Mexico, and Madrid.

Cockpit and Cabin Updates

Inside the aircraft, the Rockwell Collins Fusion-powered Vision flight deck will have the "clearest vision" in business aviation, Coleal said. The cockpit is the business aviation launch application of Rockwell Collins's combined vision system, which merges infrared enhanced vision and synthetic vision system imagery into a single view.

In addition, the cockpit comes with a new "safety and situational awareness package" that includes features such as advanced weather radar detection with predictive windshear, ADS-B In with real-time traffic information, and advanced airport moving maps, along with an improved terrain database.

DAVID McINTOSH

Bombardier Business Aircraft president David Coleal introduced two new jets at EBACE 2018.

The cabin includes a dedicated rest area and a kitchen placed in front of the aircraft—"where it belongs," said Coleal—with designer-home features such as a steam oven that allows for more gourmet meal options. Additionally, the newest Globals are fitted with new cabinets and countertops to further enhance styling.

Further, the cabin suite adopts the patented Nuage seat also fitted within the larger Global 7000. The Nuage seat features deep recline for rest, a tilt-link system to dip the base of the seat as the back reclines, and a tiltable headrest to optimize neck support.

The conference/dining suites in the Global 5500 and 6500 further are equipped with the Nuage "chaise." Unique to these two aircraft models, the chaise provides traditional divan-style seating for business meetings. But it can also reshape into a lounge configuration, where a person can recline and lie back. In the rear is a private suite designed as a "secluded retreat" with a new en-suite that has two dedicated windows, additional storage, and a walk-in shower option. The aircraft have in-flight accessible pressurized baggage space.

The Global 5500 and 6500 will incorporate Ka-band high-speed connectivity. This has become a selling point with customers, Coleal said, noting that the lack of Internet is becoming an AOG item. The entertainment system displays 4k ultra-high resolution. As for as the environmental system, the cabin incorporates options for 100 percent fresh air and turbo cool or heat, which enable quicker temperature changes.

The 6500 is planned for entry into service next year. Coleal said two flight-test vehicles will be sufficient to see the program through certification.

Plans call to integrate the models into the current 5000 and 6000 production lines, as well as in the completion lines. The completion lines are transferring to Wichita, Kansas, for the 5000/5500, and a new location in Montreal for the 6000/6500. Coleal said demand remains strong for the 5000 and 6000, and Bombardier will continue producing all four variants as long as demand dictates.

The 5500 and 6500 have lower list prices, at $46 million and $56 million, respectively, than their predecessors. The 5000 and 6000 are listed at $50.4 million and $62.3 million, but Bombardier executives stress the market will dictate ultimate pricing. ■

Rolls-Royce launches Pearl 15 turbofan

Rolls-Royce unveiled a new engine family for the large and very-long-range class of business aircraft with its first applications—the Bombardier Globals 5500 and 6500—in hand. Quietly in development for years, the Pearl builds on the venerable BR700 family that has powered the Global 5000 and 6000 as well as the Gulfstream G550 and G650. The first variant, the Pearl 15, fits within the same nacelle package that is on the current Global 5000 and 6000.

But the engine incorporates numerous changes, adopting research involving key technologies derived from Rolls-Royce's Advance2 engine technology demonstrator program. The result is a new core with new high-pressure compressor, along with advanced engine health monitoring, low-emissions combustor, and a two-stage shroudless high-pressure turbine.

Under the Advance2 program, the Pearl engine family could have a potential range from 10,000 to 20,000 pounds of thrust. The first member, the Pearl 15, will produce 15,125 pounds (ISA+15), providing up to 9 percent more thrust during climb than the BR710, but improving efficiency at the same time.

The engine has a 7 percent improvement in specific fuel consumption and is two decibels quieter, even further exceeding Stage 4 noise standards. Among the most notable gains are in NOx emissions, which are better than internationally set standards by 35 percent—a 20 percent gain over the BR710—and smoke emissions, which are 80 percent better than international environmental regulations and 48 percent more margin than the BR710. The smoke output is so small that it is barely if at all visible, company executives said.

The first Pearl application made its first run in 2015 and received EASA certification in February. Shortly after certification, the Pearl 15 began the flight-test campaign aboard the Global 5500 and 6500 flight-test vehicles. **K.L.**

› continued from page 1

FAA funding

ground support services located at those airports closed during a TFR for any residence of the President that is designated or identified to be secured by the U.S. Secret Service," according to bill language.

The language calls for verification, but provisions of the bill would cover both direct and incremental financial losses that occur when the airports are closed during the TFR. The Aircraft Owners and Pilots Association has backed the provisions, which would provide relief to airports such as Palm Beach County Park Airport (Lantana Airport) that essentially shut down during the TFRs.

The measure will cover non-gateway airports near Trump National Golf Club in Bedminster, New Jersey, and Mar-a-Lago in Palm Beach, Florida, and the National Air Transportation Association is hoping to convince lawmakers to expand the applicability to include Palm Beach International Airport (PBI) and the affected businesses there as well.

NATA noted that businesses lose more than $1 million from the TFRs during peak season.

The House and Senate appropriations bills also would provide the FAA with $17.7 billion in total budgetary resources overall, including access to additional infrastructure funding, but actual funding levels would come in at $310 million below the FY'18-approved level.

In the House bill, the FAA's operations account would receive a $199 million boost, and the baseline airport grants-in-aids program and facilities and equipment accounts would remain steady.

The FAA's Air Traffic Organization would receive a $147 million bump over 2018 levels, funding for 14,500 air traffic controllers, 7,400 safety inspectors, and operational support personnel. Also, the contract tower program would receive $168 million, providing funding to bring additional towers into the system.

Other bill language would direct the FAA to prioritize the development of non-destructive inspection to facilitate use of additive manufacturing materials and to work with international regulators on improving certification and validation procedures.

The House budget would include $56 million for unmanned aircraft system integration and calls for a report by the end of September on the FAA's UAS traffic management research. Research, engineering, and development funding would be down nearly $9 million under the bill.

Senate Proposal

In the Senate bill, the operations budget would be up $199 million as well. The Senate provides flexibility for the FAA to shift funding over its operations budget but reiterates its opposition to use of the funds to transfer air traffic control functions to an independent not-for-profit organization.

Also included are $1 billion for NextGen programs, $168 million for contract towers, similar to the House bill. Further set aside is $750 million for airport improvements, in addition to the traditional annual Airport Improvement Program funding, for a total of $4.1 billion.

The $750 million is part of $10 billion in infrastructure funding included in the transportation appropriations bill.

The Senate report expresses a desire for the FAA to "do more to be responsive to community concerns" regarding noise and directs the agency to improve the development of flight procedures in ways that take public comment into consideration.

The bill further directs the FAA to review and improve the Flight Standards Service regulatory process with a focus on consistency. In addition, the bill calls on the FAA to coordinate with industry to make the certification process more effective and efficient.

A manager's amendment included in the Senate bill directs the FAA to use existing resources to fund its support of major aviation events.

The General Aviation Manufacturers Association praised both bills, with president and CEO Pete Bunce saying they "will further improve aviation safety and help facilitate innovation and advances in general aviation." Bunce pointed to language that would foster improvements in the FAA's regulatory and oversight activities, as well as industry coordination. "This will improve the effectiveness and efficiency of the aircraft certification process and acceptance and validation of aviation products globally." ■

Full-throttle opinion from former NTSB member John Goglia

Beware of omitting details in records

Listen up, my fellow mechanics. How you record maintenance work just got a new focus, thanks to a recent NTSB decision that presents a potential new enforcement danger to your certificate. A May 11, 2018 decision by the NTSB reinstating the FAA's emergency revocation of a Part 145 repair station puts a new emphasis on maintenance record entries; specifically, what maintenance personnel choose to leave out of their descriptions of work performed could land them in very hot water.

This decision makes clear that intentional falsification can rest on information left out of the description of work performed, so-called shortcuts that many mechanics routinely take in recording maintenance.

The AeroBearings case involves the FAA's emergency revocation of the company's Part 145 repair station certificate for—among other things—falsification of records. It seems that the company was authorized by one set of inspectors to do what it was doing for five years. A new inspector—after receiving two hotline complaints—reviewed the company's authorizations and determined the FAA had been mistaken in granting one of these authorizations.

The FAA reinspected the facility and, after 10 months, issued its report and handed the company an emergency revocation.

Omitted Information

According to the NTSB's decision related to the issue of falsification, the case turned on omissions made in FAA Form 8130-3s (Authorized Release Certificates). According to the FAA inspector who testified at the hearing, the "OEM manuals for the bearings in question did not authorize [AeroBearings] to disassemble bearings." He also testified that "[the company's] 8130-3 certifications were false in that they did not fully describe the work that had been performed." On cross-examination, the inspector admitted that the entries on the 8130-3 were "incomplete in that they omitted some information."

The company's witness testified that the final inspection certification was accurate and that work performed before the inspection—though not recorded—was authorized. The administrative law judge determined that the FAA had not met its burden of proving intentional falsification and reversed the sanction of revocation. (The ALJ did, however, find other violations and ordered an indefinite suspension of the AeroBearings certificate.) On appeal, the full Board reversed the law judge and reinstituted the emergency revocation.

On the issue of falsification, the NTSB first reviewed its long-standing standard for determining intentional falsification: "The [FAA] must prove the respondent (1) made a false representation, (2) in reference to a material fact, and (3) had knowledge of its falsity." The NTSB has previously determined that omissions can constitute the first prong of this test (false representation) and that certain omissions can be determined to be "material"; that is, if they could "affect decisions inspectors, mechanics, or operators make concerning work on the aircraft."

Previously, however, the Board has required the credibility of the maintenance personnel making the entry to be determined before concluding that the person had knowledge of the falsity. This case makes new law in that regard. The decision states: "This case provides the Board with an opportunity to expressly expand the Board's 'willful disregard' standard...to mechanic intentional falsification cases." This means that a mechanic can be found to have intentionally falsified a maintenance logbook entry because of omissions he had intentionally made—even if there was no proven intent to falsify.

The Board is saying that mechanics can lose their licenses if they fail to enter work they did, even if there was no intent to falsify. Accurate maintenance records are critical. And the best policy would be to write up all the maintenance actions. But should this be grounds for a charge of falsification of records—a charge that would result in an emergency revocation—without giving you, the mechanic, a chance to prove that the omissions were not done with the intent to falsify?

This disturbing decision could have tremendous ramifications for mechanics and maintenance personnel throughout the industry, at repair stations, airlines, and any maintenance facility. ■

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

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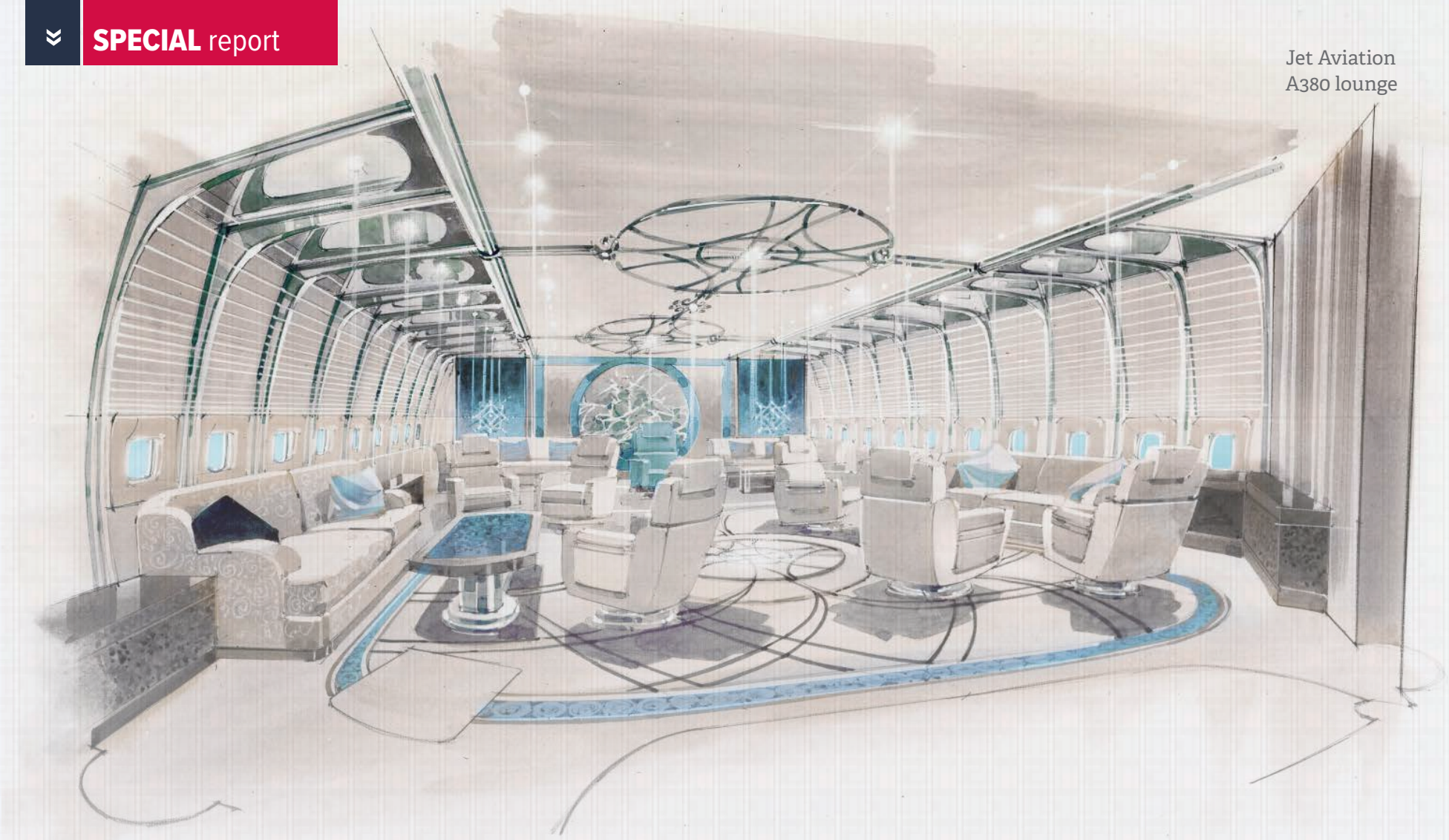

Jet Aviation A380 lounge

Completions & Refurbishment

Next-gen cabins redefine the heights of comfort and capability

by James Wynbrandt

With business jet speeds already brushing against the sound barrier and endurance that puts almost any spot on earth within range, the cabin remains the last frontier for dramatically and efficiently improving performance. Here are highlights of what designers, engineers, OEMs, and aftermarket product and service providers are doing to create ever more comfort and capability within these rarefied chambers.

New Cabins

Dassault looks high and wide for comfort

"The industry has been moving toward ever wider and higher interiors, and customers told us what they wanted most in our new Falcons was more space," Eric Trappier, chairman and CEO of Dassault Aviation, said in unveiling the Falcon 6X in February. Claiming the mantle of "the world's first ultra-wide business jet," the 6X features the tallest and widest cabin (6' 6" x 8' 6" unfinished) of any purpose-built business jet.

Replacing the cancelled 5X, shelved due to development issues with the Safran Silvercrest engines chosen as its powerplants, the 6X borrows many of its interior features, while taking advantage of the new Pratt & Whitney Canada PurePower PW800 engines to provide a longer cabin (an additional 20"; more than 40' 6") and greater range (5,500 nm). Designed "from the cabin out," in Trappier's words, the 6X is "passenger-centric" without compromising performance.

Falcon 6X

"Every element of cabin style and design has been totally rethought," according to Dassault, the result of an extensive survey of customer tastes and inputs from Dassault Aviation's in-house Design Studio, incorporating flowing uninterrupted lines that "declutter" the cabin and enhance the feeling of space. Accommodating up to 16 passengers in three distinct lounge areas, multiple configurations and options for maximizing the space of the rear lounge and entry way/crew rest area are available.

The skylight over the entrance area, inherited from the 5X's design, will be business aviation's first. The windows are 10 percent larger than the 7X's, and the 29 portals enhance the cabin's expansive feeling. The noise-suppression system, based on the package developed for the Falcon 8X, and the pressurization system, which maintains a 3,900-foot cabin at 41,000 feet, further add to comfort, as does the ventilation system, refreshing cabin air in as little as two to three minutes.

First flight of the Mach 0.90 6X is expected in 2021, with deliveries commencing the following year.

Staying ahead of the curve

Technology and Technician Trends in MRO

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What are your thoughts on attracting new talent to the MRO space?

Stephen Maiden, Constant Aviation
We think there's been a generational shift in the fact that the younger generation might be looking less at the trades for a career. We need to make sure that we are competitive against new industries like solar, wind, and space. To do that we will need to better educate younger students about the career benefits and monetary rewards of the aviation trade.

Frank Stevens, Embraer
We are going to attract mechanics in new and different ways. Each new generation is going to be more technically savvy and that will be a good thing for us, but we have to change the way we look for mechanics and how mechanics look for us. It will be important that we change how we operate and communicate with each new generation.

Jim Swehla, West Star Aviation
We're trying to get messages out to appeal to the younger talent that's out there. It's not just being a mechanic anymore. The majority of aircraft systems today are electronic and a lot of times the first thing a technician does is walk out to the airplane with a laptop computer and plug it into the aircraft.

Dean Obr, Signature TECHNIC*Air*
We attend trade shows and visit tech schools to showcase our brand and encourage new graduates to join our team. It's no secret that there will be a shortage of available qualified technicians over the next seven years. Our team understands this, and is being very proactive to ensure we attract and retain talent by offering competitive salaries, great benefits, training, and more.

Annual spending in the global aircraft maintenance, repair, and overhaul (MRO) industry is projected to grow to more than $100 billion by 2025, according to data compiled by statista.com. Engine MRO is the industry leader, with a projected increase to $46.8 billion, while component and line MRO markets are projected to expand to $19.2 billion and $17.8 billion, respectively.

With growth in the global MRO industry comes the challenge of meeting the increasing demand for services despite a looming skilled-labor shortage. Innovative MRO shops are using advances in materials technologies, diagnostics, data storage and retrieval, and inspection and repair processes to more efficiently deliver high-quality services to customers.

Printing Parts and Prototypes

One of the hottest trends in parts prototyping and production is the use of additive manufacturing (AM). Commonly referred to as 3D printing, AM uses machines with inkjet-like heads to continuously add extremely thin layers of liquid binder to a polymer powder to form the finished 3D object.

AM now encompasses a wide range of technologies and materials, including metal alloys. For example, Lockheed Martin uses laser powder bed fusion AM to bond layers of powdered aluminum into parts used on military communications satellites. Airbus has installed an electron beam AM system that can produce parts from titanium, tantalum, tungsten, stainless steel, and other materials. Boeing has begun working with suppliers to create titanium alloy parts for its 787 Dreamliner using AM methodologies.

Fortunately, rapid advancements in technology have allowed prices of the AM equipment to fall, and in just a few years the new-generation technology has leaped from giants like GE, Lockheed Martin, and Boeing to smaller MROs like Cleveland-based Constant Aviation.

"Using 3D printing, we can save significantly in terms of setup time and prototyping," said Stephen Maiden, president and CEO of Constant Aviation, a privately owned MRO network with five fixed locations and 22 mobile AOG (Aircraft on Ground) locations. Maiden explained that the company uses AM methods for both engineering and part production. "Ninety percent of our printed parts are for first article and R&D [research and development]. But we have certified plastic replacement parts that are flying on airplanes."

Constant Aviation owns several AM machines that produce relatively small "printed" polymer parts, including panels and latching structures, which are used in the company's custom aircraft interiors. In addition, Constant 3D "prints" external parts, such as antennas and antenna shims.

"Now we can print a part that would typically take weeks or even months to set up," said Maiden. "For example, a complex tube may have to be formed in two different molds and then assembled together and sealed. But now we can print the part as one solid tube."

Additive manufacturing also reduces inventory cost and increases part availability, according to Maiden.

"You no longer need to set up and run a thousand parts through the injection mold. You can just print one," he said. "We'll get to a point where, when an aircraft goes

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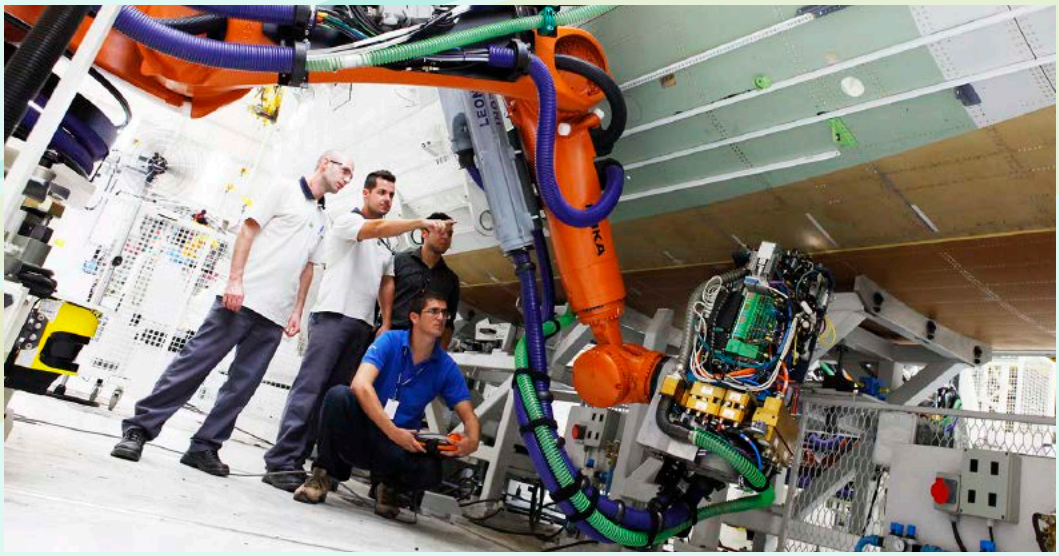

AOG or a part is needed, a component manufacturer will—for a fee—release the drawing to the [MRO] company to print the part instead of ordering and waiting for the part to be shipped."

For Maiden, inventory control is a key component of running an MRO network efficiently, especially one that provides nearly every aspect of MRO available: routine and AOG maintenance, avionics, interiors, structures, composites, nondestructive testing, paint, and more.

"We absolutely run as a network," said Maiden. "It is one inventory system that connects to each location. We can push and pull inventory throughout the network. We have proprietary data-collection software that helps us manage the business in real time."

Maiden says that while his company's proprietary software has the capability of allowing technicians to use technology like smartphones and tablets to digitally sign off work orders, it's a practice that just hasn't caught on.

"We are still using computer systems on our hangar floor to connect to our work-order system," Maiden said. "I think sometimes there's a rush to jump onto a new technology or solution, but you have to make sure it's practical for your business. If a mechanic is in an engine or has a grease gun in his hand, is operating with gloves on a tablet practical? Not every technology advancement is an improvement to your business."

A Place for Augmented Reality in MRO

Engineering teams at Embraer's Melbourne, Florida, facility are using augmented reality to assist in the design of aircraft, according to Frank Stevens, vice president of the company's Global MRO Centers division.

"Engineers are able to load an airplane into the system and then put the [augmented reality] gloves and headset on and they are essentially in the airplane," Stevens said. "They can open up compartments and move seats around to make sure that what they design on paper will work in the aircraft."

Best known for its Legacy and Phenom lines of executive aircraft, the Brazilian manufacturer also maintains a network of MRO centers in the U.S., Europe, and South America. Stevens said that currently the Embraer-owned facilities each operate on different maintenance and inventory software platforms, but part of his job is to find new technologies and platforms to gain efficiencies and commonalities throughout the network.

"We're exploring technologies that are going to take us down the path of paperless maintenance using technology such as RFID [radio-frequency identification] and or barcoding to increase efficiencies—getting airplanes out quicker while maintaining the highest standards without compromise of safety, quality, and reliability," said Stevens.

"Imagine that a mechanic has an RFID tag on his uniform, the aircraft and its components are RFID tagged, and the paperwork is bar coded. When the mechanic goes out to an airplane to change a component, the system will know where the mechanic is, which aircraft he/she is on, and what components they are changing," he explained. "The system already knows the aircraft and its work package. The RFID system links the mechanic with the aircraft and associated work orders. He still needs to identify which task he's clocking into using a tablet, but once that's done, the system can follow him through the work package, including parts removed, exchanged, repaired, or installed."

Stevens said Embraer is still at the exploratory stage with this type of RFID and barcoding system, but he sees the company implementing a paperless system in the near future.

While the technology offers significant benefits, one of the challenges with a paperless solution is the immense amount of data generated that needs to be organized, stored, and protected. Stevens said cybersecurity is a growing concern, especially in a global network like Embraer's where a customer's aircraft may undergo maintenance anywhere in the world.

"Security is paramount, and it's difficult to secure when you have a lot of data going back and forth," said Stevens. "You can encrypt small amounts of data quite easily. But in an MRO network, you are passing terabytes of data during a major inspection. We don't want any of our customers' data being released or picked up by other parties. One ounce of error data can turn into years of recovery. So the data has to be secure."

NextGen Tech Needs NextGen-Trained Techs

The first step to ensuring that emerging technologies like 3D printing and augmented reality will deliver the significant time- and cost-saving advantages promised is for MROs to have professional A&P technicians trained in their proper applications. Unfortunately, finding those technicians is getting harder, making this an issue that, sooner or later, every MRO will have to deal with.

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Tennessee under construction, West Star Aviation is one leading MRO that is taking the better-to-solve-the-problem-sooner approach.

"It is one of our biggest concerns," stated West Star's co-founder and executive v-p for sales and marketing, Jim Swehla. "The average age of A&P mechanics is close to 51. The concern is that as an industry, we don't have younger talent coming into the marketplace to fill the need. And it's only going to get worse."

One approach that West Star Aviation is taking is to become much more proactive in telling high school students and guidance counselors just how fulfilling a career as an aircraft technician can be, especially for those who are technically oriented.

"It's something we've recently started. We need to get ahead of the curve and get younger talent to want to go to an A&P school," Swehla said. "Most of the kids I talk to don't even realize that there's a category of airplane out there for business aviation. When they think about airplanes, they think airliners or Cessna 172s.

"To me, corporate aviation is the most interesting part of our business," he added. "In our business, no two airplanes or projects are the same, especially when you get into interiors, paint, and avionics. It's all custom. That's what really makes it interesting and fun."

Swehla explained that while West Star Aviation's primary focus is attracting new talent to provide its core MRO services, the company also has a growing need for technicians who can be trained to do the very specialized work required in its dedicated landing gear and accessory overhaul shop. In addition, the company recently acquired Dallas-based Dallas Aeronautical Services, which specializes in highly technical repairs and overhauls of composite and metal airframe components, including thrust-reversers, leading edges, control surfaces, and cowling inlets.

"We are bringing more of these specialized services in-house to provide our customers with a wider array of services that are delivered faster and with greater reliability," Swehla stated. "The more we can do to control the maintenance process, the better overall service we can provide our customers."

A Local Solution to a Growing Global Need

While emerging technologies and training new technicians are both critical to the continued growth of all levels of MRO capabilities, when it comes to the typical business and general aviation aircraft (B&GA) owner/operator, getting the job done is a given.

Along with providing quality maintenance, one emerging goal

at Signature TECHNIC*Air* is to become the source for all of its customers' FBO and operational needs, according to Dean Obr, vice president of operations for the BBA Aviation company, a division of Signature Flight Support.

"I think our customers appreciate the convenience of a one-stop shop and the BBA brand," he said. "We have over 200 FBO locations worldwide and we have Signature TECHNIC*Air* maintenance capabilities at 18 of those facilities. Our long-term goal is to grow that [maintenance] footprint significantly by adding maintenance facilities and increasing our number of mobile service units [MSUs]."

Obr explained that top-notch personalized support is what Signature/BBA customers expect, no matter where in the world they are.

"The Signature TECHNIC*Air* MSUs provide primarily AOG support service to our customer's aircraft," he said. "If they have an issue at a remote location, we dispatch the closest MSU to get that customer back in the air as quickly as possible. Our customers find this very beneficial."

While it may seem easy to equip a truck and put it out on the road, Obr said that there's a lot more to ensuring that Signature TECHNIC*Air*'s mobile units not only provide the right technical support but do it in a way that's consistent with the BBA brand. BBA Signature Flight Support customers expect the highest level of service, whether it's fuel or maintenance, and that expectation doesn't change just because they're at a remote airport.

"The technicians who man our MSU trucks have to be more than great technicians," Obr said. "They have to understand multiple aircraft types, they have to be highly experienced in troubleshooting airframes and avionics, and they have to have great customer-service skills. The CSR aspect is extremely important to us. These technicians are the face of Signature Flight Support to our customers."

Obr added that because of Signature TECHNIC*Air*'s high level of experience, the MSU vehicles are equipped to handle most maintenance tasks.

"The goal is to get the customer back in the air safely and quickly," he said. "Customers appreciate that. In fact, they often think of our technicians as 'their' mechanics. That level of trust helps set BBA Signature TECHNIC*Air* apart from other MROs for sure, and our customers really appreciate it." ■

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Bombardier's Global expansion

David Coleal, president of Bombardier Business Aircraft, cited an "unrelenting commitment to innovation" as the foundation of the Global 5500 and Global 6500 he introduced at EBACE in May, replacements for the 5000/6000. In addition to updated engines, the new models incorporate "a fully reimagined cabin."

Current Globals feature the Premier cabin introduced at EBACE 2017, and the new cabins build on those refinements and borrow from the Global 7500 (the rebranded 7000), whose cabin mockup has been seen at airshows around the globe. The Global 5500/6500 will have Nuage seats developed for the Global 7500 (*see box on this page*), and also the Nuage "chaise"—something not even available on the 7500. Chaise is a three-person, side-facing bench seat that converts into a chaise lounge, as the surface articulates, the back and knees rising under the passenger's control. At night it serves as a full-length bed. The area below the bench serves as storage space.

The galley will include the double ovens from the 7500 designed exclusively for Bombardier, and appliances are exposed rather than hidden as in most business jets, "inspired by a high-end home kitchen," said Tim Fagan, manager, industrial design at Bombardier. "We're not calling it a galley anymore; we're calling it a kitchen."

Bombardier is also refocusing on fabric seats, which have fallen from favor as "leather has taken the forefront," Fagan said. Fabric offers advantages including greater comfort across a range of temperatures, better sound dampening qualities, and for their interior decorating use "to create different looks, another design element." The fabrics include a wool-felt material, "like a business suit" that blends well with the cabins' woods and metal.

