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The rollout of Dassault's super-midsize, wide-cabin Falcon 6X took place on schedule on December 8 but was done as a "virtual" rollout in an online ceremony due to Covid-19 restrictions. The program remains on track, with preparations now well underway for first flight in the coming months.

Falcon 6X debuts in virtual rollout

by Matt Thurber

Inside Charles Lindbergh Hall at Dassault Aviation's Bordeaux-Mérignac final-assembly facility in France, Dassault faced the constraints of the coronavirus pandemic head-on and rolled out the super-midsize, wide-cabin Falcon 6X on December 8 during an online ceremony broadcast live on YouTube—a first for a business jet program. The event, featuring Dassault Aviation chairman and CEO Eric Trappier, was hosted by pilot and broadcasting veteran Miles O'Brien.

"Instead of violins and Versailles, the virus has put us in the virtual world," O'Brien said. "But that in no way diminishes the excitement we have for the accomplishment we herald today. Mérignac is a special, magical place. This is where Falcons come together and first take flight." More than 10,000 Dassault aircraft, both military and civil, have been manufactured here, including 2,600 Falcons. "In this corner of Bordeaux," he said, "the beautiful, bold vintages never stop improving. The Falcon 6X is just the latest baby, the best and brightest, of course, to hatch from this high-tech nest."

"[The] rollout is a significant achievement," Trappier said. "I am very pleased to present the addition of an all-new aircraft design within the Falcon family, the ultra widebody Falcon 6X."

He explained the key goals of the program, first being efficiency. "Number two is comfort. It's something which is important for us. The 6X is going to be 5,500 nm range, LA to Moscow...but what is great with the 6X is the roomy fuselage, it gives this cabin great comfort. By keeping the flexibility of all our Falcons, that is very important for our customers. Safety is something which is over everything. Thanks to the flight control system, we have a very safe aircraft. Thanks also to the flight control system, we have a very smooth flight, and that is also good for the passengers."

The 6X program remains on track for first flight—which will be hull number three, the one rolled out—in early 2021, and certification and entry into service will follow in 2022. Next steps for the 6X are ground testing and systems checks.

During the rollout ceremony, Trappier

› continues on page 32

Read Our **SPECIAL REPORT**

AIN TOP FLIGHT AWARDS WINNERS 2020

› page 20


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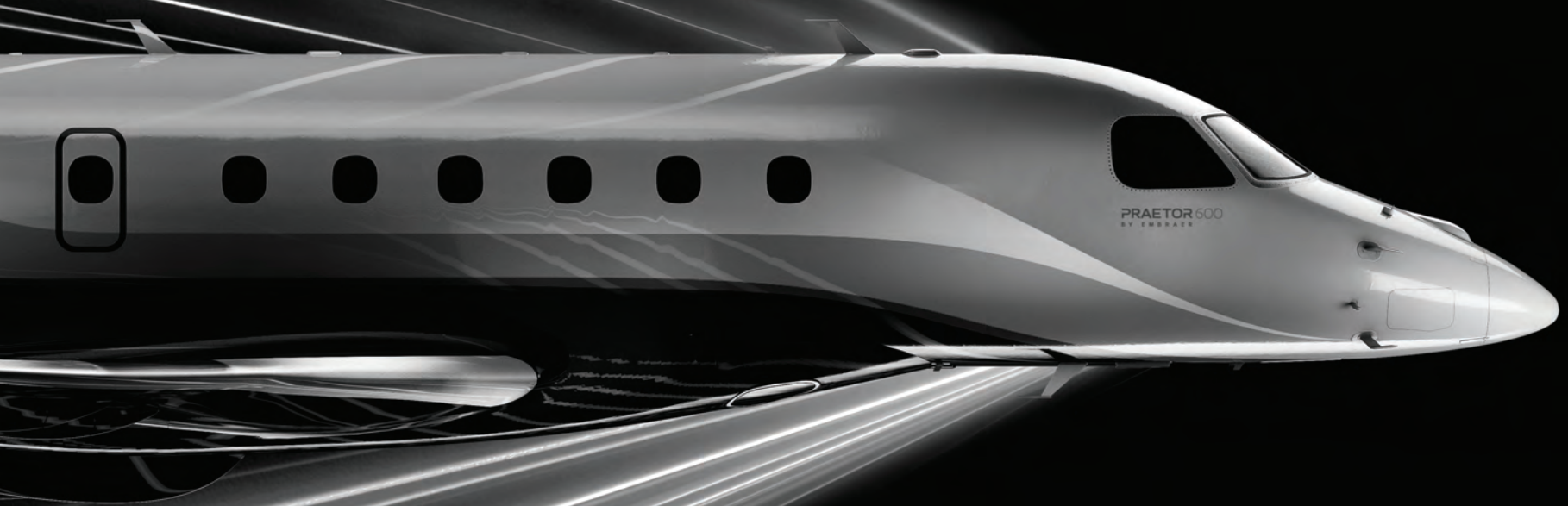

LEADING THE WAY

PRAETOR 600

BY EMBRAER

INSIDE this issue

26


10

16


20

SPECIAL REPORT

The 2020 AIN Top Flight Awards Winners.