Fagan heads a 16-person industrial design team, and as with teams at other OEMs, they seek inspiration for tomorrow's cabins from the fashion, automotive design, and yachting worlds their customers inhabit. "Our mandate is the customer experience," said Fagan. "We're more and more getting plugged in to the global design community."

The Global 5500 and 6500 are slated for service entry in late 2019.

The G-whiz factor

Gulfstream Aerospace continues refining the cabins of the G500 and G600, unveiling new interiors for both jets at the NBAA Convention in Las Vegas last fall. The revamp of the G500's three-zone cabin was based on "extensive feedback" from changes in the G600 shown at the prior year's convention, combined with additional customer insights, Gulfstream president Mark Burns said. A new seat, incorporating "innovative design techniques and ergonomic enhancements" improves comfort and reduces fatigue, according to the company, and makes a design statement with diamond-quilted inserts.

A full-size galley features an optional steam oven, an interchangeable beverage maker, and a refrigerator that can be placed above or below the counter. The galley itself can be located in the forward or aft cabin.

The G600 interior can be configured with up to four living areas, with three new standard mission-focused seating styles, options for a fixed bed, and divans that convert into beds. Furniture, bulkheads, and other interior elements are customizable. The gourmet galley can be positioned fore or aft, and stone, wood, and other flooring options are available for the entry, vestibule, galley and two lavs. The $56.2 million jet is to enter service this year.

Gulfstream G500

Embraer earns "E" for enhancement

"People ask, 'Why do anything to the best selling business jet?'" said Michael Amalfitano, president and CEO, Embraer Executive Jets, in unveiling plans for the Phenom 300E at NBAA last October. "Because we can," he said, expressing an impulse and a confidence seen across the OEMs today in their customer- and cabin-centric focus.

An upgraded version of the Phenom 300 light jet, the 300E (for "Enhanced") features a completely redesigned interior anchored by new seats, incorporating extendable headrests with bolsters, extendable leg rests and retractable armrest, and broadened seatback for greater support. Designed and engineered in house and manufactured at Embraer Aero Seating Technologies in Titusville,

› continues on next page

Yielding to the chair

With aircraft flying longer distances and ergonomic sciences advancing, the seat is receiving renewed focus, elevated to throne-like status. Several OEMs have made seats the centerpiece of recent upgrades. These are among the developments worth sitting down for.

In April Bombardier unveiled the Nuage ("cloud" in French) seat, "the first new seat architecture in business aviation in three decades," according to the company. In developing the seat, designers researched the literature of seating, and the ergonomics of working, reading, and reclining while seated, seeking to answer, "What does the body need in those different positions?" Nuage is their answer. It features a patented tilt link system that supports the entire body at every angle of incline, and is equipped with a tilting headrest and a moving seat pan that raises to provide support as the tilt angle increases. Nuage features the first-ever fully floating base, allowing the seat to track forward and back and swivel almost effortlessly, controlled by a pair of levers in the left armest. Pull up on one and the seat can slide forward and back on foot power; pull the other and it pivots laterally. Let go of the respective levers to lock the seat into the desired position.

DAVID McINTOSH

Bombardier Nuage Seats

Embraer Executive Jets showcased a new seat design for the Legacy 450 and 500, displayed onboard a Legacy 450 on static display at EBACE this May, where the optional seat debuted. Providing "better ergonomics" and improved passenger comfort, the seat offers enhanced backrest and new headrest support, and gives customers greater flexibility in personalization options via stitching, leather material textures, and color applications. The new seating options became available to customers receiving aircraft in the second quarter.

Swiss design firm Yasava has been selected to provide its Wave interiors for ZED Aerospace's refurbished CRJ700s, which will be used for its planned Aura air service linking New York, Miami, Chicago, Atlanta, Denver, Los Angeles, and other key cites, slated to bow in 2019. Yasava's Wave cabin is based around its Aiana Wave seat, and will incorporate design elements and solutions from its Astral cabin design collection, the company said. ■

› continued from preceding page

Florida, customization and personalization options include a wide choice of leathers and stitching.

The cabin's table, side ledge, side wall and valence designs are also new, while the aisle is three inches wider and there's an additional inch of headroom compared to the 300. An upper technology, or "tech" panel along the centerline of the cabin ceiling hosts the now-standard Lufthansa Technik nice HD CMS/IFE (high-definition cabin management system/in-flight entertainment) system.

Much of the rest of the cabin technology remains hidden, discretely tucked into side ledges, for example, keeping the interior sleek and stylish.

"When we design the interior, to protect ourselves and the customer, we design for maintainability," said Jay Beever, the company's v-p, interior design. In the 300E, "we moved critical components away from windows, so that anything that fails can be fixed in 30 minutes or less," he said. Beever noted that with its easily replaceable and updateable interior, "the 300E is especially set up to handle the marketplace in the shared ownership space," a role it fills as a popular platform for several fractional programs.


Embraer Phenom 300E

Textron's Quiet Cabins

Textron Aviation's current flagships, the soon-to-be certified Longitude and the in-production Latitude, are proof that the company's focus on performance and passenger comfort is paying off.

With 54 Latitudes delivered in 2017 and 12 in the first quarter of this year, the newest jet in the company's stable is off to a good start. Bulk buyer NetJets reports that the Latitude is its customers' most popular jet. The fractional-share provider has already taken delivery of 60 Latitudes, and expects to receive another 24 by the end of 2018.

Among the Latitude's—and the Longitude's—attributes are an extremely quiet cabin and the widest and tallest cabin the Citation lineup, at 72 inches tall by 77 inches wide. The extra cabin size translates into more legroom—30 inches between club seats—and room for a lavatory that Textron Aviation says is 60 percent larger than the Latitude's closest competitor.

At the maximum operating altitude of 45,000 feet, the Latitude's cabin altitude is a comfortable 5,950 feet, another factor that distinguishes it from the competition.

The Longitude shares the same cabin cross-section as the Latitude with, naturally, a longer cabin that accommodates more seats while retaining the 30-inch spread between club seats.

Textron Aviation engineers and interior designers have spent an extraordinary amount of time quieting the cabins of the Latitude and Longitude. "We're introducing one of the most thoroughly researched passenger experiences," said Brad Thress, senior vice president of engineering, "one that will revolutionize the super-midsize category with its low cabin altitude, class-leading legroom, and low decibel cabin sound levels that are half [those] of its nearest competitor."

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Jet Aviation signs another 787 customer for VIP interior

Jet Aviation has claimed another Boeing 787 completion contract, its second, a 787-9 for an undisclosed customer, the Zurich-based company announced at EBACE. Jet Aviation has dedicated "significant research and development" into carbon fiber composite airframes since 2013, and can integrate a cabin onto a 787 "without modifying the fuselage, avoiding time-consuming and costly repairs," the company said. The research "places us in an excellent position to create a finished interior that is truly VVIP, and represents the latest in aviation technology for business aircraft," said Neil Boyle, senior v-p, global completions. The interior will be installed at Jet Aviation Basel, the company's completions and maintenance center, which has performed completions on 28 Boeings since 1998.

Jet Aviation won its first BBJ completion contract in 1999, and recently the company redelivered that same BBJ, following a complete refurbishment and exterior repainting performed after the aircraft had been out of service for several years. All the seats, sidewalls and carpets were replaced, as was some of the wood marquetry. Additionally, a low cabin altitude modification was performed, and improved soundproofing installed using Jet Aviation's new, targeted sound prediction technology. A C-1 check and general defect rectifications were performed simultaneously on the Boeing.

Distinct from its completions team, Jet Aviation has an interior design refurbishment team that handles about 20 major aftermarket projects a year, like the BBJ makeover, said Simon Koenig, director of interior design refurbishment. Jet Aviation is currently performing complete refurbs on two 747s, each requiring about six months.

"We are free at the design studio in Basel to let our inspiration push boundaries for our customers," said Koenig, "because we are supported by all of Jet's workshops and craftsmen who help breathe life into our designs."

In a branding video introduced at EBACE, Jet Aviation showcased its global refurbishment/retrofit/modification and upgrade (RMU) capabilities, highlighting its completion and maintenance centers in Basel, Geneva, and Singapore. The video captures what motivates its designers, and how they translate customers' visions into reality, said Tommi Krell, the company's head of global RMU/MRO marketing. ■


Jet Aviation 787

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Experience. Unlike any other.

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Max and Neo

The completions world awaits deliveries of the next-gen Boeing BBJ Max and Airbus ACJneo like the arrival of a glamorous couple sure to shake up the social scene.

Comlux Completion USA last October claimed the contract for the first BBJ Max 8 completion, while AMAC Aerospace of Switzerland will perform the interior installation on the first VIP neo (new engine option, to reflect more efficient, upgraded turbofans), an ACJ320, for launch customer Acropolis Aviation, the UK charter operator.

The first BBJ Max 8 will arrive at Comlux America in Indianapolis, Indiana, in Q4, with redelivery to the undisclosed customer scheduled for fall 2019, said Comlux Aviation president and CEO Richard Gaona. Four design firms—Alberto Pinto Design, DesignQ, Unique Aircraft, and Winch Design—have been invited to submit design concepts to the customer, with final design selection expected in Q3.

In Basel, AMAC Aerospace awaits the Q4 induction of the first ACJ320neo. The project's design phase (by Alberto Pinto) is complete, as is more than half the engineering work, while construction of cabinets and furniture has commenced, AMAC CEO Kadri Muhiddin said at EBACE in May. Redelivery is scheduled for Q4 2019.

Addressing BBJ Max completion opportunities, AMAC Group COO Bernd Schramm said the company is "in dialog" with five purchasers of Boeing's next-gen offering, who are "now entering the phase of decision making" on selecting a completion partner.

Meanwhile, Comlux has been tapped to perform the completion on an ACJ320neo for an undisclosed Asian customer, with the green jet to arrive at the facility in September 2019 for the 10-month project. Scott Meyer, CEO Comlux Completion, said the Max and neo projects "are paving the way for establishing Comlux as a leader in the VIP completion market."

The Netherlands' Fokker Techniek will perform the first VIP completion on an ACJ319neo, under contract to long-term customer K5-Aviation, with induction scheduled for May 2019 and redelivery in early 2020. "Can you imagine how proud we are?" asked Jeff Armitage, Fokker's managing director. "This will be the first ever ACJ319neo offered for VIP cabin outfitting worldwide."

The ACJ319neo cabin will include the latest communication, IFE, and other technologies, while a focus on weight reduction will enhance the aircraft's range and payload, Armitage said. Luca Madone of K5-Aviation called the contract award "a logical continuation of the existing relationship both companies have from previous projects."

Up ahead, the Airbus ACJ350 XWB (extra-widebody) is in the wings. Like Boeing's 787, the ACJ350 has a composite airframe, and to ease and accelerate completions, Airbus offers its proprietary Easyfit concept, which allows cabin integration without airframe modifications. AMAC Aerospace and Jet Aviation completion centers in Basel have both received recent authorization from Airbus for cabin completions on the ACJ350 airframe. Neil Boyle, Jet Aviation senior v-p, global completions, proclaimed his company "ready and pleased to welcome ACJ350 XWB owners and operators" for completions.

Jet Aviation
A380 lounge dining area

ACJ Harmony cabin concept

New Cabin Concepts

Inner Harmony

Airbus Corporate Jets (ACJ) unveiled Harmony, a widebody cabin concept proposed initially for the new ACJ330neo, but adaptable to other ACJ widebodies, including the forthcoming ACJ350 XWB, which can reach virtually any location on Earth nonstop. In place of the angular lines of most VIP interiors, concentric circles, "like ripples on a pond," are a feature of the Harmony cabin layout, said ACJ.

"Long-haul flights provide time for productive work and socializing, as well as rest, and ACJ's Harmony cabin concept is wonderfully well designed to enable all of these, while bringing the world with a single flight," said Benoit Defforge, ACJ president, at the concept's introduction at EBACE.

Described as "timeless and elegant" by Sylvain Mariat, ACJ head of creative design, the Harmony interior includes a globe in the entrance area that holistically displays the aircraft's position, a master bedroom suite and office, and a spacious lounge with round table seating areas. Four VIP guest suites, each with an office that converts to a bedroom, plus an en suite bathroom with shower are farther aft, with seating for support staff and galley in the rear. Harmony can be adapted for both private and government customers.

Automotive Inspiration

Lufthansa Technik (LHT) introduced at EBACE "Inspired by AMG" with Mercedes-Benz, a second variant of its M-B Style VIP cabin. The interior combines the dynamic DNA helix architecture of the Style interior and Sensual Purity formula design language "to reach new customer groups with a strong affinity for a unique sportive design," said Wieland Timm, senior director sales, VIP and special mission aircraft, at LHT. Adapting Mercedes's new gray/black color scheme for the line, the interior "now radiates the powerful dynamic of the latest AMG cars," LHT said. The design also incorporates the so-called black panels from the Executive variant of autos, integrating displays and touch screens into the sleek black surfaces.

Velvet fist

Last fall LHT's VIP & Special Mission Aircraft division unveiled four cabin concepts

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for the brawny Airbus A330-200 Multi Role Tank Transport (MRTT), two of them—The State and Governor—giving the military platform a deluxe makeover for transporting heads-of-state, government members, and delegations. The State cabin, designed as a flying government office, incorporates all necessary equipment to enable governmental authorities or military staffs to work productively on board. The Governor configuration, which already has an undisclosed customer, can transport larger delegations of varying functions and statuses. All four cabin variants, which include Trooper and Rescue configurations, were developed in cooperation with military services and meet NATO TEMPEST requirements for signal emanation levels. Some 30 A330 MRTT aircraft have been ordered or are already in service with various air forces.

Done in VVIP manor

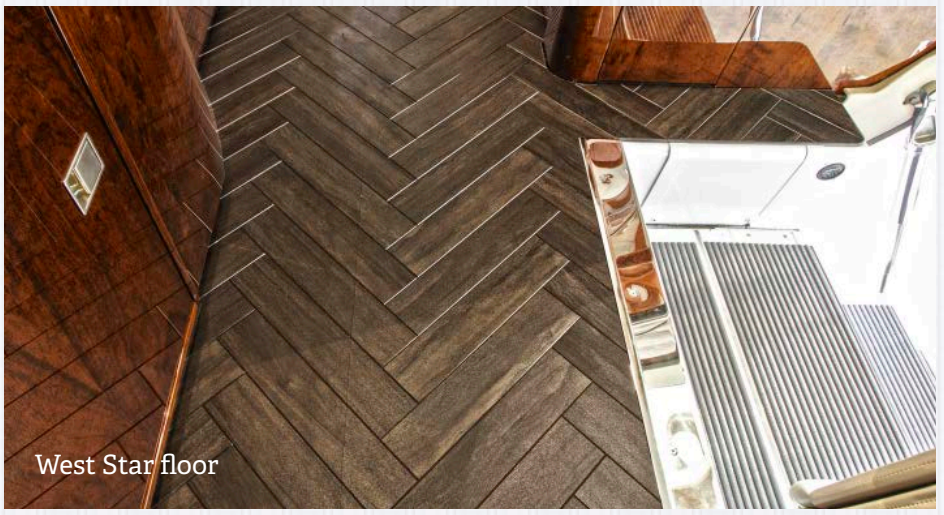
Jet Aviation, the UK's Winch Design, and Geneva's Sparfell & Partners have joined to develop a VVIP interior for the ACJ380, which would be the first such completion on this, the world's largest commercial jet.

"We've been excited about this project since Sparfell first approached us with their concept to pool all of our collective expertise to bring a completions solution for the ACJ380 to market," said Matt Woollaston, Jet Aviation v-p completions sales and design. Winch designs bespoke interiors for homes, yachts, and executive-configured aircraft, and Sparfell & Partners is a consultancy specializing in business aviation sales, acquisitions, and services.

Four A380s are coming out of lease, and the partners hope to convert at least one to VVIP configuration. Winch has created a concept embracing its "signature design philosophy, centered on the importance of creating dynamic spaces that are balanced, beautiful, and uplifting," according to the company. The half VIP/half-entourage layout features a forward bedroom on the upper deck for the principal, as well as a guest bedroom, with mini suites on the main deck. If more space is desired, "we have looked into going into the cargo area," said Mike Sutton, senior project manager at Winch. "The scale of it is exciting—the fact that you've got a double deck, plus the staircase," he added, noting its size makes the A380 "much like a yacht."

Under the agreement, Jet Aviation will engineer, manage, manufacture, install, and certify a VVIP cabin interior for this aircraft. Its Basel facility is "one of the few completions centers in the industry that can accommodate aircraft the size of the ACJ380 for VIP platforms," the company said.

"A lot of the design is already proven," said Sutton. "It's just nobody's done it on that airframe," he said. But given the scale, completion will require an estimated 2.5 years.


West Star floor

At the Completion Centers & MROs

Boeing Business Jets has contracted **Fokker Techniek** to design and perform the interior completion of a BBJ ordered by the Dutch government for transporting government officials and the Dutch Royal family. Configured in a two-cabin layout for 24 passengers (12 VIP, 12 staff), it will include a crew rest area and lavatory. The current state transport, a Fokker 70, has been in service for more than 20 years. Interior design activities are under way and the aircraft is scheduled for delivery to the Dutch government in 2019. Boeing and the Netherlands' Fokker, a GKN subsidiary, have worked together on previous BBJ conversion and completion projects.


Greenpoint BBJ787-9

Completions and MRO specialist **AMAC Aerospace** has landed a completion contract for a head-of-state 747-8i, the company's second completion on the platform. The 747-8i was inducted in AMAC's Basel completion center in February for the 20-month project, the company's second 747-8i completion, and will feature "a unique design," said AMAC CEO Kadri Muhiddin. Company engineers will install an overhead Aeroloft in the widebody for the undisclosed repeat customer.

Last year AMAC re-delivered a Boeing B777-200LR following a head-of-state completion incorporating "state-of-the-art technology systems, high-end in-flight entertainment systems including large monitors, the latest generation of soundproofing, and RGB mood lighting as well as customized artwork, custom furniture, monuments, and exotic material," the Swiss company reported. The 20-month project marked its third green completion on the platform.

Lufthansa Technik (LHT) has received a VIP cabin completion contract for a Boeing 787-8 from an undisclosed customer, its first for a Dreamliner, the order "closing the final gap in our expertise for the Boeing 787," said Wieland Timm, LHT's senior director sales, VIP and special mission aircraft. Timm noted that Hamburg-based LHT has provided technical services to more than 100 Boeing 787s from various commercial and VIP 787 operators. The cabin will include an office area, bedroom and bathroom in the forward section, a mid-cabin dining and conference area, with delegation seating of different classes aft.

Boeing widebody completion specialist **Greenpoint Technologies**, this year celebrating its 30th anniversary, inducted its fourth 787-8 in April for an executive cabin completion. The interior, by Greenpoint's in-house design team in partnership with the undisclosed client, is scheduled for a 2019 redelivery from its Kirkland, Washington completion center. The third 787-8 is scheduled for redelivery this summer. Later this year, Greenpoint's first 787-9 arrives for an executive cabin installation. In addition to green completions, the company is also performing narrow- and widebody head-of-state refurbishments, said Bret Neely, Greenpoint executive v-p.

Greenpoint also received a patent this year for a 787-flooring system, utilized on all its completions, that provides customizable attach locations for aircraft monuments and furnishings. By standardizing modifications to the 787's unique floor structure, the system minimizes parts and reduces installation time, while still supporting custom interior configurations, Neely said.

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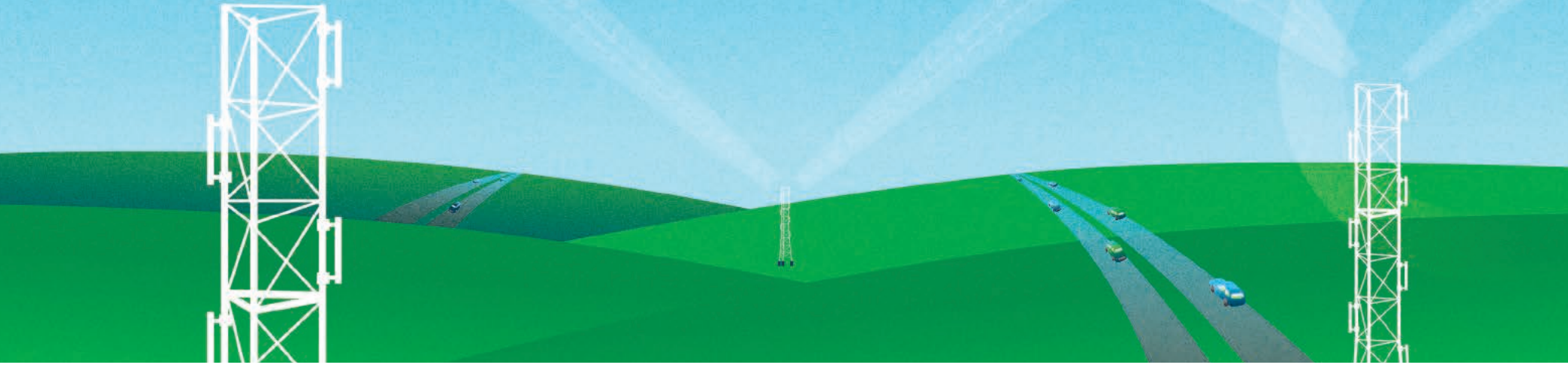

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A complete refurbishment **West Star Aviation** recently performed on a Falcon 2000XL at its Alton, Illinois headquarters facility included custom entry floors designed in house, and USB covers that light up with the customer's logo. The Falcon also got an FAA-certified aft baggage mod (available for the 2000 and 2000EX models), developed and STC'd by West Star, which adds 73.5 cubic feet of usable storage and an additional 185 to 275 pounds of baggage or equipment. The baggage compartment installation does not compromise access to common service and maintenance items, and no additional fire detection or suppression is necessary.

In other refurb projects, West Star created embossed headrests and contrasting red stitching for a Citation 560, and performed woodwork during the complete interior refinishing of a GIV-SP.

On its painting projects, West Star recently began using the Top Flight Supplies titanium paint protection system at its Alton and Grand Junction, Colorado facilities. The two-part coating process prolongs longevity of an aircraft paint job by fusing the paint pores and can even improve fuel efficiency by providing a slicker surface, reducing overall drag, West Star said.

GDC Technics has been contracted for four green head-of-state widebody completions, two each for a pair of undisclosed customers, the Fort Worth, Texas-based completion and MRO company announced in May. General partner Mohammed Alzeer said the contracts have "confirmed the confidence this industry has in GDC Technics," adding "We have the resources, knowledge, and capacity to take on many projects of this magnitude and more."

The company declined to disclose the aircraft types or schedules for the projects.

GDC has put an emphasis on the all-composite 787 airframe, and last year accomplished external penetrations on multiple models for connectivity installations including Ka-band, Inmarsat, satcom, and Live TV.

Current projects include "twin VVIP 787-8s," and the interior elements of the first slated for re-delivery weigh 20 percent less than industry average for a VVIP cabin in the airframe, "providing our clients with an operational advantage and fuel savings throughout the life of their aircraft," said Alzeer. This year the company will deliver three widebody head-of-state completions.

Ruag's Munich paint shop repainted SBK Holding's Bombardier Global Express XRS with a unique and complex "Carboneum" honeycomb scheme created by France's Happy Design Studios. SBK Holding, sovereign investment fund of the United Arab Emirates, chose a full repaint of its eight-year-old aircraft "to express its own dynamic and innovative image," according to Ruag. The design aims to evoke a sense of elegance, technology, and power, said Studios owner Didier Wolff. Reproducing the design patterns on the nacelles required the digital creation of "extraordinarily detailed" templates for the honeycomb effect. To optimize downtime, Switzerland's Ruag performed a 15-month inspection simultaneously with the paint project.

AeroVisto

Aeria Luxury Interiors announced a BBJ completion contract—the company's third since its 2014 founding—at the Singapore Airshow in February. The green 737-700 is scheduled for arrival at the company's San Antonio, Texas completion facility in Q1 next year. The Aeria-designed interior, executed in a light color palette, will feature a VIP stateroom complemented by an en-suite lavatory with shower; an office/meeting room; staff seating; and separate passenger and crew galleys. Luxury touches include generous use of gold plating, wood, fine fabrics and ornate detailing, said Ron Soret, Aeria's vice president and general manager for completions.

Formerly a division of ST Engineering's VT San Antonio Aerospace—a major airline MRO—the VIP completion and refurbishment business has been rebranded as Aeria Luxury Interiors, a standalone subsidiary. The restructuring will enable Aeria to "tailor its processes to be focused on the completion business, thereby increasing its competitiveness," said ST Engineering. Aeria will operate under its own Part 145 Repair Station certificate, allowing the company "to streamline its completion process and expedite its maintenance, refurbishment and completion contracts in the most efficient way possible," the company said.

Flying Colours refurbished a Bombardier Global Express using essentially the same design the customer ordered for his Challenger 850 in 2013. Several "engineering and style adjustments" were made to the original plans, said Eric Gillespie, executive v-p of the Canadian company. "We had to take into consideration the larger cabin, the different type of usage, and the high standards of the Global to re-create the same look and feel."

The Global's floor plan was modified to accommodate a new configuration in the mid-section, and two seats opposite the central divan were replaced with a four-seat conference group. All seats were upholstered in white leather and the armrests burnished with carbon fiber accents.

New Products & Services

In response to a spike in preowned Falcon transactions, **Dassault Aircraft Services** (DAS) launched Falcon Pre-Purchase Services, offering an array of capabilities ranging from paint and interior refreshes to new avionics and CMS installation, and propriety modifications and "engineered solutions" designed to keep the legacy fleet on par with new production aircraft. General manager Gary Schiff noted DAS has access to all the original drawings, engineering, and STCs that will lower the cost and time of any requisite, and many desired updates.

The Netherlands' Stahl and Switzerland's Maritime-Aerospace have combined forces under the **AeroVisto** banner with the aim of providing innovative interior trim materials and cabin interior solutions. Officially launched at EBACE in May, Stahl produces surface treatments and coatings for flexible materials, and Maritime Aerospace specializes in aircraft interiors. The partnership provides Stahl, already established in several mobility markets, an accelerated path into the aviation interiors section, the company said. "With boundaries between mobility segments blurring, we see an opportunity to leverage our automotive core capabilities and actively drive the seamless integration of brand experiences across the different mobility modes." Stefan Buri, global marketing director mobility at Stahl.

AeroVisto offers innovative materials for aviation interiors, starting with the introduction of a wide range of leather products. The aviation industry faces the challenge of elevating the customer experience while reducing operating costs. The AeroVisto portfolio aims to meet these demands and consists of high-quality, environmentally conscious solutions. The company said the introduction of Stahl Stay Clean lifetime+ products into the aviation interior segment will offer compelling and unique value-add to the marketplace.

The partnership gives Maritime "access to best-in-class surface technology and innovation leadership in interior trim solutions in automotive and other mobility segments," said Hermann Bauer, Maritime managing director aerospace.

Duncan Aviation has expanded its 3D design capabilities, adding a multimedia artist specializing in 3D illustrations to its in-house aircraft interior and paint design team. Computer generated 3D renderings "save a great deal of time and money, so they're popular with all of our clients, internal sales and production people," said Ken Reita, who heads the Lincoln,

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Nebraska-based MRO's 3D conceptual illustration services. "Unlike with 2D drawings, we can draw from our extensive engineering database and generate accurate 3D models of the entire interior that are specific to the actual measurements of an aircraft," said Reita. Additionally, "clients appreciate being able to see exactly what they're getting," he said.

Celebrating its 10th anniversary, Austrian charter operator **GlobeAir** is entering the refurbishment business. Two years ago, with its Citation Mustang fleet needing an interior refreshment, GlobeAir took on the refurbishment itself, designing and installing four different interiors. After receiving inquiries from other operators, GlobeAir is now offering upgrades as a stand-alone service.

"The entire fleet is aging," said CEO Bernhard Fragner, seeing opportunity in the graying Mustang corral. In addition to its four designs, the company can provide customization for seat coverings and embroidered logos. Most of the work can be done without the customer's aircraft, and the tear out and installation require only six days. Its first refurb job has been completed.

In January, GlobeAir, which owns and operates 16 Mustangs, moved into a larger hangar at its home base at Genoa Cristoforo Colombo Airport, capable of accommodating five of its aircraft at a time.

JetSet Interiors of Dallas, Texas, offers a new line of seats and a rapid finish process for wood veneer. The Signature Seating Series for Bombardier Global and Challenger jets can be built on the existing BE seat frames, and features wider headrests and armrests, a USB charging port, and iPad holder arm. Meanwhile, its quick-drying Rapid Finish Process for wood veneers cuts downtime 40 to 45 percent, saves about 10 percent in weight, and provides a stronger and more scratch-resistant finish than polyurethane, said company president Ron Larabie.

Elliott Aviation has launched a custom maintenance tracking app, Elliott Connect, enabling customers to manage aircraft maintenance online through a website or mobile app, They can apply change orders and get quotes, review invoices and work orders, and manage warranty program information, as well as communicate with Elliott team members. Greg Sahr, president of the Moline, Illinois-based company, called the new tool "especially valuable in the cases of large work scopes." The app has already been successfully tested with a customer on a Citation 650 Doc 8 inspection.

Part 145 repair station **Infinity Aircraft Services** has launched Prestige Interiors, an aircraft completions division offering interior soft and hard good refurbishments and replacement retrofits. Housed in a new 16,000-sq-ft facility that includes a 100 percent climate-controlled holding area for materials at its West Palm Beach, Florida location, Prestige offers custom handcrafted cabinets and solid surface countertops, and in-house-made seat coverings and cabin soft goods. With a full dye room, Prestige can create new colors or match custom hues. Refurbishment specialties include wood refinishing; full upholstery and seat foam replacements; leather repairs and replacement; headliners and baggage panels; and carpet extraction and replacement, according to Infinity.

Jet Aviation Singapore

Edelman Leather has re-organized all its collections by color, creating a Master Palette of 36 color families and laying "the foundation for our color theory and thoughtful transitions moving forward," the Connecticut company said. Highlighting the change, Edelman is showcasing three popular embossed leather collections: Shagreen, Sulky, and Wagon Lit, all having wide application by designers in business jet interiors.

The 15 shades of the new palette of Shagreen, the irregular, pebbled surfaced leather, include shimmering colors and saturated hues that create dramatic interior effects. The burnished texture of the Sulky palette has been given five new colors, creating an even gradient from light to dark, and bringing an added level of sophistication to the overall palette, the company said. Wagon Lit's palette of "highly usable colors" represent "a hidden gem" for designers, and "demonstrates the chromatic logic and continuity of the Edelman palette as a whole," according to the company.