Important Events Note

While there have been many cancellations and postponements of important events during the Covid-19 crisis, **AIN** remains committed to covering the business aviation industry. Please send any news and press releases, especially related to events you had been planning to attend, to ctrautvetter@ainonline.com and we will endeavor to help share your news.

Correction: In the December 2020 issue's Top Flight Awards nominations story (page 34), the OEM brand names of the Garmin Autoland system were incorrectly listed. The correct names are: Cirrus Vision G2 (Safe Return) and Daher TBM 940 (HomeSafe).

Aviation International News

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As We Go To Press

BIZAV GROUPS WORLDWIDE UNITE IN ILLEGAL CHARTER BATTLE

Concerned that illegal charter remains a threat to the industry, a dozen business aviation organizations are uniting in their effort to combat the practice through the creation of a new Air Charter Safety Alliance (ACSA). Through ACSA, the organizations will collaborate on raising awareness about illegal charters for potential customers, charter brokers, ministries of transport, and national aviation organizations.

The issue has been a top priority for ACSA members, which have worked both individually and collaboratively on various initiatives to fight illegal charter. Over the next three months, the organizations will work together to create an online platform on the issue, launch an education campaign on the dangers of illegal charter, and collaborate on best practices.

The coalition consists of the Associação Brasileira de Aviação Geral, Air Charter Association, African Business Aviation Association, Asian Business Aviation Association, Business Aircraft Operators Association, British Business & General Aviation Association, European Business Aviation Association, French Business Aviation Association (EBAA France), International Business Aviation Council, the Middle East & North Africa Business Aviation Association, National Air Transportation Association, and NBAA.

GULFSTREAM'S G600 ENTERS EUROPEAN MARKET

Gulfstream handed over the first European Union Aviation Safety Agency-certified G600 ultra-long-range jet to an undisclosed customer, the Savannah, Georgia-based airframer announced in December. The ultra-long-range model, which can travel 6,600 nm under a recently announced range boost, had received European validation in May, not quite a year after the FAA awarded type certification. The company delivered the initial G600 in August 2019.

The delivery to a European customer marks an expansion of the global fleet, Gulfstream noted. In addition to the FAA and EASA, the G600 has received approval from aviation agencies in Bermuda, the Cayman Islands, the Isle of Man, San Marino, and Mexico.

AEA SLIDES ANNUAL CONVENTION FROM MARCH TO JUNE

With the start of distribution of the Covid vaccine taking place this week, the Aircraft Electronics Association (AEA) has hedged its bets by moving back the date for its 64th annual convention. Originally slated to take place starting on March 15, 2021, the three-day event is now scheduled for June 22-25 and will remain in Dallas at the Hilton Anatole.

According to the AEA, all convention attendee registrations and exhibitor contracts previously transacted will be automatically moved to the new dates, and no further action is required. For those who have not yet registered, the trade organization has accordingly extended the deadline for early-bird registrations from Dec. 31, 2020, until March 31, 2021.

"In consultation with hotel and health officials in Dallas, we have decided to move the event dates to allow more time for Covid-19 vaccinations and for the possibility of fewer travel restrictions," said AEA president and CEO Mike Adamson.

JSX SUES JOHN WAYNE AIRPORT TO PROVIDE AIR SERVICE

JSX has filed a lawsuit in U.S. Central District Court-Southern Division against Orange County, California, and John Wayne Airport (SNA) director Barry Rondinella to stop their efforts at preventing the company from operating at one of its top three markets. In September, the Orange County board of supervisors approved new FBO lease agreements with ACI Jet and Clay Lacy Aviation that effectively shut out JSX from operating its business model of "hop-on jet service" at SNA but left open the ability to conduct traditional airline operations.

JSX alleges in the lawsuit that despite assurances from Rondinella that it would be awarded passenger allocations at SNA in 2021, JSX was informed in a November 19 letter that the company would no longer be allowed to operate from the airport effective January 1. An airport spokeswoman said the county is reviewing the lawsuit and its allegations and has no comment.

CEO Alex Wilcox said he believes SNA's so-called Access Plan that would prevent JSX's operations there violates FAA and other federal government funding the airport receives.