Edese Doret Industrial Designs (EDID) of New York City has appointed aviation management company GI Aviation of Abu Dhabi as its sole representative for the Middle East/North Africa region. GI Aviation will be responsible for providing initial meetings and discussions regarding aircraft owners' interior design requirements, and the coordination of subsequent technical meetings between the owners and EDID. In addition to executive aircraft, Edese Doret designs interiors for yachts and estates.

Aviation Fabricators (AvFab), provider of aftermarket seats and interior components for turboprops and light jets, received TSO approval in April for Beech 1900 seats. "We've been repairing them for years, but we can't get the parts" for the out-of-production seats, said G.R. Lowe III, company co-founder. The Clinton, Missouri-based company also provides components for Beech 1900 executive interior reconfigurations that feature club seating, tables, and an aft lav. The company just sold some 40 executive seats for U.S. military-operated 1900s that will be outfitted in combi executive forward/high-density aft seating configurations, according to Lowe.


UTC Aerospace Systems

AvFab provides aftermarket interior furnishings for several OEM products, including divans for Citation 500/550/560 models, Hawkers, and Beechjets, and the Nextant 400XTi (a remanufactured version of the Hawker 400), but "by virtue of the numbers" in operation, Beechcraft models represent the company's primary market. Customers include Part 135 operators seeking to give their airplanes more appeal in the market, and sellers "trying to market against newer" preowned aircraft, said Lowe.

Capping "several years of research and development," **UTC Aerospace Systems** launched the Flite series, a new product line from its Booth Veneers division. The new veneers, which include FliteFlex and AlumiFlite, were developed to meet customer requests for veneers that are lighter, more flexible, and less flammable, according to the company, lowering aircraft weight and improving performance. The products build on the company's existing three-ply veneers that use a poplar substrate first introduced by Carl Booth in 1976. The veneers provide weight savings of up to 40 to 60 percent compared to the company's current offerings, representing as much as 500 pounds in total, depending on the airframe, said Joshua Florio, Booth Veneers general manager.

FliteFlex is a two-ply product that provides greater balance of thermal and electrical properties through its proprietary, patent-pending combination of face veneer and synthetic substrate. The burn-resistant substrate is thinner and more durable than its current veneers, and also offers increased flexibility, able

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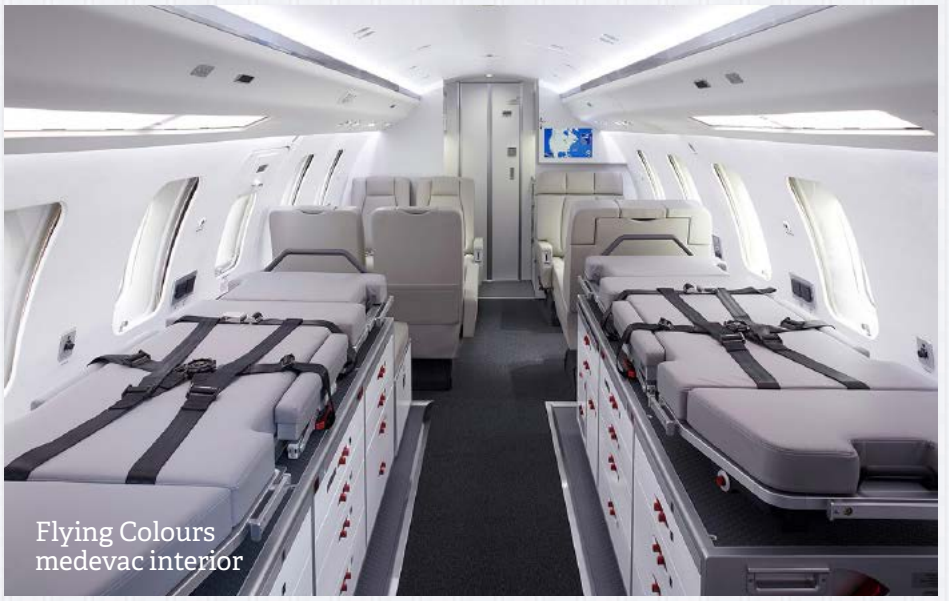
to bend around radii that traditional veneers cannot. AlumiFlite is a three-ply product consisting of a face veneer with an aluminum core and poplar backer. The face veneer is chemical-free, requiring no fire-retardant chemical, and the aluminum core is offered in two thickness options. FliteFlex and AlumiFlite are available in the same wood product varieties as Booth's legacy veneers.

Primadonna Lux of Tucson, Arizona, introduced the Diep Sleep System at EBACE, a lightweight, fold up bed frame with memory foam mattress that can fit between facing single or double club seats and in other cabin configurations to create a bed when needed. Diep Sleep unfolds in 30 seconds to form a single or double bed and stows into a compact package in one minute. The size, color, and finish of the sleep unit can be customized to match the cabin.

Infrastructure

Robinson Aerospace (formerly Robinson Aircraft Interiors), the Coppell-Texas based completion and refurbishment provider, is relocating to Alliance Airport in Fort Worth. "Now with the ability to serve our customers from a major airport location, we can truly realize our longstanding goal of becoming a turnkey U.S. completion and MRO center," said company president Jeff Robinson. The new facility has more than 217,000 sq ft of offices, conference suites, design showrooms, climate-controlled hangars, and integrated back-shops. The 14 hangar bays accommodate large-cabin business jets, and the new airport location will allow direct fly-ins by customers. The first project undertaken at the new location, a limited interior refresh and 12/24-month inspection on a Challenger 604, was completed and re-delivered at the beginning of September.

MRO and completion specialist **Jet Aviation** opened a hangar at Singapore's Seletar Aerospace Park and is building another at its Basel headquarters. The company's third hangar at Seletar, opened during the biennial Singapore Airshow in February, includes an upgraded interior shop, drying rooms, a new soft goods area, and woodshop. Recently approved as an upholsterer of Rockwell Collins (formerly B/E Aerospace) 16G seating, the facility is the only approved 16G seating center in Asia, according to Jet Aviation, authorized to re-foam and re-style 16G seats, including those of China-registered aircraft. The 41,000-sq-ft hangar can accommodate up to two BBJs or ACJs, or five Gulfstream G550s.


Flying Colours medevac interior

Jet Aviation's 94,000-sq-ft widebody hangar in Basel, now under construction, will replace two older hangars, adding a total of 49,000-sq-ft of hangar space and 21,500 sq ft of shops and offices to its headquarters facility. Built to meet increased demand for widebody completions and refurbishments, the hangar is expected to be in service for Q4.

Flying Colours has added 40,300 sq ft of floor space and about 70 more employees—a 30 percent increase in staff—at its St. Louis, Missouri facility. The expanded facility commenced work in Q1 with several cabinetry projects.

In May, Austria's **F/List** opened F.List Canada, its new production facility in the Montreal aerospace cluster, offering a range of the company's high-end interior

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The ACH corporate cabin collection

A year after bowing as a bespoke, standalone division, Airbus Corporate Helicopters (ACH) was back at EBACE, scene of its launch, showcasing the first ACH130, the turbine light single with its branded interior; the company also announced news of its progress. The complement to the Airbus Corporate Jets fixed-wing fleet, ACH aims to underscore Airbus's value proposition as the only manufacturer to offer both executive airliners and executive helicopters.

The first ACH130 is outfitted with the racing-inspired "Stylence by ACH" luxury configuration, which "combines unique passenger-focused design, exceptional single-engine performance, and first-class-quality and comfort," said ACH head Frederic Lemos.

Monaco-based VIP charter operator Monacair, which has eight ACH130s in its fleet, will operate the ACH130 for the undisclosed customer. Japan's Auto Panther, the country's first operator of the platform, ordered an ACH130 in Q1,slated for corporate VIP transport in Kagoshima.

ACH offers VIP versions of half a dozen Airbus Helicopters models including the ACH125, ACH135, ACH145, ACH160 (in development), and ACH175, each available in the company's three design offerings: Stylence by ACH; Exclusive by ACH; and ACH Editions.

"Stylence by ACH" represents off-the-shelf luxury, with details and appointments aimed at the corporate market, featuring fashionable yet rugged, high-quality interiors. Numerous choices in outfittings and options are available. "Exclusive by ACH" represents the ultimate in customization, for example matching the helicopter's interior to the décor of the yacht it will service, or reconfiguring the interior to meet an owner's unique needs or desires. In addition to fine woods, cabins may be finished in materials including crocodile or manta ray skin, said Christine Fraud, head of interiors sales and marketing, global business at ACH.

MARK WAGNER
ACH130

"ACH Editions" are interiors created with partners such as Hermes and Mercedes-Benz, "paramount luxury companies that have exceptional savoir faire, and have brought it to us in the helicopter industry," said Lemos.

Looking ahead, the ACH160, the next-generation super-medium helicopter, is on track for certification in 2019. Stylence by ACH for the ACH160 will be available in 2020, and the Exclusive by ACH in 2021. The Exclusive cabin for the 160 includes electric footsteps, a sponson to hold flotation devices, double-glazed windows, and an interior cocoon to lower cabin sound level.

Orders for five ACH160s are in hand; the launch customer, an unidentified U.S. operator, will take four, the first with a Stylence interior.

Lemos noted onboard entertainment and communication systems aboard rotorcraft are of less concern than on fixed-wing platforms as passengers spend relatively little time onboard. However, the trend is to support individual personal devices, rather than feature a large-screen monitor popping out of a credenza, for example, he said. As for communication systems, corporate helicopters, unlike fixed-wing aircraft, often operate at altitudes at which cellular ground networks are available to passengers, though such use can contravene telecommunication rules.

Going forward, ACH has developed a checklist of up to 2,000 items, depending on the model, where improvements can be made, and is developing ways to quantify and "objectivize" quality. "People say, 'It's nice,' or 'This is very good,' but it's not tangible, and people in engineering do need to understand how we measure quality," as do ACH's subcontractors, said Lemos. "It's a continuous process," he added. "The points of control were not existing as much in the past."

Since its launch a year ago, ACH has accounted for 58 of the total of 335 aircraft sold by Airbus Helicopters, and Lemos said that ratio (about 17 percent) is consistent with the sales share the division expects going forward. ■

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components and services, including stone and leather cabin flooring. Designated as F/List's Veneer Competence Centre for flame retardant wood veneers, which are key components of its interior finishing business, the 59,200-sq-ft facility will provide wood veneers for business jet interiors; finishing and assembly of interior components; refurbishment of interiors; and product and customer support for the North American market. Henceforth, its veneers—specifically, special three-layer fireproof wood veneers—and business jet equipment for North America will be produced here, allowing more flexible and faster service, the company said. Sean Johnson has been named CEO of the division. The facility also houses a showroom and veneer selection area.

F/List also has subsidiaries in Brazil, Germany, and the U.S., and has delivered more than 1,200 interiors for OEMs including Bombardier, Embraer, and Pilatus.

Medical Interiors

The vital signs of the medical interiors niche are strong. "We're seeing a spike in the global medevac market," said Sean Gillespie, executive v-p of Canada's Flying Colours, after delivering the first Bombardier Challenger 650 outfitted with a medevac interior, now in service with Swiss air ambulance operator Air-Rescue Rega. Two more medevac CL650s are set for delivery by year's end under contract to Bombardier Specialized Aircraft.

Flying Colours design engineers developed the interior in conjunction with Bombardier and medical equipment specialist AeroLite, which supplied the intensive care unit (ICU), and interior re-configuration adaption plates.

The cabin operates as a fully functional ICU for up to two patients with attending critical care experts, or can be easily reconfigured to transport up to four patients with an accompanying medical team. The layout ensures easy egress and access for the patients and medical teams, while soundproofing has been strengthened to improve the patient, passenger, and attending clinician experience. An additional four to six seats, depending on configuration, can be included for accompanying travelers.

Two aft galleys incorporate Enflite ovens, coffee makers, and customized double-width fridges that provide extra space to store medical supplies. Just aft of the cockpit, two bunks provide a crew rest area.

Flying Colours designed and built the majority of non-medical monuments, furnishings, and interior components, and secured the STC for the installation from Transport Canada Civil Aviation and EASA.

The paintwork was completed in Flying Colours's dedicated paint shop at its Peterborough headquarters. The livery features a red tail fin with a white cross, and a red design spanning the front portion of the fuselage.

Jet Aviation designed and installed medevac conversions on two Embraer Legacys at its Basel facility: a Legacy 600 for an Asian customer and Legacy 650 for a Middle East client. Both are intended to serve dual duty, also flying VIP charters. Jet Aviation has developed STCs for modifications to switch out the two interiors in a matter of hours.

Gillespie sees demand coming from the charter market, with operators seeking a VIP interior that can be partially removed to make room for a stretcher.

Aviation Fabricators (AvFab), provider of aftermarket seats and interior components for turboprops and light jets, recently received an STC for a medical stretcher for the Pilatus PC-12, and earned EASA and Transport Canada approval for a medical stretcher for Cessna Citation 500 series jets. A stretcher for the Beech 1900 is under development, said AvFab co-founder G.R. Lowe III.

"That spike will continue as the population ages," Gillespie predicts of demand for medical interiors and components.

The Complete View

Spec-ing and outfitting a cabin today is more than just choosing the configuration, fabrics, and colors. With high-tech IFE/CMS, galley equipment, and the like, the completion of any business aircraft is a complex undertaking, and a growing number of companies offer completion management services, shepherding the process from contract to delivery.

Texas-based **Mente Group** and New Mexico's **Richard Roseman Airborne Designs** have partnered in E-First/White Glove, a completions management service providing predictive program oversight for head-of-state executive airliner completion projects. The service is focused on "creating stability in what is often a destabilized setting," said Vince Restivo, Mente Group's v-p of program management. The E-First (engineering first) portion offers preliminary engineering reviews of early design concepts, while the White Glove component provides advanced technical services during the project.

AP Completion Services G650

SR Technics has added VIP consulting services for completions and refurbishment of wide- and narrow-body VIP aircraft, and business jets to its offerings. The C&R assistance is augmented by new maintenance and lifetime support programs covering aircraft during and between scheduled downtimes. All are available worldwide in both full-service and customized packages, and can be provided at the customer's base, a modification center, or remotely, the company said. The C&R services cover areas including design concept, proposal and contract, engineering, production, and testing and redelivery, capped by "downstream" services that manage the aircraft from completion to operation. In addition to marshaling internal resources to meet client needs, SR Technics said it will use its "unique and rapid access to a range of experts in related fields" to advance projects "without the need of hiring third parties."

The Zurich-based company counts its "Swissness"—encompassing customer focus, a structured way of working, and attention to detail—among the consultancy's competitive advantages.

In February, Montreal's **AP Completion Services** celebrated its 100th business jet completion management engagement, after shepherding a Gulfstream 650ER through production at Gulfstream's Long Beach, California facility. The interior is "non-standard and highly customized; the owner is a very design-savvy individual," said AP founder Andrew Broccoli.

AP typically works with clients post-purchase, "from specification to delivery," said Broccoli, a former production executive at Bombardier. He's currently working with six Global 7500 buyers to "specify interior elements and accelerate the completion process."

New models coming into service will create more need for completion management services, as well as for refurbishments and oversight of those projects. "All our Global 7500 customers are repeat customers, so they're going to be trading in airplanes," said Broccoli.

Broccoli counts seat leather, stitching, finishing, veneers, monument finish, and paint among the areas where completions issues can arise. He estimates about one in eight new aircraft buyers seek completions management services.

"I tell customers all the time, if you don't want to hire us, we don't take it personally, but send somebody—anybody," he says before back-tracking, noting that buyers sometimes send a chief pilot or director of aviation. "They can't help," Broccoli said of these flight department personnel. "They might be involved in one [completion] every four or five years. This is what we do daily."

Meanwhile AP oversaw delivery of a CL350, its 101st project, in March. ■

Gone West

In late 2017 completionist pioneer Associated Air Center (AAC) ceased operations and closed its large transport category VIP completion center at Dallas Love Field. Parent company StandardAero concluded after analysis that AAC's "business case" was "no longer an economically viable option for the company and its investors" given that: "Current and future work volumes do not support the fixed costs necessary to operate the facility. In addition, the limited pipeline for new business opportunities, excess industry capacity, and slowing demands in the VVIP aircraft marketplace have all contributed to this decision."

AAC would have celebrated its 70th anniversary this year. It performed its first exec-liner completions in 1978, on two Boeings for the president of Mexico. ■

For news on cabin entertainment, communication and management systems, see **AIN**'s annual Cabin Electronics Special Report in our August issue.

PREVIEW Farnborough

Biennial event showcases 'Aerospace 4.0'

by Ian Sheppard

The Farnborough International Airshow 2018 promises to be among the most innovative and interactive ever. Organizers are working hard to enhance the event against the backdrop of a clamp-down on airshow safety after a vintage Hawker Hunter crashed at Shoreham almost three years ago, on Aug. 22, 2015.

Since the last show the Farnborough organizers (Farnborough International Limited, FIL) have engaged with all constituents of the aerospace industry, further bolstering areas such as space and cargo and the Innovation Zone, focusing on "Aerospace 4.0": the new industrial revolution built on robotics, cyber, additive manufacturing (3D printing), and other emerging technologies.

Amanda Stainer, commercial director of FIL, told **AIN**, "Aerospace 4.0 has its own dedicated [building] this time in the heart of the exhibition center. ADS [owners of FIL] has said its members are very keen to know about new technology...and going forward, it will grow more and more."

She added, "We're also growing the Cargo Village, which is supported by Volga Dnepr." So far, Volga-Dnepr is bringing an Antonov 124, its subsidiary Cargologicair is bringing a Boeing 747-8F, and there will also be a Qatar Airways freighter.

The Space Zone will this year be larger and situated at the eastern end of Hall 1, near the show site entrance. Chinese entities CASIC and OneSpace, the launch company, will be at Farnborough for the first time, said Stainer. "It's the first time we've had the Chinese in the Space Zone."

Stainer said that the team is watching developments in Urban Mobility closely and although it won't feature heavily this year, this is something that could create another special zone from the 2020 airshow.

An innovative approach to defense product promotion for exhibitors will involve performance company Crisis Cast running a Live Product Demonstration Area (LPDA) in Hall 3. "We are building an air force command center and it will have a Jason Bourne theme," said Stainer. The idea is to create a scenario with actors performing while demonstrating products. The production will be filmed and displayed on screens around the show site. Exhibitors signed up so far for the LPDA include Bell, Grob, UTC, Lockheed Martin, MBDA, and Leonardo.

The event has 78 static aircraft signed on and organizers expect to host 80,000 trade visitors.

Also for the first time at the Farnborough Airshow the organizers have their own TV stream and film open-forum sessions and play them on screens around the show site. Subscribers can watch later, if they missed them live.

There will also be a new Farnborough Airshow App that will allow visitors to easily find companies by their stand numbers, and lots of information and alerts about events at the show, links to content, and so on.

Business aviation will be well represented at the show also, with Bombardier, Gulfstream, Dassault, Embraer, Diamond, Piaggio, and Pilatus exhibiting aircraft. Airbus Helicopters, Bell, and Leonardo will display helicopters in the static park too. The C Series airliner is already listed under Airbus (which now owns 50.01 percent of the program with Bombardier), while two Airbus Military A400Ms will be at the show, one flying and an RAF example in the static display. ■

DAVID McINTOSH

Industry aims to keep pilot pipeline moving

by Alexa Rexroth

Whether your discussions come in the lobby of a well established FBO, en route to the fuel farm, or in the cockpit, the words "pilot shortage" are bound to be featured in your conversation. Those words have become synonymous with "epidemic" in the aviation industry. Business aviation is certainly not immune, as corporate pilots are beckoned to join the airlines, leading their flight departments to devote increasing funds and creativity to developing retention packages. Blockages in the pipeline appear to come from three elements: increasing competition in corporate flight department hiring and retention strategies; a growing deficit of flight instructors and qualified pilots; and the constant need to attract the next generation of aviators and maintainers.

Plenty of Underqualified Pilots

The term "shortage," according to Don Haloburdo, senior vice president of flight services at Jet Aviation, oversimplifies the situation. He maintains that "there is not a pilot shortage, but rather a shortage of pilots who meet the current job requirements for positions that are available across the industry." Haloburdo explained there are plenty of pilots listed on the FAA registry as certified, but those pilots do not necessarily match up with the open positions and associated requirements in business aviation.

"In business aviation, when we have a customer who buys a large-cabin aircraft, the expectation is that when the aircraft is delivered, they will have a crew and can take the aircraft anywhere that its operational capabilities were designed for. The owners are not of the mindset to take a less qualified pilot and feel comfortable that the pilot is the most qualified individual they can have flying their 50- to 70-million-dollar asset," said Haloburdo.

Don Haloburdo, senior vice president of flight services at Jet Aviation

While customers are willing to pay more to ensure they have a safe and qualified crew, Haloburdo said salaries do not solve the larger problem at hand. "If there are 25 jobs available, but only 20 people to fill them, it does not matter how much you pay them. You still have five open positions. It is getting to the point where we are shuffling different people across the industry into different jobs. As more and more airplanes are being delivered into the marketplace, pilot production at the right experience level is not keeping up," he explained.

The current hiring process has become increasingly difficult for corporate flight departments as the threat of pilots leaving for the airlines remains rampant. According to a workforce retention study conducted by NBAA, pilots are leaving business aviation for the airlines for four reasons: predictability of schedule, compensation, retirement benefits, and job stability. "It costs more to hire people now. When people have folks who leave their organization, they suddenly begin to look at salaries. If they realize that they have not been keeping up with the marketplace, then they may have a group of crewmembers who are paid under what the current market is calling for," said Haloburdo.

Increasing salary costs are especially challenging for smaller businesses in the industry. "I think there is added pressure in our industry, because so much of it is small business. If you are a 30-something-year-old pilot and conduct an economic comparison for what you can make in business aviation versus what you can make working for a major airline right now, there is a disparity. If the overall economic situation is dramatically different, people will pick the path that will better serve their needs in the future," said Haloburdo.

The standard hiring practices of the past appear to be dissolving as corporate flight departments struggle to fill open positions. "I think the days of simply posting positions, reviewing resumes, calling for interviews and expecting that by doing so you are hiring the most qualified people...is [not] where we are currently sitting," said Haloburdo.

Corporate Flight Departments Get Creative

Staffing and recruiting efforts in business aviation are continuing to be challenged as flight departments become increasingly creative in their retention package offerings. GrandView Aviation, a private jet charter operator, recently announced a five-year retention package of up to $80,000 to attract highly qualified flight crews for its Phenom 300 fleet. According to GrandView, a signing bonus of $5,000 to $10,000 commensurate with the pilot's experience will be paid upon completion of training and company onboarding. The company also has a retention bonus program that pays up to $60,000 after five years of service to the company.

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Pilot shortage

Other operators are making similar offers. Keeping up with the competition, however, is not always achieved through retention packages and sign-on bonuses, as explained by Elaine Lapotosky, director of staffing operations at Jet Professionals. "People are trying to be as competitive as they can, but at some point, you just can't compete at that level, so you have to be creative with what you offer," said Lapotosky.

That creativity, she said, can sometimes be found through "really getting to know your employees and candidates. Sometimes people want to know they are more than a number. Value doesn't always mean the same thing to everyone. You can certainly throw a bunch of money at people, but that doesn't always equal value to everybody."

Candidates' awareness of their importance in the current market has also provided recruiters with an added challenge of convincing them to change companies. "This is not a naïve market. This is a group of individuals who are professionals and understand their value in the market. They are interviewing the company as much as they are being interviewed. They know exactly what they are looking for and where their line in the sand is. Every check box needs to be marked for people to move," said Lapotosky.

Five years ago, Lapotosky explained, the situation was very different, as people were more willing to have open discussions about new opportunities. "From the recruitment side, just finding qualified candidates interested in making the move has been more challenging. Never mind the fact that it is hard to find people because they are leaving for the commercial industry. People are fearful that the grass is not always greener on the other side."

The pool of candidates is the same for staffing companies and "we can only separate ourselves by our customers and team members. We're all struggling. There is not a conversation in this industry that doesn't turn to staffing, the shortage, and how we can find and retain talent. This needs to continue to gain momentum and actually see some programs put in place to support the really good conversations that are happening. This is a grassroots effort and everyone needs to help the situation," said Lapotosky.

Flight Schools Struggle To Retain CFIs

While often cited as a costly training requirement and direct contributor to the pilot shortage, the Airline Transport Pilot (ATP) certificate continues to be required for a pilot with a Part 121 airline and is recommended by the Coalition of Airline Pilots Associations (CAPA) as the minimum standard for Part 135 operations. Capt. Lee Collins, president of CAPA, said the ATP requirement is not to blame for the shortage.

Elaine Lapotosky, director of staffing operations at Jet Professionals

Collins explained the shortage the industry is facing now is a result of pilots who are retiring after being hired in the early 1980s when "the U.S. airline industry had the largest ever rate of growth in its history. We're not having a shortage because of the ATP being in place. We need to solve the needs of the massive airline industry growth right now versus the big trough of people leaving because they've been in the industry for 30 years and are ageing out. Those two lines are heading in the wrong direction at the same time, and we've got to find a way to get more pilots."

Capt. Lee Collins, president of CAPA

In an effort to address the issue, CAPA "went to the source. We went to the flight schools, the big academies, and the universities and asked them to tell us what was going on," said Collins.

The overwhelming response from those institutions, according to Collins, came down to three key areas of need: better training aircraft, more instructors, and more pilot examiners.

"They said, 'Please do not change the ATP requirement,' because all of their instructors are students who are completing the program and [then] sticking around for about a year until they get enough time to go to the airlines. If you get rid of the [ATP] requirement that makes them stay here, then we won't have any instructors. We are having to cap enrollment because there are not enough flight instructors—and aircraft fleets are aging, and there are not enough designated pilot examiners [DPEs] from the FAA. These three choke points are causing a slower throughput than what we need to meet the demand, none of which has to do with the ATP certificate," said Collins.

Collins said students are often left waiting for a month or two at a time to take their check rides because of the need for more DPEs across the country. CAPA is continuing to ask flight schools how they can help to generate more instructors and is going to begin a pilot program that will reach out to retired military and airline pilots across the country to drive interest in mentoring opportunities. Additionally, Collins stressed the need to work with GAMA to develop newer, better, low-cost trainers that can be brought to market quickly to re-equip flight schools with better equipment.

"If people want to talk about what we can do to fix the problem, they need to stop focusing on getting rid of a rule from the FAA and start fixing things...and finding new ways to train new people how to fly and fill the cockpits," said Collins.

Tremendous Turnover

Kenneth Byrnes, chairman of the flight training department at Embry-Riddle Aeronautical University (ERAU), echoed CAPA's findings of a flight instructor deficit that would only be worsened if airline requirements were lowered. "If the rules change and all of a sudden you can go straight to the airlines with a commercial multi again, the supply will stop because most of the students will want to go straight to a jet after their primary training. I surveyed my group here and about half of them said they would not get their CFI if they could go straight to the airlines."

Not gaining experience as a flight instructor, however, is something Byrnes sees as a detriment to a pilot. "They miss out working for us and the experience they gain as an instructor. The highest level of learning is to teach. It's kind of like a finishing school for pilots. You have to have the knowledge, skills, certificates, and the ability to teach someone else how to acquire those things with the right demeanor and attitude. When you do that for a year and then go to the airlines, you are better for it," said Byrnes.

At ERAU, high turnover of flight instructor staff has proven to be a turbulent problem. Byrnes explained, "It's definitely not difficult for us to recruit flight instructors, because it's a transient position that serves as a stepping stone to the regional airlines or corporate aviation. It's not a destination career. I have more than 200 flight instructors at any given time, which creates a lot of training standardization. They come and work for us for about a year and then leave when they get their minimum requirements and move on to the next career step. We have about an 85 percent annual turnover rate of our CFI staff. We are definitely seeing that there is not a shortage of people, but an incredible amount of turnover and shortage at the upper end with CFIs and flight standards personnel."

Kenneth Byrnes, chairman of the flight training department at Embry-Riddle Aeronautical University

ERAU is not alone in dealing with tremendous turnover of flight instructors. "Where everybody is having the most difficulty is retaining flight instructors who are able to teach multi-engine and are able to teach future flight instructors how to be flight instructors. That is the choke point for us. Part 61 requires a person to hold a flight instructor certificate for two years before providing training to another initial flight instructor applicant. Last summer, we submitted an exemption request to the FAA from that requirement," said Byrnes.

The Petition for Exemption submitted by ERAU seeks exemption from the requirements of Title 14 of the Code of Federal Regulations CFR § 61.195(h)(2)(iii) in an effort to permit ERAU flight instructors who have held a flight instructor certificate for less than two years to be able to train flight instructor applicants. "The most critical piece of the pipeline, if you look at the industry as a whole, from the majors to the regionals, and even military and corporate aviation, is the pilots really come from two places. They come from flight training providers, which need instructors, or from the military. About three quarters of pilots need to come from the civilian side where the flight instructor workforce has to be viable. If there is a critical point right now with the pilot shortage, it is the flight instructor cadre in the nation. If we don't have the instructors to train the next batch of students, then the faucet gets completely shut off," said Byrnes. ■

Aviators and maintainers of tomorrow

While retaining qualified flight instructors may be a challenge, student interest at Embry-Riddle Aeronautical University (ERAU) continues to rise. "There is definitely not a lack of interest in pilot professions at ERAU. Our student numbers are up and continue to climb because there are good paying jobs at the other end. It's a viable career field with a good return on investment," said Kenneth Byrnes, chairman of the flight training department.

Awareness of the aviation industry and trade career paths, such as becoming an aviation maintenance technician, is being instilled as early as the grade school level and is being promoted at aviation career fairs that target younger audiences.

Roxanne Ober, director of admissions and outreach at the Pittsburgh Institute of Aeronautics, said, "We want to be appealing to middle school and high school students who want to be problem solvers, troubleshooters, and critical thinkers. That is what the aviation industry needs. I have seen our program change individuals' lives, and the feedback we get from graduates is so rewarding. I heard a recruiter at the last career fair I attended say that now is the best time to get into this field." **A.R.**

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Daher eyes ISR market with latest TBM configurations

by Kerry Lynch

Daher unveiled a new configuration of its TBM 910 and TBM 930 turboprop singles aimed at the intelligence, surveillance, and reconnaissance (ISR) market. Announced last month during the international defense and security show Eurosatory 2018, the ISR-configured TBMs will be fitted with underwing hardpoints and electrical connections to accommodate sensors and large-format cameras.

Daher sees a range of applications for the ISR configuration, from defense, security, and medical evacuation to transport missions. The aircraft can provide more than six hours of surveillance capability and can be reconfigured rapidly for various duties, the French airframer said. Daher is further pointing to the aircraft's ability to operate from 2,455-foot runways and its speed capabilities, compared with other ISR options.

Daher announced the availability of the ISR configurations during Eurosatory 2018.

"The new TBM ISR version brings a fast, all-weather airborne platform to the market for surveillance operations and aerial photography, with a very competitive cost-performance ratio compared to existing solutions," said Nicolas Chabbert, director of the Daher Airplane Business Unit. "As a result, we are now offering the TBM ISR as an alternative—or complement—to medium-altitude, long-endurance unmanned aerial vehicles and to heavier aircraft in a platform that is rapid and efficient to deploy, with limited logistics requirements."

Daher validated the handling qualities and flight-envelope performance of an ISR-equipped TBM, including the use of a 110-pound (50-kg) ultra-high-definition camera for photo trials. The TBM 910/TBM 930 ISR variants also can be used for surveillance with a multi-sensor optronic retractable turret, synthetic aperture radar/ground moving target indicator radar (SAR/GMTI), communication interception system, and secure transmission means, Daher said. The aircraft can be equipped with a quick-change console mounted behind the pilot for various missions and tactical situation monitoring. ■

Eclipse to stay at ABQ; new backers cited

Following months of unsettling developments and threatened eviction, New Mexico-based Eclipse Aerospace last month reached an agreement with city officials to maintain its presence at the Albuquerque International Sunport (ABQ) as the company works to restructure its operations.

According to documents obtained by **AIN**, Citiking International US LLC remitted payment of $1,081,657.21 to the city at the end of May, settling all back rent, fees and related charges against Eclipse dating back to last year.

That total also included June 2018 rent and a two-month security deposit on three buildings now occupied by the company for maintenance and support of the Eclipse 500 and 550. The agreement further stipulates that revised leases on those facilities be sent to the Albuquerque City Council by August 31 for consideration.

"It is intended that this Agreement shall be assumable by [Eclipse] through May 2019 pursuant to a bankruptcy proceeding," the settlement continues.

Online records indicate Citiking incorporated in Delaware seven months ago. One Aviation—formed in 2015 through a merger between Eclipse and Kestrel Aircraft—is not named in the settlement, and inquiries to Eclipse representatives were not returned by deadline.

In addition to continuing operations at ABQ, earlier this month Eclipse opened a new maintenance facility at Aurora Municipal Airport (ARR) following an agreement to vacate its former operation at Chicago Executive Airport (PWK) at the end of May. **R.F.**

GA fees ahead at DAL

by Kerry Lynch

The city of Dallas plans to implement a new landing fee for general aviation operations at Dallas Love Field (DAL) this summer under a recently adopted ordinance. Approved by the Dallas city council on April 25, the ordinance took effect July 1, specifying that the director of aviation should determine the fee based on a formula that factors aircraft weight and airport maintenance costs.

Under the formula, 80 percent of the fee will be based on airport upkeep costs that are attributable to general aviation landings and 20 percent will be calculated using aircraft landing weight. The fee will vary annually based on operations and maintenance needs.

According to city documents, the fee could be as much as $5.80 per 1,000 pounds in the first year, based on an estimated $20.175 million maintenance and operations needs at DAL in 2018. Of that, the city is assigning $6.2 million to general aviation operations. With nearly $1.3 million expected to be collected in the 7-cents-per-gallon fuel flowage fee, the city estimates it will need to collect $4.9 million in general aviation landing fees.

Commercial carriers currently pay $2.20 per 1,000 pounds, a figure the city said is derived by calculating annual airfield requirements divided by total landing weight of all signatory airlines.

While the ordinance took effect July 1, the actual implementation and fees are still unclear. The Love Field Pilots Association, which includes a number of general aviation operators and businesses at the airfield, in late May wrote airport city officials expressing concern about the fees as originally outlined, saying there is still confusion on the applicability to based and transient operators. The letter also stressed the need for more transparency in the development of the fees, saying at first look the formula appears "flawed and unfair" to the general aviation community.

The letter further expresses concern that discussions surrounding the fees leading up to their approval in April did not include the general aviation community itself.

The city cited increasing costs for keeping up with traffic and maintenance needs in its decision to approve the fee. But airport officials also stress that they want to ensure that general aviation pays its "fair share." ■

A new landing fee at Dallas Love Field could put a damper on FBO businesses there, including the Business Jet Center facility.

PHOTOS: MATT THURBER

Kodiak Series II: Sandpoint to Santa Monica

by Matt Thurber

Driving on an early May morning to Sandpoint, Idaho, to see the Quest Aircraft factory and then fly a new Kodiak 100 Series II to California, it was clear that icing conditions were not only forecast but likely in the wet gray clouds that shrouded the local mountains. For the flight-into-known-icing-certified Kodiak, however, icing is not a problem, and in the 11 years since it entered service, the capable utility single-engine turboprop has proven its mettle in challenging flying all over the world.

Today's flight, while relatively routine for the Kodiak, would be just a taste of what the airplane can do, but it showed me that the Kodiak is tremendously flexible. It fits in to the comfortable-transportation category with handsome, comfortable interior furnishings but quickly transforms into the utility role where landing on a dirt strip in the middle of nowhere is just a normal operation. Of course, the Kodiak can land almost anywhere, with optional straight or amphibious Aerocet or Wipline floats available, and it can carry more cargo with installation of the optional belly-mounted cargo pod.

Quest marketing director and chief demo pilot Mark Brown met me at Sandpoint and arranged for a factory tour before our departure. For a small aircraft manufacturer, Quest is highly vertically integrated, making almost every part at Sandpoint, including crafting 40 percent of machined parts in-house. Aluminum parts are alodined in tanks at Sandpoint, and before assembly parts are epoxy primed to prevent corrosion. About the only parts that Quest doesn't make are composite components, for example, the cowling, fairings, and other small parts.

All work in the factory is tracked on an electronic work instruction system developed by Quest. This system keeps track of time spent on each task, hosts videos showing how to do tasks, logs quality control sign-offs, and contains other assembly information.

Sandpoint to SMO

Our journey would take us over some of the highest terrain in the Continental U.S. and end in Southern California where Quest dealer Clay Lacy Aviation awaited delivery of its newest Kodiak and provided the airplane for this evaluation.

Coincidentally, parked on the ramp where Kodiak N247KQ awaited was the second production Pilatus PC-24 utility jet, another airplane designed to operate from non-paved airports. The Kodiak was the first Series II—still designated model 100—off the assembly line, and after our trip, Brown would fly it on a demo tour then return it to Clay Lacy in Van Nuys, California.

Brown had already planned our first leg to Truckee Airport near Lake Tahoe on his iPad, using Garmin Pilot; a two-year subscription is now included with new Kodiaks. He loaded my bag into the rear luggage area through the large rear door then stowed the tail stand, which is recommended to keep the tail from tilting back and hitting the ground while loading cargo. After Brown briefed me on the seat adjustments, I climbed into the left seat through the pilot's door. The Kodiak sits high off the ground—propeller clearance is 19 inches—and I felt like I was sitting in an SUV, with great visibility ahead and to the sides. The front doors close with a simple pull then a push of the latch to secure the door.

The simplicity of getting the Kodiak ready to fly is one of its best attributes. There is little to do beyond making sure both fuel selectors are on, turning on the aux fuel pump, then holding down the spring-loaded starter motor switch until the Pratt & Whitney Canada PT6A-34 reaches 14 percent, moving the fuel condition lever to low idle, then at 52 percent NG, letting the switch go.

Once the Garmin G1000 NXi avionics were ready, Brown loaded the flight plan from his iPad via Garmin's Connext system using the Flight Stream 510 wireless gateway. Our plan was to fly from Sandpoint and stop for fuel in Truckee, California, a high-altitude airport nestled in the Sierra Nevada Mountains. With a full load of fuel (315 gallons usable; or 2,143 pounds), two pilots, and some cargo, the Kodiak was about 1,000 pounds lighter than the 7,255-pound maximum takeoff weight.

Quest chief demo pilot Mark Brown showed off the capabilities of the utility turboprop. The avionics suite is the Garmin G1000 NXi.

The Kodiak is at home in mountains and in known icing conditions, and the TKS system helps prevent ice accumulation, but can also serve to remove existing ice.

Into the Ice

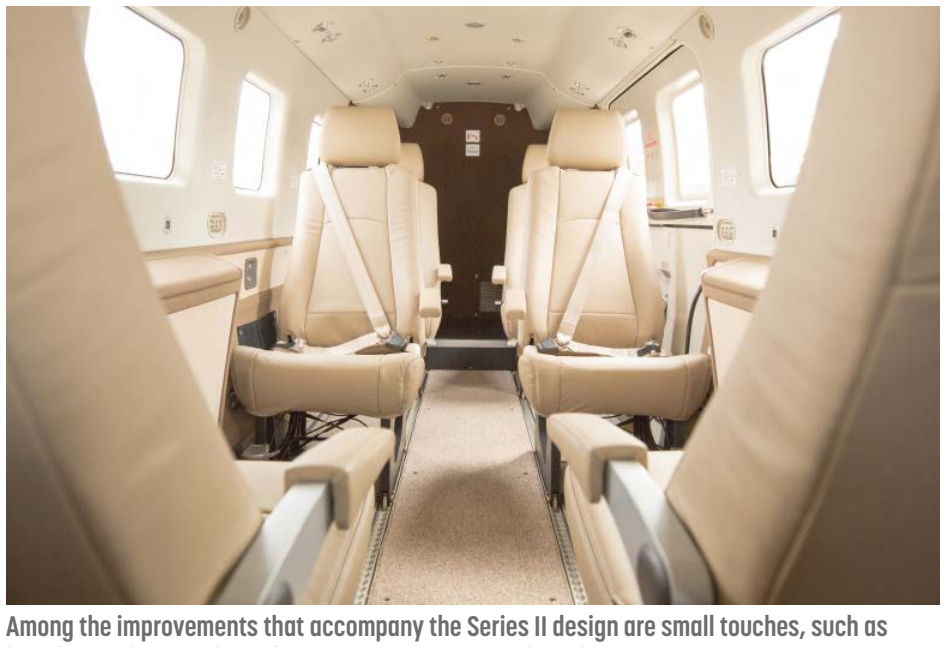
The gray skies dripped light rain as we taxied out, and at 2,131 feet msl, the 12 deg C OAT would soon put us in perfect icing conditions. Taxiing with the PT6 in low idle moves the Kodiak along briskly, so an occasional dip of the prop into beta helps manage taxi speed. The Kodiak is, despite its size, fairly compact and easy to maneuver on the ground using differential braking for sharper turns. Minimum turning radius is just 12.6 feet.

Brown briefed me that the Kodiak gets light at about 55 knots and to maintain back pressure on the yoke and let it lift off the runway. With flaps set to 20 degrees and after lining up on Runway 20, I pushed the power lever forward approximately to the top of the green arc on the torque gauge then made a finer adjustment into the yellow band toward the red maximum torque value, which is allowable for up to five minutes.

Liftoff came quickly, and the Kodiak levitated off the runway almost before I was ready. Best rate of climb speed is just 99 kias at sea level, slightly lower at Sandpoint's altitude of 2,000 feet agl, and delivers a climb rate of about 1,200 fpm at mtow. With air-conditioning on, which we didn't need that day, climb rate drops by about 100 fpm.

After liftoff, I set the climb attitude to 10 degrees and once reaching 85 kias, raised the flaps to 10 degrees, then at 95 kias, flaps zero. I climbed at 104 initially then sped up to 115 kias because we were expecting icing. At our light weight, the Kodiak zoomed up at 1,650 fpm.

Leveling off at 12,000 feet with the Garmin GFC 700 autopilot switched on, true airspeed settled at 173 knots while the engine was burning 336 pph.



Among the improvements that accompany the Series II design are small touches, such as branding and ownership enhancements, to improve the cabin experience.

TKS Comes Through

The best place to look for indications of ice accumulation is the tires, according to Brown; the white ice contrasts sharply with the black rubber. We activated the TKS ice-protection surface/prop switch, which forces glycol-based liquid through tiny holes drilled in cuffs attached to the leading edge of the wings and empennage and through outlet pipes next to each propeller blade. The liquid not only prevents icing but also acts as a deicer. The spray from the propeller generally keeps the windshields clean, Brown said, so it isn't always necessary to switch on the windshield TKS.

As we cruised along at 12,000 feet—the most efficient altitude for the Kodiak, according to Brown—we punched in and out of wet clouds at -10 deg C and picked up what looked to be moderate mixed icing, but the TKS easily kept up with it. We were using the TKS's high setting, and the 16 gallons of fluid onboard would last 80 minutes at that rate (12 gph). At the lowest (normal) setting (6 gph), the tank would provide 160 minutes. In extreme conditions, the max flow goes through the fluid in 40 minutes. While the TKS fluid does make a bit of a mess on the airplane, it is quite effective at removing and preventing ice accumulation, with the added advantage that the fluid flowing back along the flying surfaces protects more than just the leading edges. The checklist also calls for switching the engine inertial separator inlet to bypass during icing encounters.

At the height of the icing conditions, the speed dropped to 160 ktas but then picked back up to 170 ktas when the ice cleared off the wings.

Eventually the clouds dissipated and we were in the clear for the rest of the flight. Speed crept up to 180 ktas and fuel flow 333 pph, with ISA +5 deg C at 12,000 feet. We turned off the TKS and returned the engine bypass to the normal position.

Deserted Strip

The air was smooth as we crossed from eastern Oregon into northern Nevada, and it wasn't long before we spotted some unusual circular markings on the flat desert floor below us, sort of like the Nazca lines in Peru that used to fascinate me as a kid. A quick look at the map confirmed that we were flying over the Black Rock desert, location of the annual Burning Man festival, which hosts a pop-up airport on the table-like desert floor. The prospect of an off-airport landing on the site of the Burning Man proto-city proved irresistible, and we canceled our IFR flight

› continues on next page

Price:
(typically completed and equipped)
$2.15 million

Engines (1):
Pratt & Whitney Canada
PT6A-34, 750 shp

Avionics:
Garmin G1000 NXi

Passengers (typical):
1 crew + 9 pax

Max Range:
(45-min reserve)
1,132 nm

High-speed cruise:
185 ktas

Long-range cruise speed:
132 ktas

Fuel capacity:
320 gal

Max payload w/full fuel:
1,358 lbs

Ceiling (certified):
25,000 ft

Max takeoff weight:
7,255 lbs

Takeoff ground roll:
(sea level, standard)
934 ft

Landing ground roll:
765 ft

Length:
34.2 ft

Wingspan:
45ft

Height:
15.25ft

Cabin:
Width: 4.5 ft
Height: 4.75 ft
Length: 15.8 ft

Cargo volume:
(aft of crew seats)
248 cu ft

› continued from preceding page

Kodiak Series II

plan, chopped the power, and descended.

Before setting up for the landing, which Brown would do because it was off-airport, I slowed the Kodiak to get a feel for low-speed handling and did some stalls. The Kodiak is no light airplane, but while the controls are a bit heavy in pitch, it handles much like a big piston single, for example, a Cessna 206, with a heavy engine up front. Pulling the power back, I slowed the Kodiak and dropped the flaps (10 degrees below 138 kias, 20 degrees below 120 kias, 35 degrees below 108 kias) and held the nose up to bleed off airspeed.

The Series II Kodiak now includes a Safe Flight angle-of-attack system, with the indicator mounted in the line of sight on the glareshield, just to the left of the center post. While I like having AOA, I also like an airplane that lets you feel the flow of air over the wings, and the Kodiak does let you know when that flow is weakening. The Kodiak stalls gently, which is expected with its cuffed outboard wing design, and this helps maintain flow as long as possible over the ailerons. I added power and turned while pulling the yoke back to try to induce a reaction, and the Kodiak just held altitude and even climbed a bit while I kept the yoke as far back as I could in more than a 30-degree bank. There was no wing drop at all during the stall. The Kodiak's maneuverability, especially at slow speeds, is a huge safety benefit and gives pilots fat margins for flying in tough terrain.

Landing on Black Rock

For a landing on an unfamiliar off-airport location—it's not a specific airstrip because the desert is flat for miles—Brown likes to touch down on the main wheels with full flaps and nose high and feel the quality of the ground before fully committing to the landing. He brought the Kodiak smoothly down to the surface and rolled the big tires along the desert floor, then allowed the full weight to settle on the wheels and brought the nose down. Surprisingly little dust blew up as we coasted to a halt.

The temperature was comfortably cool when we climbed out after shutting down the engine, and an enormous silence made it feel like we were the only humans left on earth. After a few minutes for me to shoot Kodiak-in-the-desert beauty photos, Brown climbed back in and fired it up for a quick trip around the pattern and a low pass followed by another landing for me to videotape.

I took off from the Black Rock desert and we climbed to 11,500 feet and headed to Truckee. Winds were a little gusty there, and I came in high, but the Kodiak slows down and descends quickly when needed. On short final, I had to add a bit of power to counter a downdraft and the PT6 responded promptly.

For short-field landings, Vref is a low 74 kias, but for normal operations, 80 to 85 kias is the target. From the cockpit, the nose seems to sit a little low, so touching down on the main gear requires a decent amount of pull to get a proper flare. I would need more practice at this, and my first landing was almost a three-pointer, with the nose touching right after the main wheels. The gusty winds didn't bother the Kodiak at all, and it was easy to plow through the bumps and put it right on the centerline.

After refueling—this Kodiak doesn't have the single-point refueling option, but it is available as a post-delivery STC—we took off for Santa Monica, again climbing VFR to 11,500 feet. Our route took us over Yosemite National Park, and the clear weather gave us perfect views of Half Dome and Bridalveil Fall.

Descending in the busy airspace over Simi Valley and Van Nuys, I brought the Kodiak down to 2,000 feet over the beach near Pacific Palisades and called Santa Monica tower, which cleared us to land on the now-shortened Runway 21.

In a day's flying, we put the new Kodiak through its paces, from well-paved runways to a makeshift desert runway; and from IFR in moderate icing to VFR sightseeing through mountainous terrain. The trip reinforced the flexibility of the Kodiak and the pleasure of flying such a versatile airplane. ■

PHOTOS: MATT THURBER

The Black Rock desert provided an opportunity for a look at the Kodiak Series II's off-airport capabilities. As expected, the airplane landed smoothly in the desert.

Kodiak Series II Features

- 18 new paint schemes
- New cargo door step mechanism that also lowers cabin noise
- Improved wing root sealing cuts noise and eliminates fumes in the cabin
- Improved Rosen pilot sunvisors
- Pratt & Whitney Canada PT6A-34 engine adds an accessory gearbox chip detector
- New pilot door stays, one for partial opening and one to hold the door fully open
- L3 ESI-500 four-in-one electronic standby instrument
- Two new glove boxes, one iPad-sized on right side, a smaller one on the left
- Garmin G1000 NXi integrated avionics suite
- Standard Garmin Flight Stream 510 wireless gateway
- Complimentary two-year subscription to Garmin Pilot
- Garmin's GTX 345R ADS-B Out/In transponder
- Safe Flight Arinc 429 angle-of-attack system
- Two Bose A20 ANR headsets with Lemo plugs
- Optional single-point refueling port and control panel (post-delivery STC)
- Optional Garmin Surface Watch terminal safety system
- Animated Nexrad on the G1000 NXi with optional GDL 69 datalink/ SiriusXM receiver
- Optional Garmin GWX-70 weather radar
- Optional L3 LDR1000 cockpit voice and data recorders available in single or dual installations

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Safety, regs, and funding in spotlight at NATA event

by Kerry Lynch and Samantha Cartaino

The National Air Transportation Association last month concluded its 2018 Annual Meeting and Aviation Business Conference highlighting key issues before the association, from Part 13 complaints filed against airports over FBO pricing to a focus on looming workforce shortages, advancing NextGen, and continuing the push to get a reauthorization bill through Congress.

The association also turned over its board with the election of Ross Aviation president and CEO Jeff Ross to take over as the new chairman. Ross, who previously was vice chairman, succeeds Pentastar Aviation president and CEO Greg Schmidt in the new role. Stepping in as the new vice chairman is Curt Castagna, president and CEO of Aeroplex/Aerolease Group.

FAA associate administrator for aviation safety Ali Bahrami keynoted the first session of the three-day event, praising the industry for its collaborative efforts that have helped more than surpass goals set nine years ago to drive down the fatal accident rate by 10 percent. In fact, the accident rate has declined 27 percent, from 1.2 fatal accidents per 100,000 hours at the time the goal was set to 0.84 per 100,000 hours in Fiscal Year 2017.

"This all because of the work you and the rest of our colleagues in aviation are doing together," he said. "We are deeply committed to innovation and cooperative approaches to address general aviation safety."

But he stressed that the community must not become complacent and continue to work to improve, using a data-driven approach. He also noted the agency's successes in improving safety with the Compliance Philosophy and said it would continue.

Other efforts have included a more agile, reorganized Flight Standards group, he said. This reorganization will help with the agency's efforts to become more consistent, he added, but encouraged attendees at the NATA event to continue to provide feedback in that area.

He also touched upon the agency's hiring woes, saying it, like the rest of the industry, is facing workforce recruitment issues. "We are having a very, very difficult job hiring qualified people because the industry is doing well and [private companies] are paying much more than we are," he said. Bahrami further noted the agency is in the midst of developing a five-year strategic plan, and he plans to communicate it both to the FAA workforce and aviation community, believing that the way forward is to be in step with industry.

Industry Cohesion

Leaders from five other aviation associations joined NATA president Marty Hiller in providing perspectives on reauthorization and other industry issues. The leaders discussed the importance of stable, long-term funding for the FAA and adequate funding for areas such as airports. But of first concern was making sure the FAA reauthorization legislation got through Congress in a timely fashion.

Also on that panel, Aircraft Owners and Pilots Association president and CEO Mark Baker discussed his association's Part 13 complaints at airports over FBO pricing, saying AOPA is focused on ensuring access and encouraging use of affected airports. Hiller, meanwhile, outlined the complexities of the issue with the many factors playing into pricing.

Despite the differences over the pricing issue, Joel Bacon, executive vice president, government and public affairs for the American Association of Airport Executives, praised the general aviation community's overall cohesiveness on issues such as reauthorization, saying it was "absolutely remarkable." The industry was able to pick off Republicans on the ATC issue when a committee chairman had made the issue an important part of his life's work on Capitol Hill and had the backing of a president, he noted.

SAMANTHA CARTAINO

Left to right: NATA board members Greg Schmidt, Gary Dempsey, Jeff Ross, Marty Hiller, and Tim Obitts address issues affecting general aviation businesses and how NATA can help.

Industry leaders followed this session with visits on Capitol Hill with their local leaders to discuss key issues, such as forwarding the FAA reauthorization bill.

Ethics was another area addressed during the NATA conference, with discussions focused on a number of the efforts various associations have been making to elevate the issue. Mente Group president and CEO and National Aircraft Resale Association chairman Brian Proctor outlined the difficulties of tackling ethics in a highly fragmented broker profession where about 1,100 brokers have facilitated sales of 4,500 aircraft in a given year, meaning many are one-airplane sales for the vast majority of brokers. NARA recently rolled out a multi-faceted strategy that includes concepts such as certification and is discussing developing training programs with third-party vendors.

NATA, meanwhile, recently re-emphasized its ethics code and has a task force focused solely on illegal air charter. The association has been working with the FAA over the past year on actions that could be taken but first must better frame what constitutes illegal charter.

TSA Administrator David Pekoske addressed attendees in a closed-door session, and while conceding he has more to learn yet about the industry, pledged to work with the general aviation community, NATA reported.

Another significant area highlighted included commitment on the aviation services side to environmental responsibility. Keith Sawyer manager of alternative fuels for Avfuel, outlined the importance of transitioning to sustainable alternative jet fuels, noting it is the key path for industry to meet its goals of reducing carbon emissions by 50 percent by 2050. At the same time, he discussed the complexities of integration into the fuel supply chain with a need for more availability of the alternative fuels.

Larry Jorash senior v-p operations for Signature Flight Support, discussed a need for further testing on older engines. Jonathan Lee, Air BP business development manager, meanwhile, outlined his company's multi-pronged approach to becoming carbon neutral throughout its network, including creating carbon offsets through investing in various sustainable projects worldwide and introducing carbon efficiencies and technologies where possible.

The NATA conference also served as a venue to dig deeper into many issues confronting aviation services business, such as how to attract qualified FBO leaders, and the lack of clarity surrounding the recent exemption Congress provided for aircraft management services from the commercial air transport federal excise taxes.

In addition to the FBO leadership workforce concerns, workforce and training issues in general were discussed in separate sessions. The need for expanded use of organizational delegation authorization was addressed in a session dedicated to maintenance hot topics, while FBO and airport managers were given guidance on how to approach airport lease agreements in a manner that both parties walk away satisfied and fully understanding the contracts. Another topic touched upon was how to prevent ground handling damage, or so-called hangar rash.

NATA also honored a number of individuals during the presentation of its annual Industry Excellence Awards program. These included former Gulfstream president Larry Flynn with the Willam A "Bill" Ong Memorial Award and Randall Berg, former director of aviation for King County International Airport/Boeing Field, with the NATA Distinguished Service Award. The Distinguished Public Service Award went to Gerald Dillingham, former U.S. Government Accountability Office director of civil aviation issues.

Other honorees included the ATP/NATA General Aviation Service Technician Award to George Terry, vice president and director of maintenance operations at Corporate Eagle in Michigan; Airport Executive Partnership Award to Juan Rivera, airport director at Manassas Regional Airport; Excellence in Pilot Training Award to Janine Schwahn, chief instructor at Summit Aviation in Montana; and, Safety 1st Certified Line Service Professional Award to Henry Graves, line technician and shift leader at APP Jet Center Manassas in Virginia. ■

Millennials take positive view of bizav

According to a newly released study conducted by EBAA and ThinkYoung, Millennials expect that flying will become easier and cleaner in the years to come, with business aviation becoming much more accessible for the next generation of users. The survey queried people between the ages of 18 and 25 in four key European countries—Germany, France, the UK, and Switzerland—about mobility, business aviation, and the future of sustainable personal air transport.

Millennials' views on transport are closely linked to concerns about the environment, the survey notes, with 40 percent saying climate change is the main trend that will have the biggest effect on the development of sustainable personal air transport.

The generation positively views business aviation for the freedom and flexibility that it offers. In fact, 62 percent of respondents believe the main benefit of business aviation is its ability to take people where they need when they need.

Business aircraft ride-sharing options appeal to Millennials. According to the survey, 60 percent of Millennials are ready to use ride-sharing air services, but only 46 percent are ready to use automated ride-sharing air services. **C.T.**

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ALL PHOTOS: KIM ROSENLOF

Air Force Museum unveils restored *Memphis Belle*

by Kim Rosenlof

Following a 13-year restoration effort, the National Museum of the United States Air Force (NMUSAF) in Dayton, Ohio, publicly unveiled the newly restored Boeing B-17F *Memphis Belle* on May 17, 2018, exactly 75 years after its crew completed its historic 25th bombing mission over Nazi-controlled Europe in 1943. The subject of a World War II bond tour and several full-length feature films, the Belle became an American icon as the first B-17 Flying Fortress to achieve the 25 combat mission mark over occupied Europe and return to the United States without a crewmember killed.

The three-day NMUSAF event featured guest speakers, book signings, WWII-era aircraft, and vehicles and reenactors who camped on the museum grounds. While inclement weather forced visiting aircraft to depart early on the first day of the event, B-17s *Aluminum Overcast* from the Experimental Aircraft Association, *Yankee Lady* from the Yankee Air Museum, and *"The Movie" Memphis Belle* from the National Warplane Museum (named for its starring role in the 1990 film Memphis Belle) were stationed at nearby airfields and performed occasional fly-bys during breaks in the weather.

The reenactors conducted a series of briefings in the Nissen Hut on the museum grounds, including recreating the operations briefing and post-mission debrief of the *Memphis Belle*'s 25th mission. While most were years older than the young WWII pilots and crew they portrayed, the oldest gentleman attending one of the *Belle* ops briefings was Col. Howard Hunt (U.S. Air Force, Ret.), who at age 96 is the last living pilot of the Memphis Belle. Hunt flew the Belle in December 1943 during the aircraft's war bond tour and journeyed from his home in Alaska to Ohio for the unveiling.

"It was a very stable airplane," said Hunt about the *Belle*. "It was a little beat up when I flew it because it had completed its war service. But it flew real nice and landed easy."

Hunt served as a ferry pilot during World War II, flying "almost everything in the [USAAF] inventory."

"Once you trimmed up a B-17, it almost flew itself," Hunt said. "The B-17 was a dream to fly compared to some of the other airplanes. The B-24 was a boxcar; not very stable and you always had to wrestle it...The B-25 was very noisy because it didn't have a collector around the engine. You fly that for eight hours and you couldn't shut down the engine [noise] ringing in your head."

After the Belle's war bond tour concluded, the aircraft was used for training at MacDill Army Air Field in Florida until the war ended, then was moved to Altus Army Air Field, Oklahoma for storage. The city of Memphis, Tennessee, acquired the Belle in 1946 and displayed it outdoors for more than 30 years. Graffiti, vandalism, and weather damage marred the aircraft, and an initial restoration effort by the *Memphis Belle* Memorial Association (MBMA) commenced in 1977. The MBMA displayed the Belle outdoors under a canopy until 2002, then released the aircraft to the NMUSAF in 2005.

It took NMUSAF more than 13 years and 55,000 hours of labor to restore the *Memphis Belle* to operational condition. Former B-17 pilot and NMUSAF volunteer Lt. Col. Jack Hampshire (U.S. Air Force, Ret.) participated in the *Belle*'s restoration.

Former B-17 pilot Lt. Col. Jack Hampshire was one of many volunteers participating in the restoration.

"It was in pretty rough shape when we got it back," said Hampshire. "Vandals had cut away the fabric on the elevators and the rudder, and they stole hydraulic and fuel lines...When they restore an aircraft here, they want it to look like it just came out of the factory. Although [*the Belle*] will never fly again, they could haul it out of here and put hydraulic fluid and batteries in it and it would fly."

The *Belle* is no stranger to needing replacement parts. During its combat tour from November 1942 to May 1943, the Memphis Belle flew 148 hours over Europe in 25 daylight bombing raids, absorbed multiple hits from flak and fighters, and required five engine changes, a wing replacement, and tail replacement. Remarkably, despite heavy aircraft damage, no crewmembers died on the Belle and only one was injured enough to earn a Purple Heart. This feat of survival occurred at a time when the average lifespan of a U.S. Army Air Forces (USAAF) Eighth Air Force bomber was 18 missions, although *Belle* was not the only lucky Fortress. According to a U.S Air Force fact sheet published January 31, 2018, B-17F *Hell's Angels* completed its 25th mission one week earlier than the *Memphis Belle*, but stayed in theater until 1944, surviving 48 missions without any injured crewmembers. It was scrapped in 1945. ■

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PROPELLING THE NEXT CONNECTION

Serge Dassault 1925-2018

Aviation world mourns visionary business leader

by Ian Sheppard

The aviation community was saddened by news of the passing of Serge Dassault, 93, on May 29, the day before the business aviation community gathered for EBACE 2018 in Geneva. Dassault is believed to have suffered heart failure while at his office in Paris.