DFJ, EMBRAER REPORT CYBERATTACKS

Dassault and Embraer both recently reported cyberattacks.

The Dassault Falcon Jet division, which markets and supports the Falcon family of business jets in the Americas, stated that certain of its IT systems had suffered a cyberattack on Monday, December 7. "DFJ immediately initiated procedures to investigate and remediate the event and has proactively isolated some of its systems to further protect them," the company said.

The report came 11 days after Embraer issued a statement that it had suffered a cyberattack resulting in the disclosure of certain data. That attack actually occurred on November 30, and Embraer said it had to isolate certain systems to protect the overall network.

FAA moves fast on vaccine approval and shipment

by Chad Trautvetter and Kerry Lynch

In immediately approving the use of the Pfizer-BioNTech Covid-19 vaccine following the U.S. Food and Drug Administration's emergency-use authorization, the FAA calmed growing concerns within the pilot community about the potential threat to their medical certificates should they get vaccinated against the pervasive virus.

The day after the FDA had announced emergency-use authorization on late Friday, December 11, the FAA issued its announcement that pilots can receive the vaccine under the conditions of their FAA-issued airman medical certification. In addition, the agency said, FAA air traffic controllers subject to FAA medical clearance can also receive the vaccine.

However, these pilots and controllers "with medical certifications or medical clearances" must wait 48 hours following the administration of this vaccine before conducting safety-sensitive aviation duties, meaning flying or controlling air traffic. This waiting period applies after each dose—the Pfizer vaccine requires two doses, 21 days apart for maximum effectiveness.

"The FAA anticipates taking no additional measures to ensure safety after the initial window for side effects closes," it said. "However, the agency's medical professionals will continuously monitor the initial distribution of the novel vaccine and documented clinical results and will adjust these recommendations as needed."

The FAA notice, which came on a Saturday, marked an unusual step for the agency, which typically takes up to a year before adding new vaccines to its approved list. Given the nature of the pandemic and recognizing the urgency, the FAA made good on its promise to take swift action.

FAA Monitoring

In the weeks leading up to the vaccine approval, the FAA issued a statement that it was "closely monitoring the active vaccine trials and awaiting the outcome of the [FDA] committee's scheduled meeting." That statement came as numerous pilots had expressed their concerns on chat boards and through outreach to a number of aviation associations.

"We are grateful to the FAA for taking this immediate and proactive step to address medical certification concerns related to Covid-19 vaccinations that will aid in keeping the aviation industry moving forward," said NBAA president and CEO Ed Bolen after the announcement of the first vaccine approval. "[FAA] Administrator [Steve] Dickson's previous military and civilian aviation experience continues to offer him unique insights on pilot-focused challenges, which in this case have proven astute."

The Pfizer-BioNTech vaccine was the first of many that have been on track for FDA review. Moderna's review was to follow a week later, and by mid-December more than a dozen other candidates were in final-stage trials.

FAA Evaluation

The FAA said it would evaluate vaccines as they receive FDA authorization and would similarly advise pilots and air traffic controllers of any waiting periods required for those vaccines.

The agency's approach to the vaccines follows its pattern of how it has handled other vaccines. John McGraw, v-p of regulatory affairs for the National Air Transportation Association, said the FAA has approached the Covid-19 virus, for the most part, as it has other viruses such as the flu. "So far what we've heard from the FAA has been consistent with how they've treated things in the past," he said.

The agency does recommend pilots schedule waiting periods after taking a vaccine, but "it is not a disqualifying event," he said, adding that unless there were something truly unique about a particular vaccine, "I would expect the FAA to take the same posture" as the vaccines come up for review. He cautioned, however, "You do have a responsibility that you do feel fit to fly."

The first batches of vaccines were shipped almost immediately, the initial one from Michigan's Gerald R. Ford International Airport on December 13.

Leading up to that flight—a FedEx shipment—air carriers worked in concert with the FAA on the safe handling and transport of the vaccine, including trial runs. The FAA in October had formed a Covid-19 Vaccine Air Transport Team to ensure the system was ready and more recently issued a Safety Alert for Operators cautioning that carriers need to take several extraordinary safety measures when preparing to transport vaccines at temperatures of minus 70 deg C.

"Our team is enabling these efforts scientifically and in a disciplined but innovative fashion, by using the safety risk management tools that are part of our safety management systems," Administrator Dickson told the Aero Club of Washington in December.