Groupe Dassault, the company that he owned and led for many years following the death of his father—company founder Marcel Dassault—in 1986, issued the following statement: "It is with an infinite sadness that we learn of the death of Mr. Serge Dassault, chairman, and CEO of Groupe Dassault, and the former chairman and CEO of Dassault Aviation. Dassault Aviation's management, engineers, technicians, employees, and workers all send their deepest and most sincere condolences to Mrs. Dassault, her children, and grandchildren."

EBAA chairman Juergen Wiese said in his introductory remarks at Tuesday's EBACE opening general session: "Yesterday, the business aviation family lost one of its great leaders and figures. Serge Dassault was a giant and legend, an innovator and pioneer, in commerce and politics, in France and across Europe. Our hearts go out to the [Groupe] Dassault family and our hearts go out to the Dassault family that are here with us in Geneva this week. We dedicate EBACE 2018 to that legend, Serge Dassault."

A Lasting Legacy

In 1914, then 22-year-old Marcel Dassault founded the company that would eventually come to dominate French aviation. At that time, he was still named Marcel Bloch, and his successful design of a wooden propeller for World War I pursuit aircraft kicked off one of the greatest success stories in aviation.

Serge was born Serge Bloch in Paris on April 4, 1925. He was one of two sons of Marcel (the other being Claude) and his wife, Madeleine (née Minckes). The Bloch family, being of Jewish heritage, was stripped of its property in World War II during the Nazi occupation of France, with Marcel having refused to have anything to do with the German aviation industry. He was deported in 1944 to the Buchenwald concentration camp, then released in April 1945 when the camp was liberated. Marcel subsequently changed the family name to Dassault, his brother Darius's alias when he served in the French underground, derived from "char d'assault," the French term for a battle tank.

The young Serge focused on his education, joining the family business in 1951 after graduating from the Institut Superieur de l'Aeronautique et de l'Espace, having previously studied at the Lycée Janson de Sailly and gaining a first degree from the École Polytechnique in Paris. In the early 1960s he added an MBA from HEC Paris.

Serge became manager of the Dassault flight test department in 1955 and worked on the development of the Super Mystère B2, Étendard, Mirage III, and Mirage IV, among other aircraft. He was then appointed head of exports and led the negotiations that resulted in the sale of the Mirage III fighter to Switzerland and Australia. Serge also launched the Mystère 20 (now Falcon jet) sales campaign in the United States.

Marcel dispatched Serge to the U.S. to investigate the burgeoning market for jet transports for business executives. The result was the Mystère 20 twin jet, leveraging the technology of the Mystère IV fighter. The aircraft first flew in 1963 and, according to one tribute, "impressed an observing delegate from Pan Am [none other than Charles Lindbergh], who wired founder Juan Trippe to say 'I found our bird.'" This was the start of the spectacularly successful Falcon business jet family.

Later in 1963, Serge became a senior manager at Électronique Marcel Dassault, where he was appointed CEO in October 1967, holding this position until December 1986. After Marcel's death in 1986, aged 94, Serge became the chief executive of Groupe Dassault.

Serge was soon to prove his mettle as a businessman. Having seen his father successfully rebuff attempts by President Mitterrand to nationalize Dassault in the 1980s, Serge headed off attempts by President Jacques Chirac to restructure France's aerospace industry in the mid-1990s, and thus Dassault remained proudly independent.

He was instrumental in guiding the development of such iconic aircraft as the Falcon business jet lines and Rafale fighter but also led his company to diversify into other areas, notably acquiring France's leading newspaper publisher Le Groupe Figaro, in 2004. The company also owns the Paris-based auction house Artcurial and wine estates in Bordeaux. Many an aviation executive and journalist has enjoyed Château Dassault's wines on board the company barge, moored adjacent to its St. Cloud headquarters next to the Seine in Paris.

Serge was also active politically as a member of the UMP party, with his son Olivier becoming a deputy in the French National Assembly. Serge himself was a former mayor of the city of Corbeil-Essonnes, a suburb of Paris some 23 miles southeast of St. Cloud, on the Seine. In 2004, Serge became a French senator, championing the position of entrepreneurs struggling against onerous tax and social regulations.

In 2000, Serge passed the reins of Dassault Aviation to CEO Charles Edelstenne (Eric Trappier became CEO in 2014) but remained active in the business to the end. Edelstenne will now be considered a leading candidate to take over from Serge in leading Group Dassault.

At the time of his death, Serge Dassault was honorary chairman of Groupe Industriel Marcel Dassault, the family's holding company, which also includes Dassault Systèmes, the leading supplier of the aircraft design and development software (Catia) that is used by the aerospace industry around the world; Sogitec; Lummen; Le Figaro; and SABCA.

Serge Dassault married Nicole (née Raffel) on July 5, 1950, and is survived by her and their four children—Laurent, Olivier, Thierry, and Marie-Helene—and several grandchildren. Laurent and Olivier have held executive positions in the family company. ■

JetNet iQ survey sees optimism among operators

European business aviation operators are currently the most optimistic in the world, according to results from the latest JetNet iQ quarterly survey. Since 2011, the Utica, New York-based industry data provider has asked operators the question: "Where is the business aviation industry in the current business cycle?" and more than 40 percent of European respondents indicated that they now believe it is past the low point, the highest percentage for the region since the survey began. This eclipses North American respondents, who traditionally have been the most optimistic but came in at about 38 percent in the most recent survey.

Worldwide, the level of industry optimism has rebounded to a new high, since a low in the third quarter of 2016, when Europe was struggling with the threat of Brexit, and the U.S. was wracked by a bitter, divisive election.

At EBACE 2018 JetNet vice president Paul Cardarelli noted key economic indicators in Europe and the U.S. such as consumer and business confidence have been trending upwards, while unemployment has declined in both areas over the past five years. GDP growth in the first quarter was 2.9 percent in the U.S. and 2.7 percent in Europe. "Getting close to 3 percent, which is an indicator if you will, the threshold that makes business aviation very happy," he told the audience.

The declining pre-owned inventory is another source of encouragement, Cardarelli noted, with available business jets sinking below 10 percent of the fleet for the first time in a decade. As the inventory has come down, aircraft are trading faster, with days on market shrinking from approximately a year in January to eight months in March.

When asked about new aircraft purchase intentions, 45 percent of likely buyers said they would acquire a midsize jet, while 40 percent replied that they were interested in large cabin. "We've been watching for growth in the small jet segment, but right now we're still seeing compression there," stated Vincent. "It means people aren't replacing at the lower end as they were."

Vincent believes that 2017 was the trough in the latest cycle, and expects the OEM output to begin picking up. In its latest business jet forecast, the company sees deliveries of 7,885 jets worth $236 billion by 2027. According to the prediction, Cessna will account for 23 percent of those aircraft, followed by Gulfstream (20 percent), Embraer (19 percent), Bombardier (18 percent), Dassault (8 percent), and HondaJet (7 percent). **C.E.**

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The NBAA San Jose Regional Forum will bring current and prospective aircraft owners, operators, manufacturers, customers and other aviation professionals together for a one-day event on September 6. The forum incorporates exhibits, a static display of aircraft and education sessions to help current operators, as well as those considering using an aircraft for business. Any current issues in the region will also be addressed. Visit the website to learn more and register.

REGISTER TODAY: www.nbaa.org/2018sjc

Industry renews its push for alternative jet fuel

by James Wynbrandt

DAVID McINTOSH

A cross-section of industry leaders gathered at EBACE to commit to alternate fuels.

Renewing a push for carbon neutrality in business aviation operations, a coalition of industry organizations released the "Business Aviation Guide to the Use of Sustainable Alternative Jet Fuel (SAJF)," an overview of emerging alternative fuel options and a roadmap for their development and adoption, on the eve of EBACE.

"We're excited to announce this next major milestone on reducing emissions," said EBAA chairman Juergen Wiese. NBAA president and CEO Ed Bolen added, "With this initiative, we underscore our effort on what has always been an important priority." The coalition also includes GAMA, IBAC, and NATA, with technical assistance from the Commercial Aviation Alternative Fuels Initiative and the Air Transport Action Group.

In 2009, the business aviation community set goals to mitigate its impact on climate change that included achieving carbon-neutral growth by 2020, but "progress has been uneven over the past eight years," the guide notes. SAJF represents the single largest potential reduction in aviation's greenhouse gas emissions, it adds.

According to the guide, SAJFs for business aviation are safe, approved, and available now, though in limited quantities; reduce emissions; and represent an environmental win-win, since the fuels are sustainable and renewable.

Currently, OEMs Bombardier, Dassault, Embraer, Gulfstream, and Textron Aviation, and engine manufacturers GE, Honeywell, Pratt & Whitney Canada, and Williams International are working to help business jet operators increase their use of SAJF. Challenges ahead include limited production of SAJF and lack of distribution infrastructure, said David Coleal, chairman of GAMA's Environmental Committee and president of Bombardier Business Aircraft. The coalition will launch a pilot program to demonstrate the viability of SAJF at select general aviation airports, he added.

Coalition members also signed a declaration reiterating "their common commitment to creating a pathway that achieves carbon neutrality from 2020 forward," and calling on "governments to implement the necessary policy framework to encourage and support the full development and commercialization of SAJF." ■

Gulfstream waiting for wider biofuel availability

Gulfstream continues to adopt the use of biofuels where possible to reduce its carbon footprint, but laments the lack of availability around the world. Derek Zimmerman, president of Gulfstream product support, told AIN that the G600 and G550 on the static display at EBACE used a 70/30 percent blend of jet-A and biofuel, but this was only possible because the aircraft came directly from its base in Savannah, Georgia, where Gulfstream has its own tank, supplied by World Fuel Services (WFS).

Zimmerman said the lack of airports supplying biofuel was demonstrated by its own supply having to come from a refinery on the U.S. West Coast, meaning it must be trucked across the U.S. It comes from Paramount, California-based AltAir Fuels.

The facility, which AltAir converted with the assistance of Honeywell UOP, converts non-edible natural oils and agricultural waste into approximately 40 million gallons of low-carbon biofuels and chemicals per year. These advanced biofuels are drop-in replacements, requiring no modification to aero engines or aircraft, added AltAir.

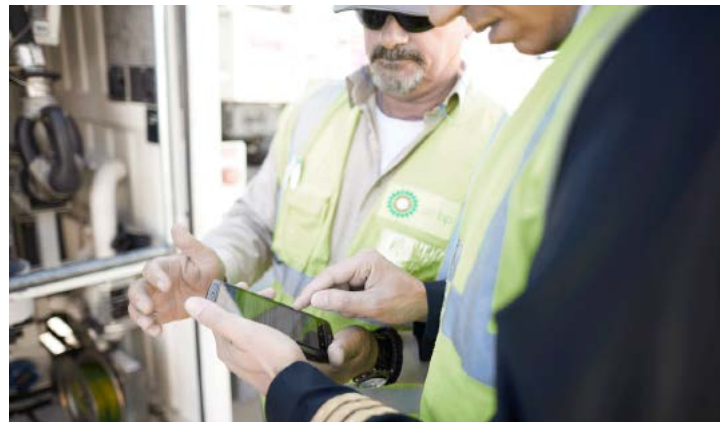
AltAir Fuels created a strategic partnership with World Fuel Services (and United Airlines) to offer cost-competitive sustainable biofuels. "[These companies] agreed to buy 30 million gallons of low-carbon, renewable jet fuel over a multi-year period," said AltAir. Zimmerman said the manufacturer's fleet had flown around 500,000 hours using biofuels, which are to jet-A specification and in fact "have a slight performance advantage" as they are denser.

"We wanted to hold the infrastructure," said Zimmerman, "But there are still supply and demand challenges. We would like to have an East Coast refinery" to supply the factory. At the moment, the logistics mean the fuel is at approximately "a 50 percent premium" to jet-A, most of this being accounted for by shipping. He estimated a 20 percent increase would be down to just lack of production efficiency, due to far less being produced than jet-A at present.

Zimmerman told **AIN** he would also like to find refineries in Europe and Asia and to help its operators to adopt biofuel, perhaps starting with its own service facilities around the world. Already, the company estimates it is cutting one million pounds of CO_2 a year from its carbon footprint, "on a full-lifecycle approach." **J.W.**

Air BP to launch technology to prevent misfueling

by Samantha Cartaino



Airfield Automation's "safe2go" app detects fuel volume and offers fuel grade checks, adding barriers to misfueling incidents.

Air BP unveiled its new Airfield Automation technology at EBACE. This real-time, cloud-based digital platform is an integrated global solution for operators and airports that improves safety barriers and decreases risks during the fueling process. Air BP plans to incorporate Airfield Automation into its network this summer and anticipates it will be fully operational at approximately 350 locations by 2020, as an end-to-end paperless data capture system, which will allow the fuel transaction to take place entirely on the ramp using a tablet or smartphone.

Airfield Automation collects data related to airport fueling operations and works from an app called "safe2go" on a handheld device in fueling vehicles. This app detects fuel volume and offers fuel grade checks, which add misfueling barriers. The "safe2go" app confirms customer details with the pilot or airline, who sign off electronically.

Air BP claims this technology is one of the first commercially deployed systems to offer an engineering barrier to prevent misfueling. For this reason, the company is looking into patent protection.

Misfueling is a prevalent safety issue. Kerry Rutherford, technical director at Air BP, said, "Misfueling is one of the biggest risks we face in our industry, and the new Air BP Airfield Automation technology provides an engineering barrier to stop it from happening. As aircraft engine technology advances and new unleaded fuel grades are introduced, we anticipate that it will become even more relevant in future."

Air BP held a two-year trial period for the Airfield Automation technology at nine airports in the UK, Cyprus, and Portugal. This trial period included commercial, business, and general aviation customers. According to the company, one airport saw more than 5,000 aircraft fuelings completed over the last six months with the technology. This helped customers deliver more than 46 million liters (approximately 12 million gallons) of fuel into aircraft.

Organizations within the aviation industry are also working to prevent misfueling problems. The National Air Transportation Association (NATA) started an initiative in 2016 called General Aviation Misfueling Prevention to bring awareness to misfueling issues. This year, the organization launched the Supplemental Safety Training Program, which aims to quickly respond to industry safety issues. The program, which addresses the risk of jet fuel contamination with diesel exhaust fluid in its first course, works well with its 2016 initiative. ■

ForeFlight Mobile adds territory, features

by Matt Thurber

Along with introducing its new European service, ForeFlight has added new features to simplify flying and improve safety for users of its "Integrated Flight Application" ForeFlight Mobile app.

The European service, developed in partnership with Jeppesen (supplier of digital IFR and VFR navigation data), brings a full suite of ForeFlight Mobile features to pilots flying in European airspace, including Eurocontrol-optimized routing and flight-plan filing.

European subscription plans display Jeppesen IFR and VFR navigation, terrain, and obstacle data on the Aeronautical Map and also include AIP procedures, charts, and Eurocontrol documents. Subscribers can add options such as Jeppesen VFR terminal procedures (formerly Bottlang charts) and IFR chart subscriptions. Also available are host-nation VFR data packages, with the initial availability of German DFS aeronautical information publications and charts.

Subscribers to ForeFlight's Business Performance Plan can access a library of aircraft profiles covering a variety of popular turbine airplanes including models by Bombardier, Cessna, Daher, Dassault, Embraer, Gulfstream, and Pilatus. The profiles "include climb, cruise, and descent models defined for multiple altitudes, weights, and temperatures using the manufacturer's published flight-planning performance data," according to ForeFlight.

Flying in European airspace is complex, and ForeFlight's planning engine uses the aircraft profiles to calculate a recommended route, taking into account Eurocontrol constraints and weather conditions.

The routes offered by the Graphical Route Advisor are validated by Eurocontrol and displayed on a preview map. Routes can be filtered based on IFR, VFR, YFR, or ZFR. Once the user picks the optimum route, ForeFlight can file the flight plan via AFTN at no additional cost, then receive a calculated takeoff time notification via email in case of traffic management initiatives.

For single-engine turbine operators flying commercially, EASA requires a route risk analysis, which can take hours to create by hand. ForeFlight makes the SETOPS risk calculation much simpler, and it can be accomplished in minutes, depicting glide range graphically and also providing a SET-IMC risk threshold analysis table.

Pilots flying datalink-equipped aircraft can use ForeFlight to upload flight plans into the FMS for aircraft with Honeywell and Satcom Direct routers. To use this feature, ForeFlight provides a recall number in the navlog, and this number is used to upload the routing into the FMS.

ForeFlight introduced the Trip Assistant in the latest version of the app. Trip Assistant is a tool for dispatchers and pilots to create an itinerary for a trip that includes time needed for ground transportation at either end.

When planning a trip, the user can input either a desired departure time or arrival time, and Trip Assistant will calculate how best to meet the specified time by looking at drive times as well as flight times based on weather forecasts.

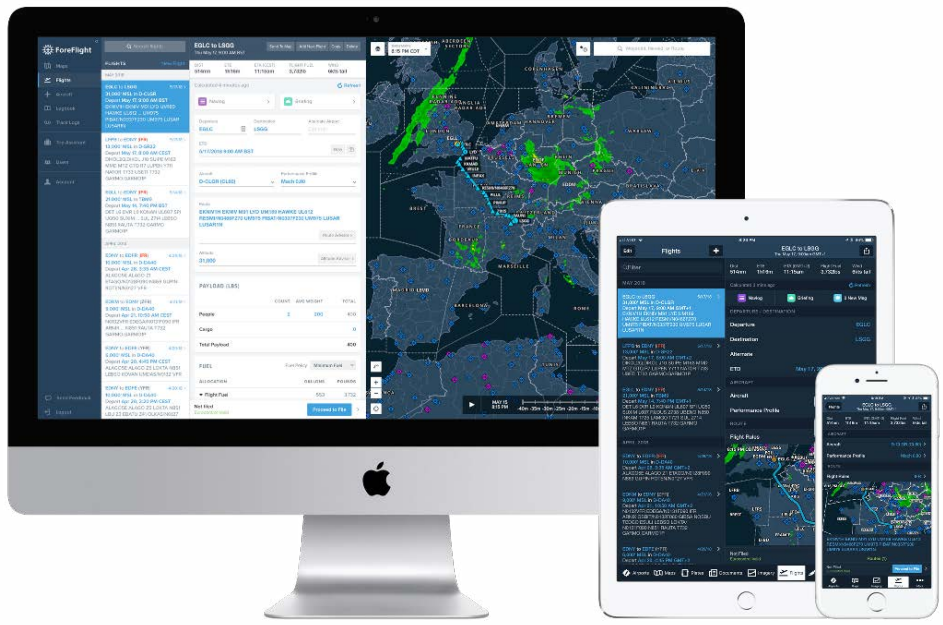
Another new ForeFlight feature is map declutter icons are now in the map view; these allow the user to add or remove certain features to make the map easier to view. Included are airports, airspace, airways, flight information region (FIR) boundaries, terrain, and roads.

Pilots can now set a boundary on altitudes used for flight planning, so ForeFlight won't suggest an unusable altitude for a planned route.

Other new features include flight delay notifications; automated terrain alerts from any page in ForeFlight; editing fuel quantities on the Flights tab; and the ability to pull up airport information by tapping on an airport tag in the synthetic vision view.

Two business plans are available, Business Pro and Business Performance. The Pro plan costs €180 per year and includes ForeFlight features such as Jeppesen VFR and IFR navigation data and global airspace information, Eurocontrol AIP charts and documents, data-driven Aeronautical Maps, mobile and web flight planning and filing, graphical preflight briefing, aviation weather, FBO directory, avionics connectivity, documents catalog, geo-referenced approach and taxi charts, profile view with airspace, terrain, and obstacles, and synthetic vision.

The Performance plan includes the above and adds performance profiles, a flight-planning engine "that generates optimized routes between any two airports in the world, fuel and payload planning, automatic fuel and weight safety checks, integrated contract jet fuel pricing, and more." ■



For users in Europe, ForeFlight Mobile's flight planner takes into account aircraft profile and weather constraints to suggest a route that is validated by Eurocontrol.

Universal buy opens markets for Elbit

by Matt Thurber

Elbit Systems recent purchase of Universal Avionics Systems creates a new wide ranging avionics integrator able to offer products to every segment of aviation. But the move also opens new markets for Elbit.

The acquisition was announced March 22 and closed on April 11. Universal Avionics, which was privately owned, fetched $120 million in the transaction, but its value to Elbit may be far more over the long run. Universal Avionics is now a wholly owned subsidiary of Elbit Systems and will be the lead for commercial sales in North America for Elbit's Aerospace Division commercial aviation business line.

"Over the years it was hard [for Universal Avionics] to compete against the big [avionics] OEMs, being a private company," said Dror Yahav, Elbit vice president, Commercial Aviation, Aerospace division. "Now that it's part of Elbit, this new entity can be a big force [in the industry]."

He added, "We will explore synergies, and allow them to access our product portfolio. They will be part of Commercial Aviation and will maintain their own identity and brand. It is a big step for us. The company is very impressive, with a long heritage. They're a worldwide expert in what they do." Universal also brings its own certification team and two flight-test airplanes, which will help Elbit improve product development efficiency. "That's a big plus," he said.

Elbit already serves the Part 25 avionics market for business and commercial aviation with enhanced vision systems (EVS) and head-up displays (HUD), including its new SkyLens wearable HUD.

Yahav sees opportunities to build on the Universal Avionics distribution and product support network. "On top of having a full avionics package," Yahav said, "[the acquisition] provides us access to the aftermarket, which is quite appealing to us, especially with our wearable solution that is easy to install and can serve as a HUD. That fits well in this marketplace."

What is new for Elbit in the Part 25 space is Universal's bread-and-butter flight management systems and communications products, which are key components of NextGen avionics installations. "Universal touches new trends in aviation," said Yahav, "[including] ADS-B Out and SBAS-LPV through FMS upgrades and new FMS [installations]. Elbit brings EVS. When we look at the whole package, we call it a NextGen air transport package. It makes sense to upgrade the airplane with both."

Elbit has offered traditional HUDs to the business jet market and even STC'd its HUD in a Challenger 604. "We found that due to the complexity of the installation and cost, it was hard to penetrate this market," he said. "One of the reasons we developed SkyLens is that we wanted to be able to install it overnight with a minimum impact on the cockpit."

So far, ATR is the first customer for SkyLens in a fixed-wing aircraft and plans to begin flying with the HUD in 2019, following certification later this year. Leonardo has selected SkyLens for its helicopters. "There are others that we haven't announced yet," Yahav said.

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Airtext LT: satcom for the price-shy

by Matt Thurber

Although the cost of an air-to-ground or satellite communication system is a relatively small percentage of the purchase price of a high-performance single- or twin-engine turboprop or light jet, owners of these aircraft, and also smaller aircraft, want something much less expensive to purchase and with cheaper airtime costs.

Until costs come down for more sophisticated airborne connectivity systems, a simple solution is an Iridium satcom. To make it truly cost-effective, eliminating voice service brings the price of the hardware and service well into the range of affordability.

The portable Airtext LT offers text-only capability to make satcom affordable to operators of smaller aircraft.

Send Solutions is now selling one such device, the Airtext LT. The LT can be used only for messaging, but it works anywhere in the world (where satcom is allowed) and is portable, so there are no installation details to worry about. Just plug it into a 12-volt cigarette lighter power outlet, hook up the external antenna, and it's ready for action, on the ground or in the air.

Iridium's current limited bandwidth does constrain devices like the LT, which can't do anything other than send and receive text messages, but it does this at a fraction of the cost of more sophisticated airborne connectivity systems. Thus, the LT may be just what owners of smaller aircraft are looking for.

Airtext does offer more expensive units with voice capability, but these must be hard-wired to 28-volt electrical systems. The 12 volts available from a cigarette lighter outlet don't provide sufficient power for voice calls on the LT, according to Send Solutions founder and CEO David Gray. Send Solutions is developing a USB-powered Airtext LT, and this should be available soon.

In-flight Test

We tested the Airtext LT during a flight in northern New Jersey in a Piper Cherokee 180.

Setting up Airtext requires first downloading an app onto an iPhone or Android phone, then connecting the phone via Bluetooth to the Airtext LT, and placing the phone into airplane mode (but Bluetooth on). Up to six users can connect to Airtext LT simultaneously.

Plug in the LT's external antenna and make sure it has a clear view of the sky, then plug in the cigarette lighter connector, and it is ready for action.

Once the LT finds Iridium satellites, sending and receiving text messages is done via the Airtext app. As long as the phone is connected to the Airtext LT and the LT is communicating with the Iridium satellites, messages will go through via Airtext.

The recipient first receives a message that [so-and-so] is flying and messaging via Airtext. Please respond to this number until landing." After the Airtext LT is unplugged, anyone responding to a message sent via Airtext will receive a message that says: "[So-and-so's] flight has landed. Contact [so-and-so] via their regular texting number."

Airtext messages are limited to 140 characters, but Airtext strings longer messages together.

The benefit of communicating via Airtext was evident during the flight because I was able to send and receive text messages in the air and on the ground, and there is no need to wait until climbing to 10,000 feet to switch the system on as there is with air-to-ground connectivity systems.

Text messages via Airtext traveled quickly, sent from about 2,000 feet agl and also from the ground at Greenwood Lake Airport in West Milford, New Jersey.

Airtext isn't just for messaging; the Iridium connection has additional benefits, including weather requests and FBOlink.

Using Airtext, pilots can request digital-ATIS (at airports where it is available), Metar, TAF, and ASOS information. D-ATIS is currently available only for U.S. airports, but the other weather products work for almost any airport in the world. The Airtext app also connects to Airtext's FBOlink service, which notifies participating FBOs when an FBOlink user sends a text message requesting service or answers to questions.

Airtext LT retails for $4,950, which includes a carrying case, antenna, and power cord, and is available from Send Solutions and distributors such as avionics shops and Sporty's Pilot Shop. The initial price includes 500 text messages, then messages cost five cents each. Longer messages such as D-ATIS may cost around 25 cents, depending on how many characters are sent.

This is much less expensive than current D-ATIS products, according to Gray, who cited a customer with a Challenger 605 using a weather retrieval system paying $5 to submit a weather request then another $5 to receive the weather information. Airtext buyers range from light aircraft owners to business jet pilots, he said. "It's not just for the little airplane."

Buyers who purchase an Airtext LT now can trade that in up to two years later for full credit toward a more capable permanently mounted Airtext system or one that will work with Iridium's new high-speed Next satellite network. ■

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Universal buy opens markets for Elbit

Elbit and Universal Avionics are looking beyond EVS and HUD into new ways to present information to pilots. Yahav gave a hint of what this might look like and promised more details at this year's NBAA convention. "We didn't just want to connect aviation to HUDs and EVS," he said. "That's been done. We wanted to bring the head-up, head-down display operation to the next level. What we're talking about is a fully augmented reality environment that allows the pilot to get all the information available in the cockpit superimposed on the real world and being able to feed back with the environment to influence the cockpit." This is all with the goal of making flying more intuitive and increasing situational awareness.

One manifestation of this new technology is to display ADS-B In traffic on a HUD. "Think of the potential benefit," Yahav said. "Such integration can only be done if we master both technologies. It's quite complex. We will demonstrate this concept at the NBAA show. It's not only integrated, but it's a smart integrated cockpit." ■

GPS jamming and spoofing on the rise

GPS jamming and interference events are growing exponentially as aircraft systems are becoming increasingly reliant upon them for primary navigation. During the last three years, Spirent Communications, a company that tests navigation equipment, has captured 150,000 different jamming and interference events.

"Global navigation satellite system [GNSS] jamming essentially is as hard as it is to get your credit card out. You can go out and get a piece of jamming equipment rather easily. Yes, it is illegal, but if you are jamming GNSS you probably don't care," said Jeremy Bennington, Spirent corporate solutions and technical strategy lead.

He added that the risk to aviation safety is real and tangible. "Since 2013 the FAA Aviation Safety Information Analysis and Sharing System has recorded more than 100 instances of pilot reports of GPS being jammed. But we know it was far more than that because in the reported cases they busted some sort of regulatory requirement; they busted altitude or went to the wrong place."

Bennington noted several examples of GPS jamming/interference in recent years. This includes the Eastern Mediterranean Sea earlier this year, where five sea vessels and one aircraft had interference over extended periods of time, with some vessels up to 25 miles off course. Last year, GPS was jammed by Russia for one week in Norway. In second-quarter 2016, there were more than 50 reports of GPS interference on approach to Runway 24 at Manila International Airport, producing a loss of onboard GNSS functionality and GPS-L and GPS-R invalid messages, as well as a decrease in navigation performance leading to an RNP alert. This also caused missed approaches, produced a large map shift on the navigation display, and affected TAWS terrain indications.

Bennington said the "Pokemon Go" augmented reality app released in 2016 encouraged hackers to spoof GPS to win prizes and put code online. "The spoofing they were doing was largely on cellphones, but you take that same code and software-defined radio and put that together along with position and timing data and you can make a fairly sophisticated GPS or GNSS spoofing device," he said.

"We've seen a huge increase in GNSS-related spoofing incidents in part because of Pokemon Go because the technology was rapidly developed over a six-week period and was put out over the internet and people who wanted to nefariously use it could," Bennington added. "There haven't been that many cases of drones being brought down, but that's because the financial impact and the loss of life associated with bringing down drones today aren't very high compared with disrupting shipping at sea. But we will see that effect as [aviation] becomes a target for rogue states or hackers." **M.H.**

MATT THURBER

Drone use to double, Skyward study predicts

by Mark Huber

Drones are becoming increasingly popular with midsize companies (annual revenues of $50 million to $1 billion) and large companies (annual revenues greater than $1 billion), according to a study released by Verizon unit Skyward. The study predicts by the end of 2018, drone use could reach 12 percent among $50 million plus companies and 19 percent of surveyed professionals said their companies already used drones or plan to do so in the near future.

Overall the study showed that 10 percent of all surveyed companies used drones across all industries—the highest in construction and engineering with 35 percent—and 88 percent of companies that used drones saw a positive benefit in one year or less. Of those that use drones, more than nine in ten report that drones help their company capture more information, be more efficient, and save time; half report that their company's bottom line would suffer if they did not use drones. More than four in five expect drone flights to increase year over year, three in four expect to increase spending on their drone program over the next 12 months, and drone adoption is expected to double, with nearly one in five companies using or expecting to use drones in the future.

Of those using drones, nearly two in five are using first-person view, more than one in five are using LiDAR (light detection and ranging) with drones, over one-third of companies plan to use drones to increase automation, and half say they do not plan to use drones to deliver payloads. Most company drone programs are small in size with fewer than five drones and one to four employees; 27 percent of respondent companies own 25 or more drones and 39 percent have 25 or more employees in their drone program.

Eighty-four percent of companies are expecting to increase flight volume in 2018; 51 percent conduct between one and nine per month and 41 percent report 10 or more flights per month. Most companies are keeping all elements of their drone program in house; 63 percent said they do not outsource any aspect—flights, data processing, or data analysis—of their drone operations. Spending varies but is becoming substantial; 39 percent of respondents reported spending $50,000 or more in 2017; 29 percent spent less than $10,000. Ninety-two percent said the benefits derived from their drone program exceeded the cost, but only 37 percent said drones helped them to create a new revenue stream. Drones were more likely to improve the efficiency and safety of ongoing operations. ■

GE flies into drone game with Airxos

GE last month launched Airxos, a wholly owned company dedicated to managing ground and airspace for unmanned vehicle operations. The new company is a venture between GE Business Innovations and GE Aviation. Airxos announced that it has been selected for several programs to develop unmanned aircraft systems traffic management (UTM) infrastructures, advanced UAV operations, and certification/waiver automation that will "help transform the transportation ecosystem."

"GE already has been using drones and drone technology for some time. What Airxos offers is the infrastructure and advanced operations necessary to unlock the emerging markets of autonomous flight," said Airxos general manager Kenneth Stewart.

Airxos projects and programs include the unmanned aircraft systems integration pilot program, Northeast UAS Airspace Integration Research Alliance (NUAIR), NASA technical capability level (TCL) testing and low altitude authorization and notification (LAANC), and DriveOhio.

The U.S. Department of Transportation's unmanned aircraft systems integration pilot program is designed to assist government agencies, municipalities, regional aviation authorities, and private sector operators manage and meet the challenges of safe UAS operations. Of the 10 pilot programs nationwide, Airxos was selected as a partner for three: the city of San Diego, city of Memphis, and Choctaw Nation of Oklahoma. Airxos will work with program partners to demonstrate capabilities including urban, night, and beyond visual line of sight operations, as well as to develop overall UTM systems.

Meanwhile, Airxos is collaborating with the NUAIR Alliance for an unmanned testing and rating initiative that will combine NUAIR's new national unmanned systems testing and rating (NUSTAR) capability with Airxos's autonomous service platform. While NUSTAR will objectively measure UAS performance and test systems against industry consensus standards, Airxos will automate the processes used by commercial operators, pilots, organizations, and drone manufacturers to engage in commercial flight operations. To support this effort, Airxos plans to open an office in the Syracuse, New York Tech Garden.

Airxos has also partnered with NASA on TCL testing and has applied for a LAANC application in support of bringing a range of UAS operations to scale.

Under DriveOhio, the Ohio Department of Transportation's UAS Center has invested $5.9 million in UTM research for ground and air vehicles to complement current research for autonomous and connected vehicle testing along the 35-mile-long U.S. 33 "Smart Mobility Corridor" between Dublin and East Liberty. The Ohio UAS Center will be able to conduct UAS operations such as traffic monitoring and incident response along the corridor safely in a monitored environment. With the UTM system in place, the corridor will be able to support future UAS and autonomous operations such as package delivery and air taxi services. Airxos is partnering with Gryphon Sensors, CAL Analytics, and Ohio State University's College of Engineering to implement a UTM solution for the corridor. **M.H.**

News Update

Milestone Adds S-92s

GE Capital Aviation Services unit Milestone Aviation Group recently completed the purchase and leaseback of four Sikorsky S-92s, boosting the company's owned and financed portfolio of S-92s to over 95—more than one-third of the total S-92 fleet. Milestone is now the owner of the largest S-92 fleet in the world. Used S-92s remain price competitive for many offshore applications, and others have been shifted to search-and-rescue missions where the S-92 is proving increasingly popular.

First ACH130 Delivered

Airbus's bespoke brand has delivered its first "Stylence by ACH" luxury configuration of its seven passenger ACH130 single-engine helicopter. It will be operated by Monaco-based VIP charter company Monacair for an undisclosed customer. In 2017 Airbus sold 58 helicopters in Airbus Corporate Helicopters VIP configurations.

Enstrom Names New Leaders

Enstrom Helicopter is installing new leadership, with company veteran Matthew Francour taking the role of CEO on an interim basis. Former CEO Tracy Biegler has resigned to "pursue other opportunities." Francour has been with the company since 1978, most recently serving as director of manufacturing. Other recent new appointments at the company include Stephanie Bergstrom as CFO and Dennis Martin as director of sales and marketing.

Bell Opens Vertical Lift Center

Located near the Pentagon in Crystal City, Virginia, the Advanced Vertical Lift Center is designed to provide an interactive experience for the company's military customers, partners, and policymakers to interact with future vertical lift (FVL) technology, including that aboard Bell's V-280 Valor tiltrotor as well as unmanned systems. The facility houses a V-280 flight simulator, a mission table that demonstrates an interactive and visual representation of inserting the V-280 into battlespace, an augmented reality demonstration that shows how Bell's digital thread technology affects design, build, and sustainment by bringing hands-on training and maintenance support to remote locations, and an immersive virtual reality experience with the V-280.

Ruag Named Bell 505 MRO

Ruag Aviation's Sion, Switzerland facility has earned manufacturer MRO approval for the new Bell 505 Jet Ranger X light turbine single and will host the 505 during its European launch tour. The Ruag team attended 505 technical courses at the Bell Helicopter Training Academy in Texas, which qualifies its workers to perform maintenance on the 505 and also to reassemble it. Bell 505s are shipped to Europe partially disassembled, separated into airframe, tail boom, main rotor blades, and transmission. **M.H.**

Hansen Helicopters execs facing federal charges

by Mark Huber

In late May, the FBI arrested Hansen Helicopters owner John Walker and three company employees—executive vice president Marvin Reed, director of operations Kenneth Crowe, and director of maintenance Phillip Kapp—on charges stemming from an investigation into the fatal crash of a Hughes 369HS, N9068F, operated by the Guam-based company in 2015 on a fish-spotting contract in the Pacific near Manra Island, Kiribati. They were indicted on fraud, conspiracy, money laundering, records falsification, and other charges including the attempted destruction of an aircraft.

The indictment charges Hansen with engaging in a systematic practice of knowingly using uncertified aircraft parts, falsifying logbooks and creating false logbooks, and swapping aircraft data plates to mask aircraft identity and history. This included flying aircraft previously classified as "damaged beyond repair."

In addition, during the course of the 2015 crash investigation, the NTSB determined, "The pilot did not hold a pilot certificate issued by the United States Federal Aviation Administration, which is required to operate a U.S.-registered aircraft while in international airspace." Nor could the NTSB locate any personal flight records for the pilot at all, including a logbook. Both Crowe and Kapp are accused of lying to investigators and falsifying records in connection with the investigation into the crash, which killed the pilot.

That crash investigation in particular opened Hansen to greater scrutiny. In late 2016, FBI agents raided Hansen facilities in Guam, Saipan, and Georgia, seizing airworthiness certificates, registrations, and logbooks for 15 of the company's helicopters. Of the 15 registrations and certificates of airworthiness seized, by Hansen's own account, six were from aircraft whose data plate information was "not original." They also confiscated several helicopters outright, including one being maintained by Hansen in the Philippines. This shut down most, but not all, of Hansen's operations.

Last year, Hansen filed suit challenging the federal government's authority to retain these seized assets, valued at $4.6 million. The filing contains copies of the questionable airworthiness certificates signed by former FAA inspector Timothy Cislo as well as the names of the various shell companies—12 in all—Hansen used to register the helicopters in question. Although all of the helicopters hold N-number registrations, many of them are registered to separate entities that share a common mailing address on Vanuatu, a microstate that has been placed on the international "gray list" by the international Financial Action Task Force for its lax anti-money-laundering enforcement.

The documents seized in the 2016 raids are believed to have pointed prosecutors to bribes being paid to FAA inspector Cislo in exchange for issuing and reissuing special airworthiness certificates for helicopters operated by Hansen without performing the requisite inspections. Cislo pleaded guilty to three counts of honest services wire fraud earlier this year in connection with those charges. Prosecutors charged Cislo with accepting funds from Hansen Helicopters or its representative in 2014, to purchase a Taylorcraft BC-12D with an estimated value of approximately $20,000.

Hansen acquired a pair of written-off helicopters and returned them to service after Cislo signed off on inspections that were backed by missing/falsified maintenance logs that clearly misstated the extent of the helicopters' accident damage.

Crowe is also charged with falsifying forms related to the 2017 crash of another Hughes 369, N805LA, being operated by Hansen. He allegedly reported to the FAA that the crew sustained minor injuries and that the aircraft received only minor damage and was subsequently exported to the Philippines. In fact, the crew received significant injuries and Crowe allegedly ordered the helicopter scuttled. During the course of its investigation into that accident, the NTSB reported numerous records irregularities. "Exclusive of the 337 forms, none of the contents conformed to the FAA maintenance entry requirements. The records contained multiple internal service time and/or component number discrepancies." ■

Bell 525 Relentless

Fourth Bell 525 flies

The fourth Bell 525 joined the program's test fleet early this summer. FTV4 flew from Bell's flight test center in Arlington, Texas. The helicopter joins two others currently in flight test. One more, FTV5, is scheduled to fly in the fourth quarter of this year.

Prototypes of Bell's new super-medium twin have completed more than 400 hours of flight testing since they resumed flight in July 2017 following a one-year stand-down after the fatal crash of FTV1 in 2016 during one-engine inoperative testing at high speed, with severe vibration, and in-flight break-up of the aircraft. Following the accident, Bell implemented several design changes to the 525, including filtering of the biomechanical and sensor feedback by the control system to prevent amplification of vibrations in specific flight conditions. Bell is aiming to complete flight testing and gain certification for the 20,000-pound fly-by-wire helicopter next year. **M.H.**

$40 million settlement in Seattle newscopter crash

by Mark Huber

The drivers of two vehicles who were injured when a Seattle newscopter crashed into a street in 2014 reached a $40 million settlement during the course of a five-week trial in May. Guillermo Sanchez and Richard Newman were stopped in their vehicles at a red light on Broad Street near the Space Needle when a 2003 Airbus Helicopters AS350 B2 owned by Helicopters, Inc. of Cahokia, Illinois, and being operated for KOMO-TV, crashed onto their vehicles after attempting to lift off from a nearby elevated helipad. The two men suffered blast, traumatic brain, burn, and PTSD injuries and are continuing medical treatment. The settlement was reached with the television station's parent company, Sinclair Broadcasting, the operator, and the estate of the helicopter pilot.

The accident killed pilot Gary Pfitzner, 59, and cameraman Bill Strothman, 62, who were working for Helicopters, Inc. The helicopter was lifting off from KOMO-TV's sixth floor heliport (WN16), where it had taken on a full fuel load of 143 gallons, and was en route to Renton Municipal Airport (RNT) at 7:40 a.m. on March 18, 2014 when it crashed into Broad Street below, sending ignited fuel running downslope. The NTSB determined the probable cause of the crash to be loss of control "due to a loss of hydraulic boost to the tail rotor pedal controls at takeoff, followed by a loss of hydraulic boost to the main rotor controls after takeoff." Fire damage and an absence of a flight recorder precluded determining the reason for the loss of hydraulic boost.

During the course of its investigation, the NTSB noted that the operator could not document whether the accident helicopter had been equipped with an updated checklist that incorporated changes to the second most recent revision (revision 3, 2006) of the rotorcraft flight manual governing hydraulic system test procedure. The procedure had been changed by the manufacturer following reports of helicopters unintentionally becoming airborne during hydraulic system checks when the collective becomes unlocked. The new procedure called for the fuel flow control lever (FFCL) to be set to a position between the "off" and "flight" detents to achieve a gas generator (Ng) speed of 67 to 70 percent before performing the checks. Under the old procedure, the FFCL was set to the flight detent, about 82 percent Ng.

The pilot was a helicopter CFI-I with a commercial rating, held a second-class medical, and had logged 6,538.8 hours of rotorcraft time; 1,047 in the AS350D and 5.5 hours in the AS350B2. He completed a flight review in the accident helicopter on February 8, 2014, his last flight in it before the accident flight. The pilot would typically fly every morning Monday through Friday.

The NTSB noted that security camera footage showed, "The helicopter lifted off and simultaneously began to rotate counter-clockwise in a near level attitude. The helicopter continued to rotate counter-clockwise for about 180 degrees while it ascended slightly above the elevated helipad, after which it began to ascend further while moving slightly away from the elevated helipad. After the helicopter completed about a 360-degree rotation, the helicopter transitioned to a nose-low (tail-high) attitude while it continued to rotate counter-clockwise. The helicopter rotated counter-clockwise another 180 degrees and then began to lose altitude while moving rapidly away from the elevated helipad. The helicopter then descended until ground impact." ■

Garmin unveils G3000H for Part 27 helicopters

by Mark Huber

Garmin has unveiled the G3000H touchscreen-controlled, IFR-capable integrated avionics system for Part 27 helicopters and named the Kopter SH09 as an initial platform. The G3000H features WAAS/SBAS, ILS approach capability, Connext wireless integration, and visual approach guidance. The G3000H is built with a flexible and scalable architecture that can be tailored to a variety of helicopter designs and combines widescreen, high-resolution, landscape-oriented displays with selectable split-screen capability and touchscreen controls that serve as the pilot interface to the integrated flight deck.

Additional features include helicopter synthetic vision technology (HSVT), hover display, Telligence voice command, helicopter terrain awareness and warning system (HTAWS), helicopter IFR and VFR en route charts including major U.S. metro areas and oil rigs in the Gulf of Mexico, reduced protection mode to minimize nuisance HTAWS alerts, WireAware wire strike avoidance technology, HSI mapping, visual approach capability, terrain profile view, available ADS-B In/Out with TerminalTraffic that minimizes nuisance alerts in airport environments, and TargetTrend relative motion technology to more quickly identify traffic conflicts.

G3000H Features

Other available features include SiriusXM high-resolution animated weather radar imagery, on-board weather radar, radar altimeter read-out, verbal ATC-like TAS/TCAS spoken traffic alerts, European Visual Reporting Points (VRPs), NVG-compatibility, and the ability to display video input from compatible FLIR camera sources.

"The G3000H blends a superior feature set and safety-minded technology into a contemporary platform for the VFR/IFR turbine helicopter market," said Carl Wolf, vice president of aviation marketing and sales. "With the G3000H, we're excited to bring IFR capabilities in an advanced integrated flight deck and further expand our product offering so our partners have even more options within this class of helicopters."

"The G3000H will ease the workload of SH09 pilots while providing best-in-class situational awareness. This will enable a higher level of safety for every mission, the core principle behind the design of our helicopter," said Michele Riccobono, Kopter executive vice president of technology.

Representatives of both Kopter and Garmin were at EBACE 2018 answering questions.

Helicopter synthetic vision technology (**HSVT**) displays an "out-of-the-window" view of surroundings on the primary flight display (PFD), regardless of weather conditions. The HSVT blends information related to the helicopter's position with topographic databases to create and display real-time 3D images and incorporates visual and audible alerting of potential ground hazards by displaying terrain, available obstacles, and powerlines that may pose a threat to the helicopter.

Hover Display provides a combination of location, heading, and vector references to help guide and orient pilots during hovering maneuvers.

Connext wireless integration unlocks more capabilities from within the G3000H integrated flight deck, including wireless database and flight plan transfer from the Garmin Pilot app, as well as the sharing of traffic, weather, GPS information, back-up attitude information, text messaging, and flight tracking with mobile devices in the cockpit.

Telligence Voice Command uses automatic speech recognition technology built within the audio system and accepts hundreds of voice commands at the push of a button on the cyclic. For example, pilots can simply state, "tune destination tower," to load the tower frequency into the standby comm position.

HTAWS provides graphical and audible alerts of potential terrain and obstacle conflicts along the flight path. Garmin HTAWS includes forward-looking terrain avoidance, which features five-color contouring and aural advisories to help keep pilots aware of hazardous terrain and obstacles. While descending, voice call-outs are also available in 100-foot intervals beginning at 500 feet. An additional 50-foot call-out is available with an optional radar altimeter.

Helicopter route charts are accessible on the MFD and HSI map.

Reduced Protection (**RP**) mode works in conjunction with HTAWS by minimizing nuisance alerts during low-altitude helicopter operations while continuing to provide protection from terrain and obstacles.

WireAware wire-strike avoidance technology graphically overlays powerline information within the U.S., as well as some locations in Canada and Mexico.

HSI mapping displays an MFD-like perspective map view in the primary field of view of the pilot on the PFD to help pilots focus on their instrument scan, enabling them to better visualize terrain, traffic, and weather as it relates to their flight plan.

The touchscreen-controlled Garmin G3000H avionics suite for Part 27 is loaded with features to improve situational awareness.

Visual approach capability automatically generates a three-degree vertical path from the threshold of the runway down to pilot-selectable minimums.

Terrain profile view displays a vertical cross-section view of the active flight plan on the MFD, so it's easier to view terrain and obstacles that may pose a threat throughout an entire flight.

ADS-B In/Out available with the G3000H features **TerminalTraffic**, which minimizes nuisance alerts in the airport environment. Audible alerts of potential flight path conflicts are also available. **TargetTrend** relative motion technology provides pilots with a faster, more intuitive way of judging traffic trajectories when identifying potential threats while flying in dense environments. ■

Kopter plans to fly third protoype this month

The third Kopter SH09 single-engine prototype, aircraft P3, likely will fly in July following a three-month schedule delay triggered by a supplier problem. "It was a conscious decision," Kopter chief technology officer Michele Riccobono told **AIN** in late May. "We discovered a quality issue with a dynamic system component from a supplier that failed our incoming inspection test."

Riccobono said the other two Kopter prototypes have completed their flight testing and that P2 is being retained for ground testing of the drive system. Flight tests of P3 will initially be conducted in Sicily. Riccobono said the first few flight hours would be devoted to flight envelope expansion and investigation and handling, development testing, and a few certification tests. He said the majority of the certification testing would be handled by the first fully representative production aircraft, PS4, scheduled to join the test fleet in the third quarter of 2018 and fly into 2019.

"We wanted to push the first flight of PS4 a little bit to the right to benefit from the initial flights of P3. If there are some last-minute changes we want to put into PS4 we will have the time to do it," he said. Riccobono added that the company took advantage of P3's first flight delay to further refine PS4.

The company also continued all of its non-flight development, test and certification activity that encompassed ground/bench testing components, systems, and subsystems including the gearbox and main rotor hub, conducting all of the fatigue tests required by EASA to get P3 in the air, and implementing design improvements on PS4. Riccobono said that the company also is building a full-scale avionics system integration rig that will house the components of the new Garmin G3000H touchscreen avionics system. Garmin announced in May that Kopter would be an initial customer for the new G3000H *(see article on this page)*, which brings IFR glass panel sophistication and capabilities to Part 27 helicopters.

"We have asked Honeywell [supplier of the HTS900 engine] to provide a Fadec connected to the engine simulator so that we can integrate the avionics to the engine which is one of the high-risk items. Whenever you integrate the engine to the avionics you always find issues. Thanks to this fully representative engine simulator we can mitigate much of the risk well ahead of putting this system on PS4," he said. "On a components system testing level, we are on a good track."

Riccobono said the company is gearing up for certification and customer deliveries next year, even as it completes its flight test program. "We are in parallel ramping up the production line. The idea is to start the build-up of PS4 together with the [customer] civil aircraft. Our target is to establish single-digit deliveries in 2019. To do that we need to parallelize things. While we are completing certification we will already have the first few production aircraft in the pipeline," he said.

Kopter's order book for the $3.5 million all-composite helicopter currently stands at more than 120, which a company spokesman told **AIN** represents the first three years of production. The company currently employs 260, 150 of whom are working in engineering, development, testing, and design. **M.H.**

Under its new partnership with Bombardier, Airbus will build C Series jets at the same site in Mobile, Alabama, where it already assembles A320s for the U.S. market.

Airbus, Bombardier close on C Series deal

by Ian Sheppard

Airbus and Bombardier have finalized the C Series partnership agreement first announced on October 16 last year, the companies announced last month. Although CSeries Aircraft Limited Partnership (CSALP) already existed, Airbus's "consolidation" of it will come into effect on July 1, 2018, when the European manufacturer takes a controlling stake.

During a conference call on June 8, a few hours after the announcement of the final deal, Airbus CFO Harald Wilhelm expressed satisfaction with the speed at which the sides managed to close the transaction. "We're all super-happy we have received all regulatory approvals and executed definitive agreements last night, and this allowed us to close the transaction well ahead of our original schedule," he said.

The partnership's head office, leadership team, and primary final assembly line will operate out of Bombardier's base in Mirabel, Québec, while a second C Series line serves as an extension to Airbus's A320 family final assembly line in Mobile, Alabama, "dedicated to U.S.-based customers."

Airbus Commercial Aircraft head of performance management Phillipe Balducchi will lead the partnership. During Friday's call, Balducchi would not comment on reports regarding any change of branding for the C Series and its variants, the CS100 and CS300.

Under the deal, Bombardier had agreed to fund cash shortfalls of up to $925 million over the course of three and a half years, and the partners' Class A shareholders will share the cost of any excess shortfall.

Meanwhile, the C Series program continues its deliberate production ramp up. Bombardier delivered 17 aircraft in 2017 and 29 now operate with Swiss International Airlines, Air Baltic, and Korean Air. The company expects the line in Mirabel to double last year's deliveries in 2018.

"It will be a difficult ramp-up but we are very focused on it being robust and steep in future years," admitted Bombardier senior vice president and CFO John Di Bert. The partners hope to achieve a production rate at Mirabel of 10 per month and reach four per month at the Mobile line over a two-year timeline running up to first delivery in 2020.

"This partnership extends our commitment to Québec and to all of Canadian aerospace, and we are very glad to welcome so many C Series teammates into the extended Team Airbus," said Airbus CEO Tom Enders. "The strength of the entire Airbus organization will be behind the C Series. Not only will that enable this outstanding aircraft to fulfill its market potential, but we are convinced the addition of the C Series to our overall aircraft product offering brings significant value to Airbus, our customers, and shareholders." ■

Flight line mechanics vote to unionize at Boeing South Carolina

A group of flight line mechanics at Boeing's Charleston, South Carolina, Dreamliner plant have voted to join the International Association of Machinists and Aerospace Workers, giving the IAM at least a tenuous foothold at the factory following two previous attempts to unionize. The 176 workers, known as flight readiness technicians, won the right to representation following a May 21 ruling by the National Labor Relations Board that rejected an argument by Boeing calling the group an artificially gerrymandered subset of employees. The vote also came just months after the NLRB reversed a decision by the Obama administration that allowed so-called micro-bargaining units, provoking an argument by Boeing that the Charleston effort ran afoul of federal law. However, the IAM argued that the group worked under various employment conditions including wage scales, hours, and supervision that differed materially from those of the other employee groups.

"Today was a victory for the American worker," said IAM Boeing South Carolina lead organizer Mike Evans. "The 176 men and women flight readiness technicians stood up with South Carolina pride and voted for a better life. They exercised their freedom to join the union and speak with one voice. This election was never just about wages. The men and women wanted dignity and consistency in the workplace. And this vote put them closer to achieving those goals. We hope Boeing does the right thing by agreeing to sit down and negotiate in good faith with the dedicated flight readiness technicians.

Despite the relatively small number of employees involved—Boeing employs some 6,800 people in the Charleston area—it comes as a serious blow to the Chicago-based company, which chose the location to build a large proportion of its 787s at least partly for South Carolina's status as a so-called "right to work" state, where employers or labor organizations legally cannot force workers to join a union to secure a job. Now, Boeing worries the vote could set a precedent at the plant, eroding some of the cost advantages it brought when the company chose to locate a Dreamliner assembly line in a state where, according to the Bureau of Labor Statistics, only 2.6 percent of all workers belong to a union.

For its part, Boeing said it would appeal the NLRB ruling in favor of the union. "Boeing continues to believe that this type of micro-unit is prohibited by federal law," it said in a statement. "While we are deeply disappointed with the result and are appealing, we will come together as we continue to deliver on our customer commitments." **G.P.**

News Update

Air Baltic Signs for 30 CS300s

Bombardier's C Series orderbook swelled to more than 400 airplanes with the signing in late May of a new firm purchase agreement with Latvia's Air Baltic calling for delivery of at least another 30 CS300s. The deal also includes options for 15 CS300s and rights to purchase 15 more, potentially raising its value to $5.9 billion. The contract calls for first deliveries in the fourth quarter of next year, after Air Baltic takes the remaining 12 airplanes from its launch order for 20.

The order increases Air Baltic's order backlog to 50 CS300s, making it the largest European C Series customer and the second largest in the world. Now flying eight of the Canadian-built narrowbodies, Air Baltic recently hatched a business plan relying on expansion from all three Baltic countries.

Under a fleet modernization plan, Air Baltic plans to shed its 11 aging Boeing 737s in favor of CS300s. It also flies 12 Bombardier Q400 turboprops.

Rolls Speeds Trent 1000 Fix

Rolls-Royce finally gave more information in late May on how it aims to solve the problems with the Trent 1000 Package C engines that power some 787s, while recognizing the "unacceptable levels of disruption" its customers continued to face.

The UK aero-engine company said it is accelerating the development of the permanent fix to the intermediate pressure compressor rotor issue on Package C engines, and that it had installed a revised compressor blade in an engine that underwent testing in early June. The company added it would have first parts available for engine overhaul in late 2018, rather than 2019 as originally planned.

Rolls is also speeding the development of the new blade and a dedicated facility in Derby to build engines on which it will test it. It aslo developed a new on-wing inspection technique to support airlines in meeting the requirements of the airworthiness directives "as quickly and efficiently as possible," it said.

Air Asia Under Probe in India

Indian authorities registered a corruption case in late May against more than 10 major officials of AirAsia Group in India, Malaysia, and Singapore, who allegedly collaborated with civil aviation officials to obtain speedy clearances, removal of existing rules, and changes in regulatory policies to benefit startup domestic carrier AirAsia India.

The case report characterized the actions by the airline group as "criminal conduct." The report also specifically named AirAsia Group CEO Tony Fernandes. Authorities on May 29 conducted simultaneous raids at five offices of AirAsia India, which, according to a statement, "led to recovery of certain documents" into which an investigation continues. **G.P.**

UK seeks broad-based open skies with EU

by Cathy Buyck

The UK government last month released a long-awaited document spelling out its ambitions for air transport with the EU after it leaves the bloc at the end of March next year. Its proposal for market access envisions the continuation of current arrangements for UK and EU licensed air carriers to operate services to, from, and "wholly within the territory of the UK and the EU on an equal basis," including maintenance of seventh and ninth freedom rights—respectively, the right to fly between two foreign countries while not offering flights to one's own country; and the right to fly within a foreign country without continuing to one's own country.

In other words, the British government seeks to continue participation in the single aviation market after it exits the EU.

The proposal most likely will not sit well with a number of established EU carriers and their home countries, who will argue one can't decide to leave the EU and expect the same rights afforded EU members. A position paper of Airline Coordination Platform-members Lufthansa Group, Air France-KLM, SAS and TAP Portugal calls for basic third and fourth freedom traffic rights—the right to fly from one's home country to a foreign state and to fly from a foreign state back to one's home country—post Brexit. Additional traffic rights, the lobby group asserted in the paper, should depend on the extent of regulatory alignment, including on passenger rights, slots, fair competition, and the participation in the EU emissions trading scheme for airlines, as well as the recognition by the UK of the jurisdiction of the European Court of Justice.

The latter, however, represents a red line for the government of UK Prime Minister Theresa May.

The UK parliament's European Union Committee on Friday published its latest report on UK-EU relations post-Brexit, concluding that the UK and EU have approached the negotiations with too great a focus on "red lines," which, said the report, increases the risk that they won't reach an agreement on the future relationship. Aviation is one of the topics on which the two parties clearly disagree, it noted, calling on negotiators to acknowledge the need for compromises.

Airlines with extensive intra-EU traffic such as Ireland's Ryanair and Hungarian LCC Wizz Air have already established a UK AOC that would allow them to operate British-registered aircraft under third or fourth freedom rights. London-based easyJet created an Austrian airline to secure its intra-EU route rights post-Brexit.

Last year 164 million passengers traveled by air between the UK and the EU. Some 185 airports in the EU offer at least a weekly UK service, according to the UK government's framework proposal.

The UK and the US expect to agree on terms of an open skies in the coming weeks, though formal signing of the accord cannot happen as long as the UK belongs to the EU. ■

Rolls-Royce finds new Trent 1000 trouble

Rolls-Royce has identified another durability issue in its Trent 1000 series engines, this time involving the intermediate pressure compressor in the Package B version. The variant has flown in service on Boeing 787s since 2012 and consists of 166 engines. The engine company said it has agreed with regulatory authorities to carry out a one-time inspection of the Package B fleet to "further inform" its understanding of the problem.

"We are committed to eliminating this intermediate pressure compressor [IPC] durability issue from the Trent 1000 fleet and we have already successfully run a redesigned Package C IPC in a development engine," said Rolls-Royce in a June 11 statement. "As a precautionary measure we have also launched a redesign of the relevant part in the Package B engine as well as in the Trent 1000 Ten engine, where, although currently a young fleet, we have not seen any examples of reduced IPC durability."

In April Rolls-Royce advised operators that its Trent 1000 Package C engine would require more inspections than previously planned to address premature wear of compressor blades, a problem that first came to light in 2016.

The UK aero-engine company said in late May that it would accelerate the development of the permanent fix to the IPC rotor issue on Package C engines, making the first parts available for engine overhaul in late 2018, rather than 2019 as originally planned. **G.P.**

CHEN CHUANREN

A North Korean government Ilyushin Il-62M approaches Singapore on June 10.

Qatar Airways lobbies for free airspace

As Qatar marks the first anniversary of the airspace blockade by its Gulf neighbors, it called for not only its own right to access of international airspace but also a wider respect for the interests of aviation around the world regardless of politics.

On June 5, 2017, Saudi Arabia, the UAE, Bahrain, and Egypt shut down their airspace to the tiny gas-rich state of Qatar. Since then national carrier Qatar Airways has navigated turbulent times, as the blockade has increased the airline's operational costs due to its need to use longer, alternative air routes.