These efforts—from approving use to transporting the vaccine—do not stem from an "abstract concept for us," Dickson stressed. "We know it will save lives. The FAA is grieving the loss of several of our own from Covid-19. We honor their memories—and their families—by continuing the agency's important work, particularly as it relates to Covid-19 response and recovery and, now, vaccine distribution." ■

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In a deal that is expected to close in the first quarter of 2021, Joby Aviation is planning to acquire Uber Elevate, which Uber developed for the eVTOL air taxi market.

Joby to buy Uber Elevate urban air taxi platform

by Charles Alcock

Joby Aviation is acquiring Uber Elevate, taking on its ambitious plans to launch commercial air taxi services using eVTOL aircraft by 2023. Details of the purchase price and terms were not disclosed in an announcement made late on December 8.

As part of the deal, parent company Uber Technologies said it will invest a further $75 million in California-based Joby. Uber also disclosed it invested $50 million in Joby during a January 2020 Series C financing round, for a total of $125 million. Overall, Joby has now raised $820 million in funding. The transaction is expected to close in the first quarter of 2021, subject to regulatory review and completion of closing conditions.

Joby and Uber will integrate their respective services into each other's applications in a move that they say will enable "seamless integration between ground and air travel for future customers." Under plans being developed by Uber Elevate since 2016, the proposed "aerial ridesharing" services are expected to begin in Dallas and/or Los Angeles in 2023.

Uber's divestiture of Uber Elevate and the planned Uber Air service call into question the future involvement of the other named program partners: Aurora Flight Sciences (a Boeing subsidiary), Bell, Embraer, Hyundai, Jaunt Air Mobility, Overair (a spinoff from Karem Aircraft), and Pipistrel. It is understood that there are an additional two unnamed partners in the program and that one of these might include the UK's Vertical Aerospace.

Joby declined to provide any further details as to how it intends to deal with the other Uber Elevate partners, which are all developing rival eVTOL aircraft. **AIN** approached all of the confirmed partners for comment on how the deal will impact their involvement and future plans.

A spokeswoman for Pipistrel said the deal will not change the Slovenian company's plans. "We continue with our project of developing the eVTOL vehicle and we are constantly in communication with our other customers," she said.

Jaunt Air Mobility also indicated that it will press ahead with its four-passenger, all-electric aircraft that it intends to certify under existing FAA Part 29 rules for helicopters that will allow for all-weather operations. "Our business model has never been dependent on Uber as Uber never intended to purchase or operate aircraft," said the company's CEO Martin Peryea. "Our success and business model is based on our ability to perform and expand existing air service, certification requirements, knowledge of aircraft operations and pilot training, and acceptance by the consumer where safety is paramount."

He expressed regret at Uber's move to exclude other aircraft developers and seemingly limit choice for consumers, commenting: "We see this as a loss for all the stakeholders as Uber was able to bring a larger consortium to the forefront of critical audiences such as government entities and broader consumer input. Uber has stated that it will offer each aircraft operator access to their ride-sharing app that will allow customers to seamlessly hail rides between air taxi operations and ground transport."

Boeing indicated that it does not see the change of ownership at Uber Elevate altering its plans for the sector, which may already be reshaped following its announcement in September that it will close its Boeing NeXt advanced technology division. In addition to Aurora Flight Sciences, the U.S. aerospace group retains a stake in the Wisk joint venture with Kitty Hawk, which is developing the Cora eVTOL aircraft.

"Boeing continues to be focused on building the safe, reliable, and economical technologies that will enable the future of flight," said a spokeswoman. "Boeing subsidiary Aurora Flight Science's relationship with Uber Elevate was prior to their acquisition by Boeing and Aurora's work around urban air mobility is not affected by Uber Elevate's move."

Embraer also indicated that it will press ahead with plans for the urban air mobility sector through its newly created division called Eve. "We are just as enthusiastic as ever about the bright future we look forward to co-creating with the community and our partners, current and future," said the Brazilian company in a written response. "Eve is very well positioned to have a leadership role in this new market, leveraging Embraer capabilities as one of very few companies with a 50-year history in the aviation industry."

Joby is developing a four-seat model that will have a range of 150 miles and a top speed of 200 mph. The company appears to have plans for a larger vehicle designated S5.

According to individuals close to more than one of the other partners, Uber had previously given assurances that it would not directly invest in any one of these companies. It would appear that none of the partners were made aware of the previous investment into Joby. It further would appear that last week Uber informed some or all of the partners about the pending deal but that none of them have been informed as to how or when their existing memorandums of understanding with the group might be terminated.

"We were proud to partner with Uber Elevate last year and we're even prouder to be welcoming them into the Joby team today, while deepening our cooperation with Uber," said Joby Aviation founder and CEO JoeBen Bevirt. "The team at Uber Elevate has not only played an important role in our industry, they have also developed a remarkable set of software tools that build on more than a decade of experience enabling on-demand mobility. These tools and new team members will be invaluable to us as we accelerate our plans for commercial launch."