At a concluding press conference of the International Air Transportation Association (IATA) annual general meeting on June 5 in Sydney, Australia, Qatar Airways CEO Akbar Al Baker expressed a satisfaction with IATA's support for his airline at a time he said politics threaten the rights of citizens to travel freely.

"The international community already made up their mind on what they feel is wrong," he asserted. "IATA, as an industry leader, has not taken this subject lightly. I am sure that the director general will continue his effort to make sure that the business of free air travel is respected."

Following the closing press conference, IATA announced its board had elected Al Baker its new chairman. He succeeds Qantas Airways' CEO Alan Joyce.

IATA director general Alexandre de Juniac told a group of aviation journalists that the airspace blockade of Qatar amounts to a political issue that must get resolved through diplomatic means. "As a trade association of the airline industry I cannot make comments on political issues," de Juniac said. "[However], as a global airline body IATA strongly believes in free movement of people…So we want Qatar to have a free connectivity with the rest of the world." **K.B.**

North Koreans' Singapore trip a massive undertaking

by Chen Chuanren

In the days leading up to the arrival of North Korean leader Kim Jong Un in Singapore for his summit with U.S. President Donald Trump, many questions arose about the logistics of the trip given the questionable airworthiness of the hermit kingdom's small fleet of Soviet-era aircraft.

All details remained under wraps until the first North Korean delegation arrived in Singapore on June 9, via an Air China Airbus A330-200 (B-6130), callsign CCA60, which departed Pyongyang for a 10-hour nonstop flight to Singapore. The same aircraft returned to Beijing on the same day.

On June 10, an Air Koryo Ilyushin IL-76 (P-914) cargo airplane left Pyongyang and stopped to refuel in Guangzhou, China, before landing in Singapore to deliver Kim's Mercedes Benz limousine and other support equipment.

The same day, an Air China Boeing 747-400 departed the Korean capital with the callsign CCA122, the standard flight number for the now-defunct Pyongyang-Beijing service, a route that Air China said it would soon resume. The flight later changed its callsign over Beijing to CCA61. The 747-400 arrived in Singapore at around 3 p.m. local time when Kim walked off the aircraft with his delegation to a greeting from the Singapore foreign minister.

The Air China 747-400 (B-2472) is one of the four Air China 747s reserved for the Chinese leadership team. The Chinese Foreign Ministry later confirmed that the Civil Aviation Administration of China provided the relevant service to the North Korean delegation traveling to Singapore upon request from Pyongyang.

Much to the surprise of many, the state IL-62M arrived last, about 40 minutes behind Kim. Capable of a range of approximately 5,400 nm, the IL-62M still made a refueling stop in China, although the purpose for the stop remains uncertain.

AIN witnessed the arrival of the aircraft, notably with distinct separation of other traffic into Changi airport. The Civil Aviation Authority of Singapore and the Ministry of Defense both had issued Notams highlighting airspace restrictions and flight delays from June 11 to 13. ■

Gulfstream To Build Service Center at Farnborough

Gulfstream Aerospace selected TAG Farnborough Airport for its new London-area service center. According to company president Mark Burns, the company would first "move into a temporary facility in June next year and into the new facility in [the third quarter of] 2020." The new-build facility will have 180,000 to 220,000 sq ft (16,723 to 20,439 sq m) of floor space and will accommodate "up to 13 large-cabin aircraft under one roof," he said. "We are working with TAG Farnborough to develop this property."

Burns said the plan would represent expansion and there are no current plans to close Gulfstream's existing maintenance facility at London Luton Airport, which comprises more than 85,000 sq ft/7,897 sq m of hangar space. The site has become increasingly busy in recent years along with the airport, which has been increasingly congested with low-fare carrier traffic.

TAG Aviation To Establish Mx Control Center in Portugal

TAG Aviation established a maintenance control center (MCC) at Lisbon/Cascais Aerodrome (LPCS). The MCC streamlines requests for AOG and mobile repair team (MRT) support with one 24-hour customer service phone number. TAG Aviation hopes this MCC will enhance the company's current mobile repair team, which offers support from eight locations throughout Europe.

TAG Aviation Europe also recently celebrated the one-year anniversary of its Maltese air operator certificate and opened a new office space. The region's first aircraft, a Challenger 605, is already operating and more aircraft will be added this year.

Gulfstream Adds G600, G650 to Training Lab

Gulfstream extended the capability of its on-the-job training (OJT) laboratory with the addition of two new structures—a G600 fuselage, main entry door, and wing, as well as a G650 fuselage, door, interior, and wing.

The lab, established in 2016 occupies, 16,000 sq ft in the company's technical training center, which can accommodate up to 300 employees. It has 17 classrooms, with areas dedicated to avionics, structures, and composites, and the two additions join a GV with functional landing gear. They are used to train new employees in various areas, such as panel removal, sheet metal work, leading edge removal/servicing, and proper maintenance documentation, while giving established technicians the chance to sharpen their skills in tasks such as window sealing and entry door rigging.

DAVID McINTOSH

The upgraded EVO landing gear STC for Piaggio Aerospace's P.180 Avanti I turboprop is expected to be available by the end of this year. In the meantime, the company is already offering a factory option for retrofitting ADS-B Out in the Avanti II.

Piaggio Reveals New Upgrade Options

Piaggio Aerospace partnered with Walterboro, South Carolina-based LowCountry Aviation to develop an STC for upgrading the P.180 Avanti I turboprop twin with the new landing gear developed for the current Avanti Evo. The Magnaghi Aeronautica main and nose landing gear features a digital steering system with an enhanced rack-and-pinion actuation mechanism, which provides improved reliability and extends time-between-overhaul up to 15 years or 15,000 landings, whichever occurs sooner.

The STC should be available by the end of the year through the FAA, with EASA approval expected later. A similar program to update the Avanti II with the Evo landing gear was approved in 2017 and has already generated eight sales of the retrofit package.

Textron Aviation Adds Biggin Hill Line Station

Textron Aviation opened a new line-maintenance station at London Biggin Hill Airport, putting its services closer to operators of Cessna Citations, Beechcraft King Airs and Hawkers based at, or visiting, the fast-growing business aviation airport. A team of four mechanics has been delivering drop-in, AOG, and minor scheduled maintenance support since May.

Since 2012, the company has expanded its support footprint in Europe to include six company-owned service centers, eight line-maintenance stations, and a team of more than 400 Textron Aviation staff, including engineers, service technicians, and field service representatives.

ST Engineering Opens Florida MRO

ST Engineering Aerospace opened a new $46 million, 173,500-sq-ft airframe MRO hangar at Florida's Pensacola International Airport. The new facility, which is the company's third airframe MRO location in the U.S., can perform heavy and line maintenance, as well as modifications, on narrowbody and widebody jets. UPS is the launch customer for the new maintenance center.

Able to accommodate six Airbus A321s simultaneously, the facility includes one of the largest hangars in Singapore-based ST Engineering's global network of airframe maintenance facilities. It carries an annual capacity of 600,000 labor hours, according to the company. Some 150 employees work at the Pensacola facility, and ST plans to add another 500 in the near future.

Gulfstream added fuselages for the G600 and G650 to its On-the-Job Training Lab, giving new technicians the opportunity to practice their skills on actual structures.

Spectro Moves, Enlarges Swiss Lab Facility

Aircraft fluid and debris analyst Spectro Jet-Care relocated its Swiss laboratory from its previous location in Basel-area Kaiseraugst to a larger, remodeled facility nearby. According to the company, the expansion has allowed it to increase its testing portfolio there to match that of its UK and U.S. locations.

The new facility, five minutes from the previous location of Rinaustrasse 452, also provides increased office space and newly created customer areas, which the company claims will allow it to focus on furthering business opportunities in Central Europe. To that end, it has brought on a new business development manager, Hans Czerwinski, who is based in Germany, and concentrates his efforts on the region.

AMAC Becomes Completion Center for ACJ350 XWB

Airbus Corporate Jets appointed AMAC Aerospace's facility in Basel, Switzerland, an approved completion center for the ACJ350 XWB. "We have established an excellent working relationship with Airbus over the years," said Bernd Schramm, group chief operating office of AMAC Aerospace. "We look forward to welcoming our first ACJ350 XWB operator or owner at our facility in Basel to demonstrate our capabilities when it comes to cabin outfitting."

The company also completed and redelivered a Boeing 777-200LR following a completion last year in a project that took 20 months. This was AMAC Aerospace's third VVIP Boeing 777 completion.

Flying Colours Completes Medevac Challenger 650

Canadian completions and MRO specialist Flying Colours completed the industry's first medevac-configured Bombardier Challenger 650, already in service with Swiss air ambulance operator Air-Rescue Rega. Flying Colours design engineers developed the interior for the CL650 in conjunction with Bombardier and medical equipment specialist AeroLite, which supplied the intensive care unit (ICU) and interior re-configuration adaption plates.

The cabin operates as a fully functional ICU for up to two patients with attending critical care experts, or can be easily reconfigured to transport up to four patients with an accompanying medical team. The layout ensures easy egress and access for the patients and medical teams, while soundproofing has been strengthened to improve the patient, passenger, and

attending clinician experience. An additional four to six seats, depending on configuration, can be included for accompanying travelers.

Pilatus PC-12 Mx Intervals Extended

Pilatus developed a new PC-12 master maintenance plan that will reduce required maintenance labor by 20 to 40 percent, according to the company. The range is from users flying their aircraft 300 hours per year up to those flying them more than 800 hours a year.

Under the new maintenance plan, operators can see scheduled maintenance tasks that have maximum intervals and package them. In addition, the new plan lists "pre-packaged" tasks falling under six intervals: 300 flight hours (FH); 300FH/12 months; 600FH; 600FH/12 months; 1,200FH/12 months; and 2,400FH/24 months—all on a "whichever comes first" basis.

LegendAire Looking To Expand East from Cyprus Base

Business aircraft MRO and management company LegendAire continued to expand in Cyprus with the approval of a satellite line station at Paphos International Airport, in the west of the island, with 24/7 airside access. The company has also added a new Bombardier Global operator to its managed fleet.

In addition, at its headquarters at Larnaca International Airport, the company continues to expand operations some three years since setting up on the eastern Mediterranean island. LegendAire also has offices in the United Arab Emirates to serve the MENA region and Hong Kong for the Asia-Pacific region. The company offers business aircraft maintenance and management and has current MRO approval under EASA 145, Isle of Man, San Marino, FAA (Part 91) with upcoming approval for aircraft registered in Aruba, Bermuda, the Cayman Islands, and Saudi Arabia.

Gama Aviation To Open Bournemouth Mx Hub

Farnborough, UK-based Gama Aviation will relocate its TAG Farnborough Airport and London Oxford Airport-based maintenance operations to Bournemouth International Airport, on the south coast of the UK. The company stated the move would take place in the second half of 2018 and would "provide necessary capacity for expansion of the company's European ground business, which grew by 20 percent in 2017, while delivering immediate efficiency savings."

The company estimates that restructuring costs will amount to approximately $2 million, which will be funded out of operational cashflow, and "will be incurred largely in 2018 and treated as either exceptional items or capital expenditure, with no impact on underlying profitability of the group. The cash costs related to the restructuring will be offset by the end of the first half of 2019 through capital contributions by the new landlord and a rent-free period.

JSSI Buys Conklin & de Decker

Business aviation maintenance plan provider JSSI expanded its services portfolio by acquiring industry research firm Conklin & de Decker (C&dD). Founded nearly 35 years ago, C&dD has become a trusted source for aircraft cost and performance information.

All 12 members of the C&dD team joined the JSSI staff, and the company has maintained its brand as a separate unit in JSSI's advisory services division, which was launched last October at NBAA's annual convention in Las Vegas. It offers aircraft inspections and appraisals, assists with maintenance cost planning, and provides insurance claims management.

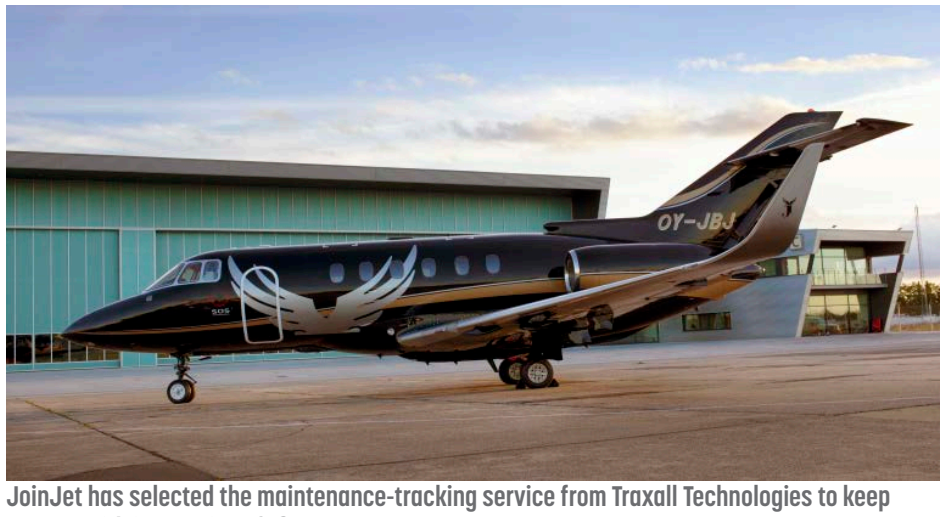
Bombardier Ramps Up Customer Experience

Bombardier added a second mobile response team (MRT) jet, a Challenger 300, based in Frankfurt, Germany. The new jet will begin flying parts and technicians to help resolve AOG problems for Learjet, Challenger, and Global operators throughout Europe in the second half of this year. The location of the jet takes advantage of Bombardier's parts depot in Frankfurt, providing coverage into northern Africa, the Middle East, and Russia.

Bombardier's MRT now has 23 trucks worldwide, and these supplement six new line maintenance stations in Europe and maintenance control centers in Wichita, Kansas, and Linz, Austria.

Traxxall Wins JoinJet Business

Aircraft maintenance tracking and inventory management specialist Traxxall Technologies added JoinJet as a client. The charter operator is using the Traxxall maintenance-tracking service for its fleet of 26 aircraft that includes Dornier jets, Hawkers, Beechjets, and a Piaggio Avanti.



JoinJet has selected the maintenance-tracking service from Traxall Technologies to keep current with its 26-aircraft fleet.


JSSI president and CEO Neil Book (left) and Conklin & de Decker co-founder Bill de Decker seal the deal that joined their two companies. Conklin & de Decker will continue to operate under its brand as a division within JSSI's advisory services division.

GE Buys Into Avionica, Forms Joint Venture

After aquiring an "ownership interest" in airborne connectivity and data collection provider Avionica, GE Aviation deepened its partnership and formed a joint venture with Avionica to take advantage of the two companies' strengths. GE is now offering Avionica products as part of its digital product line and supporting them via the GE worldwide service network.

Under the joint venture, Avionica provides flight data management solutions and GE adds its analytics expertise and digital products "to address customer needs in flight analytics, aircraft health management, and flight operations," according to the two companies.

StandardAero To Maintain Reignwood Star Engines

StandardAero signed a one-year agreement to support Beijing-based Reignwood Star General Aviation Company Limited's fleet of Rolls-Royce M250 and RR300 engines. The MRO will provide repair and overhaul services for the engines, which power Reignwood's Bell407GX, 206L4, and 206B3, and Robinson R66 helicopters.

Maintenance services for Reignwood's engines are being completed at StandardAero's Rolls-Royce M250 authorized maintenance center in Singapore. The company is also providing Reignwood with technical engine training to increase its customer support capabilities in China.

Stevens Aviation Receives Nod as Jet Aviation Vendor

Jet Aviation Flight Services (JAFS) named Stevens Aviation an authorized vendor. The recognition followed an on-site audit of Stevens Aviation's maintenance, repair, and overhaul location in Greenville, South Carolina. The location oversees Stevens' AOG and mobile maintenance teams, which will service aircraft in JAFS's managed fleet. The teams operate from 14 locations east of the Mississippi and encompass 30 technicians and 15 trucks.

Along with serving as an authorized vendor, Stevens Aviation is participating in JAFS's Train the Trainer program, clearing the way for scheduled inspection work.

Hallmark University Adds GIII to Mx Training Program

The College of Aeronautics at Hallmark University received a Gulfstream III, along with additional tools and support from Gulfstream Aerospace, for use in its maintenance training programs. The San Antonio, Texas-based institution said the aircraft donation, along with the Gulfstream support, will enable its students to train directly on a corporate aircraft, expanding the school's capabilities and expertise in this arena. ■

Toronto's Buttonville Municipal Airport has received a new lease on life with the announcement that the privately-owned airport will remain open for at least another five years.

A major renovation has been completed at Dassault Falcon Service's FBO Paris Le Bourget, with upgrades to the facility's crew and passenger areas.

Toronto Buttonville To Live On for Another Five Years

Toronto's privately owned Buttonville Municipal Airport has received another stay of execution, with the announcement that it will remain open until at least spring 2023. In 2011, real estate companies Cadillac Fairview and Armadale, which own the 170-acre plot the airport sits on, submitted an application to redevelop the property as a mixed-use residential and commercial site, and announced the general aviation airport would close in fall 2016. That date has been postponed twice, and now the companies have agreed to extend the timeline for airport operations for another five years, due to significant delays in reaching an appropriate rezoning. According to a release put out by the property owners, the outlook for extensions beyond that date will be dictated by progress on rezoning approvals.

Lynx To Acquire Napa Jet Center

The Lynx FBO Network is buying Napa Jet Center at California's Napa County Airport, marking the seventh facility acquisition since Lynx was founded in 2016 and its second this year, the company announced. Terms of the deal were not disclosed.

Lynx plans to dedicate "significant investments" into the Napa facility, including the design and development of an FBO campus "reflective of the FBO's role as the gateway to the Napa Valley." The FBO chain has hired Carrie Campbell to serve as the general manager of the Napa facility. Campbell previously worked with the Lynx management team while at Landmark Aviation, where she served as general manager for Landmark's San Diego FBO. In addition to managing the general aviation operations at one of the busiest single-runway airports in the country, she oversaw construction of a new FBO facility completed there in 2014. Lynx and its parent company, Sterling Aviation Group, continue to seek FBO acquisitions in North America, it said.

Florida Airport Gets Runway Safety Boost

Florida's Boca Raton Airport has completed a major safety upgrade with the installation of an engineered materials arresting system (EMAS) at the departure end of 6,273-foot Runway 23. A similar installation on the opposite end (Runway 5) was completed in July 2016, making it one of the few dedicated GA airports to acquire the system. The most recent project also included the installation of LED runway end identifier lights, relocation of threshold light assemblies, and the installation of a touchscreen airfield lighting control and monitoring system in the air traffic control tower and the airfield's electrical vault. The airport is also set to begin a second phase of rehabilitation on its control tower. Last year's Phase I consisted of updating the roof, HVAC, plumbing, and fire-control system. This next stage, which will be completed this year, will include replacing the windows and replacing fixtures in the cab and training room. Eighty percent of the nearly $300,000 project will be covered by Florida DOT grants with the remainder from the airport's capital improvement fund.

Dassault Falcon Service Unveils Revamped Paris FBO

Dassault Falcon Service (DFS) has completed a major renovation of its FBO at Paris Le Bourget Airport. The refurbished facility features a redesigned crew lounge with bright open spaces, a shower room, and a private crew rest area. The latter includes zero-gravity pods offering sleep music with a gentle wake sequence of programmed lights and vibrations. Other features include a revamped meeting room, updated passenger lounge, and a new crew work zone equipped with TV screens and high-speed internet access. DFS's facility is part of the Air Elite FBO network.

Jetex Adds Two FBO Locations

Global trip support provider Jetex has signed an MOU with African airport management company Aeria to be the exclusive FBO operator of the newly built FBO at Felix-Houphouët-Boigny International Airport in Abidjan, Côte d'Ivoire. Jetex will take over management of the facility this month. For Jetex, the 10,800-sq-ft/1,000-sq-m facility is its first in West Africa, and its second in the region after Morocco.

At the end of July, the UAE-based company will continue its expansion into Europe with the opening of a new FBO in the general aviation terminal at Dublin Airport. It will feature private lounges for crew and passengers, as well as access to a "platinum" lounge. Services will include concierge, ground handling, fuel and full dispatch package with support from the company's operation centers in Dubai, Miami, and Beijing.

Private jet traffic at the facility is around 3,500 departures a year and is expected to grow steadily. Six miles north of the Irish capital, the airport is the busiest in the country, with 80,000 passengers transiting it every day.

In addition to generating energy, over the course of its lifetime, the massive solar array now adorning the hangar roof at New Hampshire's Granite Jet Center will offset the same amount of carbon emissions as a car driving more than 11 million miles.

TAG Expands to Asia

TAG Aviation has increased its reach into the Asia-Pacific region, signing an agreement with the Macau Airport Authority (CAM-Sociedade do Aeroporto Internacional de Macau) to establish a new FBO at Macau International Airport, its first such location in the area. Hong Kong-based TAG Aviation Asia received a six-year concession to provide a full-service, 24/7 facility, which is scheduled to debut in this year's fourth quarter.

"The Macau FBO is a unique opportunity for TAG Aviation to continue to expand its global network to deliver world-class FBO services in the Asia-Pacific region," said Erturk Yildiz, TAG Macau's accountable manager. "Macau is fast becoming a destination of choice, and the government is fully supportive of promoting the growth of business aviation."

New Hampshire FBO Goes Green over Sunlight

New Hampshire FBO Granite Air Center, the lone service provider at Lebanon Municipal Airport, has partnered with Norwich Solar Technologies in neighboring Vermont to install a solar array on the roof of its main hangar. The 218.1-kilowatt photovoltaic system, completed last month, is the largest such solar power system in the city of Lebanon.

The improvement is part of a recent uptick in solar projects at airports that can be credited to the FAA's Airport Environmental Program, which is intended to reduce emissions while benefitting operators with significant savings in an industry with typically large operational and environmental costs. The abundance of roof space on hangars and terminals—as well as unobstructed, unshaded exposure—makes airports particularly attractive venues for solar arrays. Airports' round-the-clock operations generate significant energy bills, which solar power can lower.

"In addition to the environmental benefits of producing renewable solar energy, we are able to stabilize our long-term electricity costs," noted co-owner Greg Soho. The company received a federal investment tax credit of 30 percent and a state rebate that covered more than half of the system's installation. "With the incentives available to us, this is a very viable project."

Over its 25-year lifespan, the FBO's array will provide an environmental offset of more than 5.5 million pounds of CO_2, the equivalent of burning 268,000 gallons of jet-A.

Avflight Introduces New FBO

Avflight recently held the grand opening of its newest FBO at Pennsylvania's Harrisburg International Airport. The 5,000-sq-ft building, located next to the airport's main terminal, features a conference room, kitchen, pilot lounge, a trio of snooze rooms, a catering kitchen, and office space. It replaces the company's previous terminal, which it occupied for more than a decade in the former AMP Industries corporate hangar facilities.

A second phase of construction will see the addition of a 30,000-sq-ft hangar able to handle the latest big business jets. That structure should be completed early next year.

"By investing in general aviation, and investing in the Harrisburg region, Avflight is able to further its goal [of being] a connection facilitator," said Carl Muhs, president of the Avfuel-affiliated company. "We are proud to be the gateway to central Pennsylvania, and with this new facility, we're now a more attractive option for tenants." Muhs believes that will drive more corporate traffic to the state's capital area and help support the local economy.

Belgium Airfield To Receive First FBO

North Sea Aviation Center (NCAS), a privately owned aircraft services provider, is constructing an FBO at Belgium's Ostend-Bruges International Airport (EBOS), which operates 24/7 and features a 10,500-foot main runway. It will be the first FBO at the airport, as private aircraft there have thus far been processed through the airline terminal.

The company is about to open a 32,300-sq-ft heated hangar that can accommodate ultra-long-range business jets. When completed next March, the $2.9 million business aviation facility will feature a three-story 9,690-sq-ft terminal, with in-house customs and border control, a VIP lounge, concierge service, pilots' lounge with four snooze rooms and shower facilities, a 20-seat conference room, office space for tenants, and a rooftop bar/terrace offering views of the airport, as well as an additional 17,200-sq-ft hangar.

An adjacent upscale restaurant can provide catering from its industrial-grade kitchen. According to the company, EBOS is a 15-minute flight to London, making it an affordable alternate for aircraft parking.

Chicago-area FBO Joins Signature Network

Chicagoland FBO B. Coleman Aviation is the latest to join Signature Flight Support's Signature Select affiliate program. The five-year-old facility, one of two service providers at Indiana's Gary/Chicago International Airport, less than half an hour from downtown Chicago, features an 18,000-sq-ft terminal with a pair of conference rooms, a pilots' lounge/theater with a 105-inch television, snooze room, fitness room, shower facility, and a 12,500-sq-ft arrivals canopy with ground heat system.

It also has 90,000 sq ft of hangar space, including a recently completed 40,000-sq-ft structure, and can accommodate the latest large-cabin business jets. The FBO is certified under DASSP for departures to Washington Reagan National Airport.

Under Signature's affiliate program, members maintain their independent brand, but receive benefits such as global sales and marketing support from Signature, in addition to participation in the chain's customer loyalty offerings.

Hadid To Manage Pakistan FBO

Global flight support provider Hadid, which recently announced its debut as an FBO manager in a deal that will see it operate the FBO at Italy's Riviera Airport, has wasted little time in expanding its fledgling network. For its second location, the company will operate and manage an 11,000-sq-ft FBO terminal at Pakistan's Jinnah International Airport. The facility, located near the country's civil aviation authority headquarters, is currently undergoing a major renovation, and when completed will include a conference room, business center, and crew lounge. In addition to on-site customs and immigration, it offers flight-support services such as permitting, navigation, aircraft charter, and concierge.

Delaware Airport To Offer Customs Service

Delaware Coastal Airport (GED), through an agreement with U.S. Customs and Border Protection (CBP), can now accept international arrivals with prior notice. While CBP does not normally operate at the airport, according to Georgetown Aviation Services, the aviation service provider on the field, the new arrangement allows for international flights to receive customs clearance as long as it is requested at least 72 hours before landing. ■

FBO PROFILE: Henderson Executive Airport

MARIANO ROSALES

During a typical year, the FBO at HND may see as many as 78,000 operations.

Vegas gateway primed for growth

Many in the business aviation community likely know Henderson Executive Airport (HND) as host of the static display during NBAA Conventions held in Las Vegas. But its location, service, and amenities make it a popular port of entry to the city year round—and a key facility in the Southern Nevada Regional Airport System Plan, created "to meet the growing aviation demands of the Southern Nevada region in a thoughtful, planned manner," said Bruce Daugherty, manager, general aviation airports, Clark County Department of Aviation (CCDA).

Located 12 miles south of The Strip, the 760-acre airport is one of five owned and operated by the CCDA. The department also owns McCarran International (LAS) and North Las Vegas (VGT) Airports, along with Jean Sport and Perkins Field Overton sport aviation fields.

Originally named "Sky Harbor Airport," the facility was built in 1969 by Arby Alper to serve general and corporate aviation along with Grand Canyon sightseeing operations. In 1996 the CCDA acquired the airport for $23.75 million and invested more than $30 million in infrastructure improvements. Today Henderson has parallel runways long enough for "virtually all general aviation aircraft, saving precious time and money for those choosing HND as their entry point into the Las Vegas Valley," Daugherty said.

GA arrivals are instructed to find a parking spot, and there's ample choice. HND has 338 tie-down positions, 57 of them covered, along with 96 private enclosed hangars and 26 commercial enclosed hangars. More than one million square feet of open ramp space is dedicated to accommodating transient customers, but no need to trek across the tarmac in the midday sun—a van carries passengers to and from the terminal. (No gratuities accepted.)

A total of 243 aircraft—187 single- and 29 multi-engine aircraft, 18 jets, and nine helicopeters—are based at HND.

The lobby of the modern, 24,000-sq-ft Henderson Executive Airport Executive Terminal is anchored by the service counter for easy checking in and out, aided by a helpful, friendly staff. Glass cases among the seating areas display memorabilia from the Howard W. Cannon Aviation Museum at McCarran, and dozens of small-scale models of vintage military aircraft. Hertz and Enterprise car rentals are on the lobby's north end. The Landings, a full-service bar and restaurant, with walls covered in aviation art and photographs, is on the second floor. An outdoor dining deck overlooks the runways. The terminal also has meeting rooms and a pilot lounge with showers and sleeping quarters.

Apex Aviation, a turbine, piston, rotorcraft and avionics Part 145 repair station, provides maintenance on site, and has an AOG go team that's been dispatched as far as Siberia and Australia, according to the company.

North Las Vegas, as Nevada's second busiest airport behind McCarran, gets more traffic than Henderson (last year North Las Vegas had 177,991 operations, while Henderson had 78,087), but Daugherty doesn't play favorites in recommending which to use. "It mainly comes down to location and capability of the airport," he said.

Municipally operated airports and FBOs are relatively common, accounting for as much as 35 percent of all FBOs, according to data from the Association Management Consulting Group that Daugherty cited, and stretch across the country.

The county conducts "a weekly market survey of similar sized airports and uses the information to set fees and fuel prices," Daugherty said. "We strive to remain cost-neutral as we continue to invest in the airport to improve the NAS and customers' experience."

The department also uses "resources available on websites such as AAAE, ACI, NATA, AOPA, NBAA, and regular communication with other airports" to "keep pace," he said.

HND offers full-service jet-A and 100LL, and a 100LL self-service fuel island, with fuel provided by Ascent Aviation Group. It pumped approximately 1,200,000 gallons of jet-A and 285,000 gallons of 100LL last year.

Looking ahead, "it is anticipated that the aviation demands will continue to grow," Daugherty said, and the system plan provides the framework for the regional airports' expansions. **J.W.**

by David Jack Kenny

PRELIMINARY REPORTS

One Survivor Rescued from Jungle Accident Scene

AGUSTA BELL AB206B, MAY 2, 2018, CACAO, FRENCH GUIANA

Two fatalities have been confirmed after a helicopter operated by Pilot Air crashed in dense forest during a daytime flight to a remote gold mine. The sole survivor was immediately airlifted to the hospital in Cayenne in critical condition. The flight was transporting two maintenance workers to the mine not far from the accident site.

Signals from the helicopter's emergency locator transmitter were detected after radio contact with the control tower at the Félix Eboué de Rochambeau airport was lost. The wreckage was located by the "Dragon 973" search-and-rescue helicopter about four hours later. The survivor's identity has not been reported. The wreckage was subsequently recovered, and the accident is under investigation by the French Bureau d'Enquêtes et d'Analyses (BEA).