"Advanced air mobility has the potential to be exponentially positive for the environment and future generations," said Uber CEO Dara Khosrowshahi. "The deal allows us to deepen our partnership with Joby, the clear leader in this field, to accelerate the path to market for these technologies. We're excited for their transformational mobility solution to become available to millions of customers who rely on our platform."

Meanwhile, German eVTOL aircraft developer Volocopter, which has announced plans to launch air taxi services in Singapore, said its strategy is not impacted by the change in ownership of Uber Elevate because it is more focused on opportunities in Europe and Asia.

The company questioned Uber Elevate's commitment to a "vehicle-agnostic" approach to establishing urban air mobility services. "What happens to all the data that has been shared with and by Uber Elevate which we now know has been favoring a certain design," a company spokeswoman asked rhetorically. ■

FutureFlight

This story comes from FutureFlight.aero A resource developed by **AIN** to provide objective, independent coverage of new aviation technology, including electric aircraft developments.

News Briefs

JetNet iQ Survey Shows Industry Optimism

The business aviation industry remains optimistic despite the Covid-19 pandemic, according to the third-quarter JetNet iQ survey. JetNet iQ managing director Rolland Vincent noted that the survey's market sentiment response went from a -43 in the second quarter—the lowest score ever recorded in the survey's decade-long existence—to 4.8 by the third quarter. And partial fourth-quarter survey results showed a jump after the Covid-19 vaccine announcements. Vincent expects a 25 percent overall decline in business aircraft flying for 2020, reaching a total of 3.6 million cycles. That drop represents the lowest level of utilization since the global economic recession of 2008.

50,000th Pratt PT6 Engine Rolls Off Production Line

The 50,000th PT6 turboprop engine rolled off Pratt & Whitney's production line early last month. "From the first application more than 50 years ago, the now-iconic PT6 engine [has] more than 130 different applications today," said Irene Makris, v-p of sales and marketing at Pratt & Whitney. More than 25,000 PT6 engines are currently in service, and the total fleet has accumulated in excess of 410 million flight hours, according to Pratt & Whitney. The latest variant—the PT6 E-series—powers the Pilatus PC-12 NGX.

Consultant Assesses Green Credentials of Aircraft

ConnectSkies has launched its new aircraft acquisition consultancy aimed at helping customers choose environmentally sustainable options. The UK-based company, which has built a website to provide information and rate aircraft on their green credentials, is also planning to open a facility in central London to showcase new technology. Initially, ConnectSkies will focus on sales of existing aircraft that have relatively low carbon emissions and reduced fuel consumption. In the longer term, the company aims to work in partnership with developers of new electric aircraft and so-called advanced air mobility business models.

Five-blade Airbus H145 Gets FAA TC

Airbus's new five-blade H145 helicopter has received FAA type certification (TC) with the first U.S. delivery slated to occur early this year. The TC covers single-pilot instrument flight rules (IFR) and single-engine operations (Cat.A/VTOL), and night vision goggle capability. EASA certified the helicopter in June, and launch customer Norwegian Air Ambulance Foundation received the first production model in September. The new H145 variant adds a five-blade, bearingless main rotor system, increasing useful load by 330 pounds, simplifying maintenance, and delivering a smoother ride.

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The Beechcraft King Air 260's flight deck will share features introduced in the King Air 360.

Textron Aviation announces another King Air refresh

by Jerry Siebenmark

Textron Aviation unveiled the Beechcraft King Air 260, the latest King Air to receive a refresh with nearly all the same new features as the King Air 360, which the Wichita-based airframer announced in August. "We are bringing the latest technological advancements to the King Air 260 cockpit that not only bring greater ease of operation for pilots, they bring a whole new era of flying for this renowned aircraft," said Textron Aviation senior v-p of sales and flight operations Rob Scholl during the company's virtual news conference at VBACE.

Like the 360, the 260's flight deck will be equipped with Innovative Solutions & Support's (IS&S) ThrustSense Autothrottle, a digital pressurization controller, and Collins Aerospace's Multi-Scan RTA-4112 weather radar. "This system is widely regarded as one of the premium weather radar systems available," Scholl said. Newly designed seats created originally for the 360 through a pressure-mapping process that provides a more comfortable experience on longer flights complete the 260's upgrades.

Production of the 260 has begun, with certification and initial deliveries expected in early 2021. Its list price is $6.7 million.

On a related note, the company announced that it has obtained STCs for the IS&S ThrustSense Autothrottle on King Air 200s equipped with Pro Line Fusion avionics. The company also expects STC approval soon for King Air 300-series turboprops equipped with Pro Line 21 avionics.