Falcon Clips Wingtips on Approach

DASSAULT FALCON 900EX, MAY 3, 2018, JOHANNESBURG, SOUTH AFRICA

During a crosswind landing on Runway 17 of Johannesburg's Germiston-Rand Airport, the left wingtip scraped the runway. A subsequent inspection revealed damage to the right wingtip as well. Investigators surmised that the right wing had struck treetops as the pilot banked more steeply to avoid overshooting the base-to-final turn. Necessary repairs included replacing the slats and ailerons on both wings as well as both wingtips. No injuries were reported.

Two Killed in Himalayan Caravan Crash

CESSNA 208B, MAY 16, 2018, SIMIKOT, NEPAL

Both pilots were killed when a Makalu Air cargo flight hit a mountainside near Simikot Pass at an elevation of 12,800 feet. The accident site in the Humla district is in one of the most remote parts of Nepal, with little access except by light aircraft.

The Cessna Caravan freighter departed the Surkhet airport for Simikot at 6:12 a.m., a flight expected to take about 45 minutes. Due to the lack of witnesses and reporting stations in the vicinity, weather conditions at the time of the accident remain unknown.

FINAL REPORTS

Runway Collision Tied to Flaws in Notam System

HAWKER 400, DEC. 23, 2015, TELLURIDE, COLORADO

Weaknesses in the systems used to disseminate Notices to Airmen (Notams) contributed significantly to the ground collision between a Mexican-registered Hawker 400 and a snowplow, the NTSB concluded. The Board pointed to technical shortcomings that allow newly issued Notams—in this case, one closing the airport for snow removal—to escape the attention of air traffic controllers. The accident flight was cleared for an instrument approach eight minutes after airport staff issued a Notam closing the field. The jet struck the snowplow from behind during its landing roll, separating the airplane's right wing but causing only minor damage to the plow. There were no injuries to the two pilots, five passengers, or snowplow operator.

The closure Notam was posted via computer two minutes after the approach controller, whose workload was described as "heavy," asked the flight crew whether they had current weather and Notam information and provided vectors for their arrival. The NTSB's report noted that while Notams immediately became available to the controller, his display system did not automatically alert him of new Notams affecting the airports in his sector. Instead, the controller would have had to switch his display to a different screen, not practical while working multiple arrivals and departures at several fields. Before installation of the current system, airport operators had notified ATC of airport or runway closures by telephone.

Also contributing to the accident was the pilots' failure to change to the airport's Common Traffic Advisory Frequency and request traffic advisories after canceling their IFR flight plan.

Open Hatch, Pilot Distraction Blamed for Meridian Crash

PIPER PA-46-500TP, DEC. 24, 2015, CORINTH, MISSISSIPPI

A pilot distracted by an open access hatch on the engine cowling stalled the single-engine turboprop while attempting to turn back to the runway, according to the NTSB. The access door on the right side of the cowling had been left open by an airport lineman "as he always did" after disconnecting the aircraft from a battery charger; the pilot should have closed and latched it during his preflight inspection. The pilot and his daughter escaped with minor injuries after the airplane hit a tree and crashed into the yard of a vacant house. His wife and their daughter-in-law were knocked unconscious, and the daughter-in-law later succumbed to head injuries.

The pilot reported reducing power after seeing the door "flopping up and down," only to have it open completely during a left turn to crosswind. At that point, he said, the airplane would not maintain altitude with full power, so he "put the nose back down." A witness described the airplane flying "real slow" with its wings "wagging" before the left wing dropped and it fell into the trees. Data recovered from the airplane's avionics suite showed it reaching a maximum speed of 102 knots at an altitude of 507 feet, then slowing to 80 knots as it entered a 45-degree left bank. The landing gear remained down and locked. The manufacturer's test flight data showed that with the landing gear down and the flaps in the 10-degree takeoff position, the airplane would stall at 79 knots in a wings-level attitude and 95 knots in a 45-degree bank.

A checklist found by the pilot's rudder pedals had been issued by a simulator training provider and was not authorized for use in the aircraft. Its only reference to the aircraft's exterior read, "EXTERIOR PREFLIGHT...COMPLETE." A detailed checklist for the preflight inspection appears in the Pilot's Operating Handbook, which was found in the cabinet behind the pilot's seat. The pilot's daughter-in-law, who had been in the left rear seat, was found on the floor between the rear and middle seat rows. Her seat belt was unlatched with no indication of strain or damage.

Helicopter Pilot Failed To Reverse Course

AEROSPATIALE AS355F1, MARCH 29, 2017, SNOWDONIA, WALES

Echoing the findings of Britain's Air Accidents Investigation Branch, a coroner's inquest in Caernarfon, Gwynedd, confirmed that the pilot of the privately owned Twin Squirrel helicopter flew into clouds while approaching a mountainside rather than changing course to remain in visual conditions. Businessman Kevin Burke; his wife, Ruth; his brothers Donald and Barry; and Donald's wife, Sharon, were killed instantly when his helicopter hit the southeast face of the Rhynog Fawr mountain at an elevation of 2,060 feet, about 300 feet below its summit. The family was traveling from Bedfordshire to the Weston Airport; their aircraft was reported missing after they did not arrive as expected.

Burke held a private pilot license with night rating and had an estimated 3,650 hours of flight experience. He was not IFR-qualified, but during his most recent license proficiency check he had demonstrated his ability to maintain altitude while making turns without visual references, simulating an escape from inadvertent entry into instrument conditions. The helicopter was not equipped with a terrain awareness and warning system, and the terrain alerting function on its Garmin 430 GPS had never been installed. The published maximum elevation figure for the area of the accident site was 3,300 feet.

A GPS-derived altitude profile showed the helicopter staying below 1,500 feet until it had passed abeam the Birmingham airport, consistent with the forecast and reported low ceilings near its point of departure. It climbed to a maximum altitude of 3,000 feet as it passed the RAF base at Shawbury, then began a gradual descent that accelerated in the last five minutes before impact. A witness four miles from the scene saw it fly into the clouds.

Physical evidence indicated that the aircraft was under control of the autopilot at the moment of impact. The AAIB suggested that Burke's last sight of the ground might have been over lower terrain and that a failure to monitor his position on either the panel-mounted GPS or the aviation applications on his iPad would have left him unaware of the ridges just ahead. Northwest Wales coroner Dewi Pritchard Jones added, "Unfortunately the vertical profile shows the aircraft descending to a height where it was virtually inevitable it would collide with one of the ridges in that area."

Pilatus Oil Loss Traced to Incorrect Seal Installation

PILATUS PC-12, AUG. 7, 2017, MEEKATHARRA, WESTERN AUSTRALIA

A maintenance technician's reliance on his memory of the disassembly and the Pratt & Whitney Canada illustrated parts catalog rather than the maintenance manual led him to install parts in the wrong order, causing failure of the propeller shaft seal shortly after takeoff. The Royal Flying Doctor Service air ambulance flight returned to land safely at the Meekatharra Airport after the pilot noticed a spray of oil on the windshield during climb-out. The leakage increased enough to obscure his forward vision during the final approach to landing.

Investigators for the Australian Transport Safety Board found that the technician had installed a half-flat spacer forward of the seal instead of aft, exposing the seal to accelerated wear from direct contact with the seal runner. The investigation confirmed that the parts catalog was not intended to serve as a reference for seal replacement and did not show the parts in their actual installed positions.

Fatigue on the part of the technician, who had worked 23 of the preceding 27 days and acknowledged sleeping poorly the night before performing the work, may also have contributed. The seal replacement was initiated after consultation with a supervisor to correct an earlier oil leak whose source could not be identified. ■

Fund an Angel Cocktail Reception

Wednesday, October 17TH | 6-8 P.M. | Hilton Orlando

The Fund an Angel Cocktail Reception, formerly the NBAA/CAN Soiree, will be an invaluable networking event at the NBAA Business Aviation Convention & Exhibition. The reception will feature cocktails, passed hors d'oeuvres, and live and silent auctions. Proceeds will benefit Corporate Angel Network, which organizes flights for cancer patients to treatment centers that help bring them closer to a cure.

"Corporate Angel Network has helped to open up trials and treatments for Ava that we otherwise could not afford. We are so blessed to have them on her team. They help to make sure that she gets the medical care that she needs."

-Ava's Parents

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Executive AirShare adds base in metro Denver

by Matt Thurber

Executive AirShare has opened a new operations base at Denver-area Centennial Airport, housed at the XJet Denver FBO. The new location is Executive AirShare's western-most base and reflects growing customer interest in the company's fractional-share, charter, and aircraft management services in the Denver area.

"It was one of our top five destinations across the business," said Executive AirShare president and CEO John Owen. "It just made natural sense to set up operations there."

As an operations base, the Denver location will house customer service specialists, pilots, and maintenance technicians to serve that region, as well as managed aircraft. The company also announced that it hired former VistaJet v-p of sales Lee Richards as sales director, and he will have offices at the Denver location.

The Executive AirShare fleet totals nearly 50 turboprops and jets, primarily Phenom 100s and 300s plus Citation CJ2+s, a Learjet 45XR, and King Air 350s. About 20 of the fleet are managed aircraft, and the rest serve owners of fractional shares.

The Denver location is Executive AirShare's ninth operations base, and most are in the central U.S., with the eastern-most in Buffalo, New York. The fleet floats among the bases, although managed aircraft are primarily located at one of the operations bases, with some located elsewhere.

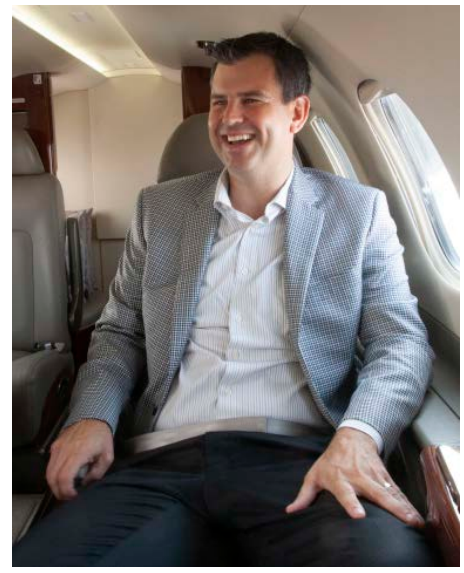
In Denver, Owen said, "We'll start building a customer base for that area, but we'll operate from Centennial to where we'll do more flights from there instead of that being a destination."

Robert Cohen, Denver-based chairman and CEO of IMA Financial Group, is the launch customer for Denver and owns a share of a Phenom 300. "He started with us in Wichita and has been growing with us in the last decade," said Owen.

Occupied-days Model

Executive AirShare's fractional-share business model differs from that of typical shared-ownership operations, in that it sells shares with associated numbers of occupied days instead of hours. A shareowner can thus schedule their aircraft for a roundtrip and stay in the same aircraft instead of flying one-way somewhere then one-way back. The hourly rate for roundtrips is about 40 percent lower, Owen explained, so owners save a significant amount if the trip warrants sticking with the same aircraft, he said, "because they don't have to pay for all that deadhead time." For example, during an out-and-back trip, an owner would pay $1,800 per hour, but if it were a one-way trip, the hourly rate would be $3,000 per hour.

"We are competitive on the one-way trips," Owen said, "but extremely cost efficient on roundtrip legs, which is where the model is centered. If the customer hits up multiple locations or does a roundtrip within a day or two, our costs are significantly lower than others we're compared to." Shareowners can also interchange within the fleet, moving into a smaller or larger airplane when needed.



"[Denver] was one of our top five destinations across the business. It just made natural sense to set up operations there."

– Executive AirShare president/CEO John Owen

The Executive AirShare model works because of its nine operations bases and the local regions that they serve, which means that it doesn't need to fly empty airplanes all over the U.S. to serve a distant customer. "We will do that if you need to," he said, "but that's not what the model is based on." The model also benefits pilots, who end up flying more out-and-back trips and spend less time away from home. "Our pilots love that they are home more often due to our day-based model," he said.

Executive AirShare, which is headquartered in Lenexa, Kansas, is also an Embraer authorized service center, so it does most of the maintenance on its Phenom 100s and 300s. "We do like the size and mix of our fleet," Owen said, "but we continue to analyze both fleet types and the size of our fleet to ensure that we are continuing to offer aircraft that our customers need and like. There are thoughts of expanding into other aircraft at some point, but we're not sure what that may be." ■

by Gordon Gilbert

Within 6 Months

July 30, 2018 **NEW**

Temporary Non-aviation Use of Airports

The FAA has published a proposed update of its policy regarding obtaining approval for temporarily closing a federally obligated airport for a non-aeronautical purpose. Such nonaviation occurrences might be a car-show/races/testing, county fairs, parades, sporting events, flea markets, charitable events, and even model airplane flying. The proposed policy statement describes the process and criteria for the agency to evaluate airport closure requests, and the required contents of an airport operator's request for approval. Comments are due July 30.

Sept. 30, 2018

Part 91 Revised CPDLC Deadline

The FAA extended its deadline for Part 91 operators to receive revised authorizations for using controller pilot datalink communications (CPDLC), although operators hoping to take advantage of reduced spacing along certain North Atlantic Tracks (NAT) must also be in compliance with ICAO's performance-based communications and surveillance (PBCS) requirements. The new deadline is Sept. 30, 2018 to provide additional time for the agency to process revised LOA applications. While the FAA's datalink deadline is separate from the PBCS mandate, the two are linked through use of CPDLC.

Nov. 8, 2018

15-minute 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 on November 8. 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 Malaysia Airlines Flight MH370 on March 8, 2014.

Nov. 8, 2018 **NEW**

Australia: Minimum Fuel Rules

New rules covering minimum fuel requirements for all Australian aircraft start on Nov. 8, 2018. The rules re-introduce a 30-minute fixed fuel reserve requirement, reduce reserve requirements for day VFR operations in small piston or turboprop airplanes, require pilots to conduct in-flight fuel management with regular fuel quantity checks and if required declare "mayday fuel," and introduce "additional fuel," which simplifies the planning requirements for fuel contingencies. The changes more closely align Australian fuel rules with U.S. standards and ICAO recommended practices.

Jan. 1, 2019

Cockpit Voice Recorders and Underwater Locators

The European Aviation Safety Agency (EASA) will require upgraded CVRs and underwater locating devices (ULDs). New ULDs must be capable of transmitting for at least 90 days instead of 30 days. By Jan. 1, 2019, airplanes with an mtow of at least 59,500 pounds with more than 19 passenger seats and performing transoceanic flights must be retrofitted with an additional ULD with "very long detection range." Also by Jan. 1, 2019, all CVRs with a 30-minute recording duration must be replaced by units with two-hour recording capability. Additionally, CVRs recording on magnetic tape must be replaced by solid-state units.

Jan. 31, 2019

Canada: CRM Requirements

Transport Canada has introduced so-called "contemporary" crew resource management (CRM) training standards applicable to commercial aircraft operations, including air taxis. The new requirements go into effect Jan. 31, 2019. This latest iteration of CRM now includes the concept of threat and error management (TEM). TEM "advocates the careful analysis of potential hazards and taking the appropriate steps to avoid, trap, or mitigate threats and manage errors before they lead to an undesired aircraft state."

Beyond 12 Months

Jan. 1, 2020 and June 7, 2020

ADS-B Out Mandates

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, and in Taiwan IFR airspace above FL290. The ADS-B Out retrofit requirement in Europe takes effect June 7, 2020.

Jan. 1, 2021 Stage 5 Noise Rules

Effective Jan. 1, 2021 more stringent noise certification rules apply for new type certificates for airplanes less than 121,254 pounds. The new rule, known as Stage 5, is intended only for newly designed airplanes and is not aimed at phasing out the existing noise standards that apply to the production or operation of current models. ■

Compiled by Alexa Rexroth

ALLEN GOAD

FLORENT CHAUVANCY

GIUSEPPE CURCI

COLLEEN KELLY

Allen Goad has been named president of *Twin Commander Aircraft*. Goad, who has more than 20 years of experience, was also tapped as president of aerospace technology for parent company H-D Advanced Manufacturing.

Florent Chauvancy has been appointed executive vice president of OEM sales at *Safran Helicopter Engines*. Chauvancy was previously vice president for heavy helicopter engine programs at the company. Safran also appointed **Giuseppe Curci** executive vice president of finance and administration. Curci previously served as financial controller for the company.

Colleen Kelly has been appointed vice president of talent acquisition at *Mente Group*. Kelly previously served as vice president of client and talent relations at Aviation Personnel International.

Ametek MRO has appointed **Jeff Chalupa** to the position of division vice president and business manager for the Midwest. Chalupa previously served as vice president of operations and program management at Nordam.

Wheels Up named **Eric Jacobs** its new chief financial officer. Jacobs has more than 15 years of senior executive leadership experience.

Ronald Cinnella was appointed chief financial officer of *Alerion Aviation*. Cinnella previously served as CFO and controller at Jet Aviation.

Nomad Aviation has appointed **Christof Aregger** its chief financial officer. Aregger previously served as a partner and management board member at Swiss Aviators.

Desert Jet has appointed **Toby Benenson** its chief operating officer. Benenson will be accountable for overall strategic direction and leadership of the company's internal and external processes. **Art Dawley** was hired by Desert Jet as vice president of operations after previously serving as Wyvern's chief executive officer. Desert Jet has also hired **Joe Madrid** as director of the company's charter sales.

SmartSky Networks has named **Nancy Walker** chief commercial officer. Walker has more than 30 years of aerospace technology and IFC experience.

Dr. Adam Rasheed has taken the role of chief product officer with the *Sentient Science* executive team. Rasheed previously served as the digital technology leader at the Baker Hughes GE Oil and Gas Technology Center and has been recognized by *MIT Technology Review Magazin*e as one of the world's top 35 innovators.

Metro Aviation announced **Brian Bihler** as the new rotor wing chief pilot and **Alan VanDoren** as the company's new assistant chief pilot. Bihler joined Metro in 2009 and previously served with the Charlotte (North Carolina) Police Department aviation unit. VanDoren has worked for Metro since 2017 as a Part 135 instructor and check airman.

Pam Day is the new director of FBO services at *Jet Aviation*'s Bedford, Massachusetts location. Day joined Jet Aviation in 2017 and has 30 years of customer service and operations experience.

Mike Hogan has joined *jetAviva* as sales director for the King Air product line. Hogan is a 5,000-hour ATP and is based in the Washington, D.C. area.

Guardian Flight has appointed **Jared Sherman** Alaska executive director. Sherman has held senior leadership positions in Alaska, with extensive air medical management experience in the state.

Cutter Aviation promoted **Mark Wilson** to Pilatus program director. Wilson most recently served as Cutter's senior business analyst.

Hunt and Palmer named **Karen Farquharson** director of business development. Farquharson, who most recently worked in senior management for Xtra Airways, brings more than 20 years of charter airline experience to the role.

Guardian Jet brought **Mick Baumann** on board as director of maintenance. Baumann previously served as an avionics technician for UTFlight and as a member of the AOG team at Bombardier Business Aircraft's Hartford service center.

Henry Kim is the new *Bombardier Business Aircraft* sales director for New Jersey, New York, and Delaware.

Greg Laab has been appointed the new director of maintenance for *Gemini Air Group*. Laab will serve the company's Part 145 MRO.

Cutter Aviation named **Josh Kovac** its new Pilatus regional sales manager in Texas and Colorado.

FlightSafety International has named **Pete Nily** manager of the company's academy in Vero Beach, Florida. Nily joined the company in 1999 and served with the U.S. Navy Reserve for eight years before joining FlightSafety. The company has also promoted **Nancy Ritter** to manager of the FlightSafety learning center in Orlando, Florida. Ritter has served as manager of the company's academy since 2012.

Western Aircraft announced **John Petersen** as the company's new regional sales manager.

Elliott Aviation has hired **Brian Husa** as regional sales manager. Husa will be responsible for executing regional sales strategies in the Midwest.

West Star Aviation has named **Keith Schroeder** regional sales manager. Schroeder will be responsible for the Midwest territory.

John Spellmeyer has joined *Duncan Aviation* as the company's new regional avionics sales manager. Spellmeyer previously worked for Rockwell Collins and served 16 years in the United States Air Force. In addition, **Leah Lenardic** and **Rebekah Williams** have joined Duncan Aviation's aircraft sales and acquisitions team. Lenardic will supplement the seven-member team and will work in market research and sales support. **Dave Thompson** joined the company as team leader for the first dedicated Falcon team at the company's Provo, Utah facility.

Gary Corde has joined *Ametek PDS* as regional sales manager. Corde will provide coverage for the Northeast, upper Midwest, and Canada. ■

AWARDS and HONORS

FlightSafety International president and CEO **Bruce Whitman** and the Corporate Angel Network are among the seven individuals and organizations to be enshrined by the International Air and Space Hall of Fame at this year's induction celebration at the San Diego Air & Space Museum. The Hall of Fame has honored more than 200 air and space legends since 1963.

Honorees also include **Peggy Whitson**, the first female commander of the International Space Station; **Ellen Ochoa**, the first Hispanic woman to go into space; and **Brad Tilden**, chairman and CEO of Alaska Air Group. Pilots to be honored include **Lloyd "Fig" Newton**, the first African American pilot in the United States Air Force Thunderbirds; and **Richard I. Bong**, America's Ace of Aces and Medal of Honor recipient. The Air Charity Network will also be enshrined.

Rob Mark will be bestowed with the Wright Brothers Master Pilot Award for 50 years of safe flying. Mark has been a pilot, flight instructor, air traffic controller, and writer.

Bill Ayer was presented with Angel Flight West's Endeavor Award. Ayer is the chairman emeritus of Alaska Airlines and a member of NBAA's board of directors. ■

FINAL FLIGHTS

Long-time business aviation executive **John Rahilly** died May 24 at his home in Southport, North Carolina, after a battle with brain cancer. He was 68. Rahilly had an aviation career that spanned more than 40 years and led him to senior roles at companies such as Canadair, K-C Aviation, Dassault Falcon Jet, and, most recently, Global Jet Services.

Born Sept. 8, 1949, in Dorchester, Massachusetts, just outside of Boston, Rahilly obtained his degree in aeronautical technology from the Wentworth Institute. During that time he met Linda Bartlett, who became his wife of 48 years.

After graduation he joined the U.S. Navy, becoming an anti-submarine warfare technician. He subsequently earned his FAA airframe & powerplant certificate from Northrop Institute in California and began his business aviation career with Canadair (now Bombardier) in Hartford, Connecticut.

He later joined K-C Aviation in Dallas, where he took on roles of increasing responsibility, eventually becoming president. He stayed on with Gulfstream after it acquired K-C Aviation before moving over to BBA Aviation as vice president of technical services, responsible for Signature Flight Support's regional maintenance centers. His career then led him to Mercury Air Centers, where he became vice president of operations, and subsequently to Dassault Falcon Jet as vice president of sales and marketing. In 2009 he took a role with Alto Aviation before semi-retiring a year later and becoming an instructor with Global Jet Services, specializing in professional development courses.

"All of us at Global Jet Services are eternally grateful for his time with us and the sharing of his skills and aviation experience with his audience," the company said. "John touched countless lives."

Through NBAA, the family has created a John F. Rahilly Memorial Scholarship for Future A&P Technicians. Donations can be sent to NBAA at 1200 G St. NW, Suite 100, Washington, D.C. 20005.

Karl Detweiler, manager of accessories marketing and business development at Duncan Aviation, passed away on May 18. Detweiler worked at Duncan for nearly 22 years and provided marketing expertise, business development, technical support, and development of FAA-approved repairs for aircraft component repair and overhaul. ■

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JULY

U.S. AIRCRAFT EXPO... July 13-14, TAC Air, Englewood, CO. Info: leslie.barto@usaircraftexpo.com; https://usaircraftexpo.com/locations/kapa.

FARNBOROUGH INTERNATIONAL AIRSHOW... July 16-22, Show Centre, ETPS Rd, Farnborough, England. Info: +44 (0) 1252 532800, enquiries@farnborough.com; www.farnboroughairshow.com/trade/.

EAA AIRVENTURE... July 23-29, Wittman Regional Airport, Oshkosh, WI. Info: www.eaa.org.

FLIGHT SAFETY'S 6TH ANNUAL NETWORKING DINNER AND SILENT AUCTION... July 26, National Press Club, Washington, D.C. Info: solorzano@flightsafety.org; https://flightsafety.org/event/6th-annual-networking-dinner/.

AUGUST

LATIN AMERICAN BUSINESS AVIATION CONVENTION & EXHIBITION... August 14-16, São Paulo, Brazil. Info: www.abag.org.br/labace2017.

2018 ORBAA GOLF OUTING... August 16, Medina Country Club, Medina, OH. Info: info@orbaa.org; http://www.orbaa.org/event-2853920.

U.S. AIRCRAFT EXPO... August 17- 18, Clay Lacy, Seattle, WA. Info: leslie.barto@usaircraftexpo.com; https://usaircraftexpo.com/locations/kbfi.

INTERNATIONAL AVIATION FORECAST SUMMIT... August 19-21, Hyatt Regency, Denver, CO. Info: http://aviationforecastsummit.com.

AEA PITOT STATIC & TRANSPONDER CERTIFICATION TRAINING WITH ADS-C IMPLEMENTATION SESSION... August 23, AEA headquarters, Lee's Summit, MO. Info: info@aea.net; www.aea.net/Training/courses/pitotstatic.

NTBAA SAFETY SHOWDOWN... August 23-24, Addison Conference Centre, Addison, TX. Info: ntbaa08@gmail.com; http://ntbaa.wildapricot.org/SafetyShowDown.

AEA RVSM MAINTENANCE... August 24, AEA Headquarters, Lee's Summit, MO. Info: info@aea.net; www.aea.net/Training/courses/rvsm/.

GARMIN G500/G600 & GTN PILOT TRAINING... August 25-26, Garmin Headquarters, Olathe, Kansas. Info: aviation.training@garmin.com; http://newsroom.garmin.com/press-release/garmin-announces-new-2018-classroom-pilot-training-classes.

SEPTEMBER

NBAA REGIONAL FORUM... September 6, San Jose International Airport (SJC), San Jose, CA. Info: info@nbaa.org; www.nbaa.org/events/forums/2018sjc/.

U.S. AIRCRAFT EXPO... September 7-8, Lyon Air Museum, Santa Ana, CA. Info: leslie.barto@usaircraftexpo.com; https://usaircraftexpo.com/locations/kcld.

AEA EAST CONNECT CONFERENCE... September 12-13, DoubleTree by Hilton-Tampa Airport, Tampa, FL. Info: katier@aea.net; www.aea.net/connect/east/.

RUSSIAN BUSINESS AVIATION CONFERENCE & EXHIBITION... September 12-14, Moscow, Russia. Info: www.rubace.aero.

NATA GROUND HANDLING SAFETY SYMPOSIUM... September 18-19, NTSB Training Center, Asburn, VA. Info: events@nata.aero; http://nata.aero/Events/2018-NATA-Ground-Handling-Safety-Symposium.aspx.

TRANSACTIONAL SUPPORT & RISK MANAGEMENT SEMINAR... September 19, Copthorne Tara Hotel, London, UK. Info: info@everestevents.co.uk; https://everestevents.co.uk/event/transactional-support-risk-management-seminar-london-2018/.

AEA WEST CONNECT CONFERENCE... September 24-25, Grand Sierra Resort, Reno, NV. Info: katier@aea.net; www.aea.net/connect/west/.

REGIONAL AIRLINE ASSOCIATION ANNUAL CONVENTION... September 26-28, Long Beach, CA. Info: www.raa.org.

OCTOBER

COMMERCIAL UAV EXPO AMERICAS... October 1-3, Westgate Resort & Casino, Las Vegas, NV. Info: https://www.expouav.com/.

AEA CENTRAL CONNECT CONFERENCE... October 3-4, Hilton Kansas City Airport, Kansas City, MO. Info: katier@aea.net; http://www.aea.net/connect/central/.

NBAA BUSINESS AVIATION CONVENTION & EXHIBITION... October 16-18, Orange County Convention Center, Orlando, FL. Info: (202) 783-9000; www.nbaa.org.

2018 ROTORCRAFT SAFETY CONFERENCE... October 23-25, Hurst Conference Center, Hurst, TX. Info: eugene.trainor@faa.gov; http://faahelisafety.org.

IAWA 30TH ANNUAL CONFERENCE... October 24-26, South's Grand Hotel, The Peabody Memphis, Memphis, TN. Info: info@iawa.org; https://iawa.org/30th-annual-conference/.

BOMBARDIER SAFETY STANDDOWN... October 30-November 1, Hyatt Regency Hotel, Wichita, KS. Info: www.safetystanddown.com.

NOVEMBER

GARMIN PILOT TRAINING CLASSES... November 1-2, Robinson Helicopter Company, Torrance, CA. Info: aviation.training@garmin.com; http://newsroom.garmin.com/press-release/garmin-announces-new-2018-classroom-pilot-training-classes.

AEA SOUTH PACIFIC CONNECT CONFERENCE... November 5-6, Sheraton Grand Mirage Hotel, Gold Coast, Australia. Info: debbiem@aea.net; http://www.aea.net/connect/southpacific/.

AEROSPACE SYSTEMS AND TECHNOLOGY CONFERENCE... November 6-8, Radisson Blu Edwardian Heathrow Hotel, Middlesex, U.K. Info: EUevents@sae.org; http://astc18.org/.

US AIRCRAFT EXPO... November 9-10, Ross Aviation, Scottsdale, AZ. Info: leslie.barto@usaircraftexpo.com; https://usaircraftexpo.com/locations/ksdl.

71ST INTERNATIONAL AIR SAFETY SUMMIT... November 12-14, Seattle, WA. Info: solorzano@flightsafety.org; https://flightsafety.org/event/iass2018/.

IBERIAN PENINSULA BUSINESS AVIATION CONFERENCE AND EXPO... November 15, Hotel Puerta América, Madrid, Spain. Info: info@interflightglobal.com; https://www.ipbace.com/.

AIRCRAFT ECONOMIC LIFE SUMMIT 2018... November 20, The Gibson Hotel, Dublin, Ireland. Info: info@everestevents.co.uk; https://everestevents.co.uk/event/aircraft-economic-life-summit-2017-2/.

DECEMBER

AIRCRAFT ACQUISITION PLANNING SEMINAR... December 4, Scottsdale, AZ. Info: www.conklindd.com.

MIDDLE EAST BUSINESS AVIATION ASSOCIATION SHOW... December 10-12, Dubai World Trade Center, Dubai, United Arab Emirates. Info: http://www.mebaa.aero/.

Indicates events at which **AIN** will publish on-site issues or distribute special reports.

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