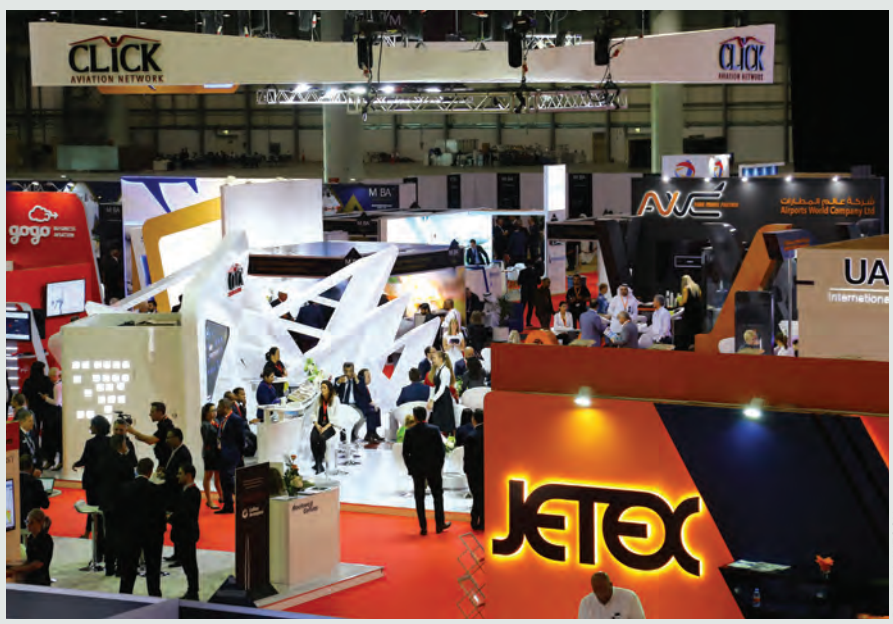
On the Cessna side of the Textron Aviation house, Scholl noted that its flagship Citation Longitude recently marked its one-year anniversary for type certification. As of the end of the third quarter, the company has delivered 22 Longitudes and the fleet has amassed more than 5,000 hours.

He added that the Longitude, along with all its other turbine aircraft, is capable of operating with sustainable aviation fuel (SAF). "And we are proud that our customers can choose to fuel with SAF when taking delivery of a new Beechcraft turboprop and Cessna turboprop and jet aircraft, or when departing from our Wichita service center as part of their service experience," Scholl said.

Lastly, he explained that production line flow on the newest Cessna airplane, the SkyCourier turboprop twin, will begin in early 2021, with FAA type certification anticipated later that year. While Scholl acknowledged Textron Aviation's other in-development turboprop, the Cessna Denali, he did not offer any update on its progress such as first flight. A spokeswoman reiterated the company was not commenting on a timeline for the turboprop single because it continues to wait for the safety-of-flight engine from GE Aviation. A GE Aviation spokesman told **AIN** delivery of the safety of flight engine is expected before the end of this year. ■

MEBAA show now canceled, organizer plans for 2022 Event

The Middle East & North Africa Business Aviation Association (MEBAA) has canceled its biennial MEBAA Show, which in September was postponed from early December to late February 2021 in the hopes that the Covid-19 outbreak would ease. "Due to concerns related to the ongoing Covid-19 pandemic and international travel restrictions imposed across numerous countries around the world, we believe this tough decision is in the best interests of the health and safety of exhibitors, visitors, contractors and staff," MEBAA founding and executive chairman Ali Ahmed Alnaqbi said in the announcement about the cancellation.



DAVID McINTOSH

The regional business aviation show was originally set to take place December 8 to 10 at the Dubai World Central airshow site and three months ago was rescheduled for Feb. 22 to 24, 2021 at the same venue. According to Alnaqbi, the next MEBAA Show will now be held in Dubai at the next regularly scheduled cycle, meaning December 2022.

"For the 2022 edition, we promise to come back bigger and better, bringing new initiatives that will add even more value to your participation at the MEBAA Show," he added. "These will include access to hours of thought-leadership seminars along with a pre-arranged meetings program to facilitate connection and networking between visitors and exhibitors." **C.T.**

News Briefs

Dassault Partners in Regional AI Competition

Dassault Aviation and Ile-de-France Region have kicked off the Paris Region Challenge AI for Industry competition, which focuses on ways to use artificial intelligence (AI) to improve Falcon business jet maintenance and fuel efficiency. This year's challenge involves using AI algorithms to develop virtual sensors capable of estimating local stress experienced by a Falcon jet using only aircraft instruments. The French airframer hopes the competition will serve to optimize Falcon maintenance programs and further development of lighter, fuel-efficient structures. Competing teams will comprise start-up companies and laboratories in and around Paris, about 10 of which will be selected by a panel of judges to submit a processing methodology based on the provided data.

Gogo Completes Commercial Aviation Sale to Intelsat

Air-to-ground connectivity provider Gogo last month closed on a previously announced $400 million cash sale of its commercial aviation business to Intelsat to focus exclusively on business aviation. The Broomfield, Colorado-based company will continue to be publicly traded and will use the proceeds of the sale to reduce its net debt and invest in its growth products such as Gogo 5G.

Collins Brings New Materials for Interior Veneers

Collins Aerospace Systems has developed a new environmentally-friendly lumber alternative, PrecisionPlank, that is designed to accurately color-match to business jet wood veneers. Unlike raw lumber, the board is free from knots, defects, and color variance "Typically, cabinet shops spend an incredible amount of time milling down raw lumber in the hopes of finding an exact board match. The amount of wasted lumber and man-hours is enormous," said Ian Webb, v-p of business development. Collins further noted that the lumber alternative can be available in as little as one week, compared with the nine- to 12-week lead time often necessary for composite lumber.

Tamarack Adds Third Installation Site

Tamarack Aerospace is expanding its capacity to handle increasing demand for winglet installations with the addition of a "transformation center" at South Carolina's Aiken Regional Airport. It will be capable of performing active winglet installations in 10 days or less. An East Coast regional sales manager and a team of installation specialists are based at the center, which will serve as an option for customers in the eastern U.S. and South America. The new center is the third installation facility for Tamarack's Atlas active winglets, joining its new UK center at London-Oxford Airport as well as its Sandpoint, Idaho headquarters facility.

First Praetor 600 joins Flexjet's European frax fleet

by Charles Alcock

Flexjet has introduced the Embraer Praetor 600 to its fractional-share fleet in Europe, a market where Flexjet sees significant potential for growth.

Flexjet added the first Embraer Praetor 600 jet to its European fleet, the fractional ownership provider announced on November 30. The nine-passenger super-midsize model was ordered as part of a $1.4 billion order placed with the Brazilian manufacturer in October 2019.

Flexjet is the fleet launch customer for the Praetor 600 and the aircraft has joined its existing Europe-based fleet of Embraer Legacy 500s and 600s. The new model is being offered as part of the operator's Red Label program, which provides customized cabin interior and flight crew assigned to each specific aircraft.

According to Flexjet, "The penetration of fractional and fleet operators in the U.S. is much higher than in Europe, so Flexjet sees a potential for growth in the shared ownership segment in Europe as quite substantial."

The Praetor 600 offers a range of more than 4,000 nm, allowing Flexjet to offer intercontinental flights, such as Paris to New York and London to Dubai. Its short-field performance means that it can operate at Europe's smaller airports, such as London City.

"Our objective is to give owners the ability to travel not just in North America, but throughout Europe, Africa, and the Middle East without leaving the safety and security of the Flexjet family," said Flexjet's European managing director Marine Eugène.

In 2019, Flexjet opened its European headquarters in London. It also has a European Tactical Control Center in the UK to coordinate flight logistics and an aircraft maintenance facility at Milan Linate Airport in Italy.

As part of its efforts to guard against Covid-19 infection, Flexjet decontaminates all its European aircraft with the Bacoban treatment (and uses MicroShield 360 in the U.S. market). Each cabin is equipped with MedAire's Universal Precaution Kit, containing equipment to protect passengers and crew from exposure to the virus.

Masks are mandatory for flight crew, and they are also required to take a temperature check before each mission and a second while on duty. Crewmembers follow World Health Organization guidelines for social distancing at all times.

Flexjet says it has achieved an environmental sustainability goal that exceeds carbon-neutrality by purchasing carbon offsets amounting to an additional 300 percent more than the standard CO_2 emissions associated with its flights. The company also claims to have the youngest fleet in its sector.

In June, Flexjet said the Covid-19 pandemic had forced it to delay the announcement of a significant expansion of its European operation. The company's European affiliate, which holds an air operator certificate via UK-based subsidiary Flairjet and holds a controlling interest in aircraft charter and management firm Sirio in Milan, currently has 15 aircraft—mostly Nextant 400XTis and a few Embraer Legacy 500s and 600s—in its fleet.

A company spokesman told **AIN** that Flexjet intends to take further deliveries from the $1.4 billion order placed last year, which includes a mix of Praetor 500 and 600 models, and also some Phenom 300 light jets. It intends to make the Praetor 600 the flagship of its European fleet. ■

NBAA-VBACE 2020

Universal Weather to donate services for Covid relief flights

Universal Weather and Aviation will donate feasibility and consulting services to general aviation operators wanting to use their aircraft to support humanitarian missions delivering Covid-19 vaccines, the Houston-based company said on December 2. Through at least June 30, 2021, Universal Trip Support will waive its fees on trip feasibility assessments, research, and consultation services for any private aircraft mission classified as a humanitarian Covid-19 vaccine delivery flight—whether or not the trip actually happens.

"In the early months of the pandemic, the world needed PPE, masks, and tests. Many flight departments answered the call for help, and we were proud to donate our services in support of so many of those missions," said Universal chairman Greg Evans. "Now that we have several approved vaccines, the business aviation industry will undoubtedly play an important role in helping deliver them where they are needed most. We want to use our expertise in global aviation restrictions and logistics to help ensure these life-saving missions can happen and are a success."

Universal Trip Support will perform what it calls scenario-specific research and consulting to help private operators understand things such as mission feasibility, identifying operating restrictions and the best options to navigate through them, documentation requirements, crew/passenger requirements, what to expect on arrival (including questions authorities will ask), and local health and safety requirements—at no cost for these Covid-19 vaccine delivery missions.

Greg Evans, chairman, Universal Weather and Aviation

Universal urges private operators attempting a humanitarian flight involving Covid-19 vaccine delivery to contact their Universal Trip Support team or account manager, or to request support online. Meanwhile, Universal frequently updates its Covid-19 webpage with the latest operating restrictions at no cost to users.

"Our business aviation community has made a tremendous difference already," said Evans. "Now we have a chance to make history by playing our role in helping to end this pandemic." **G.P.**

News Briefs

GE Catalyst Installed on Flying Testbed

GE Aviation's clean-sheet Catalyst turboprop engine has been installed on a King Air 350 flying testbed, and. delivery of the safety-of-flight engine to Textron Aviation was expected by the end of December, according to a spokesman for the engine manufacturer. So far, GE Aviation's Czech Republic facility has manufactured 10 Catalyst test engines, including three that have been torn down and reassembled as part of its testing program. Combined, the test engines have accumulated nearly 2,000 hours of run time, he added. Textron Aviation's clean-sheet Denali turboprop single is the launch platform for the engine.

Supersonic Remains in Distance for Gulfstream

While Gulfstream Aerospace has continued to research supersonic possibilities, company president Mark Burns cautions that it could be 10 years before such a supersonic business jet actually reaches the market. When asked if the company was ready to take the leap into supersonic, Burns said, "We certainly look into supersonic flight in our [research and development] center." Gulfstream continues to invest in that space, he stressed, "but I think...it's probably a decade away before there's a viable opportunity."

NBAA Moves Events Online

NBAA has begun planning its next round of virtual events for the first quarter. To be held February 23 to 25, the Flight Operations Conference will bring together schedulers, dispatchers, and pilots, among others, with a focus on mission planning, including international operations. The Leadership Summit, meanwhile, is set for March 24 to 25 and designed to bring together business aviation innovators, the association said. This will cover strategies for leading through challenging circumstances with scheduled speakers who are experts on change leadership strategies, emotional intelligence, health and well-being, and connectivity and accountability.

Rolls-Royce Begins Unblended SAF Tests

Rolls-Royce has begun exploring the use of 100 percent sustainable aviation fuel (SAF) on one of its engines. The powerplant maker is conducting ground testing with a Trent engine on a stand at its Derby, UK test facility. This program is aimed at determining how the company's current engine designs operate on unblended SAF and what future modifications could benefit them. According to director of product development and technology Simon Burr, Rolls-Royce will also soon induct an engine from its Pearl family into the 100 percent SAF test program at its facility in Germany.

Gulfstream came into 2020 with momentum, having just unveiled its new flagship G700, but things changed rapidly with the pandemic. It now believes that customers are more optimistic, and sales have continued to gain steam.

Gulfstream sees sales momentum accelerating

by Kerry Lynch

Gulfstream Aerospace executives were optimistic that the rebound they began seeing in the third quarter carried into the final months of 2020 and that the company is poised to be further buoyed by positive developments surrounding COVID-19 vaccines.

"Demand is returning, which is encouraging for us," said Scott Neal, senior vice president for worldwide sales for Gulfstream Aerospace, during a November videoconference with reporters. The Savannah, Georgia–based business jet maker saw activity begin to pick up by early July, and that trend has continued, Neal said. "We had a very solid third quarter for sales activity." That activity had continued into the fourth quarter, Neal further noted.

The improvement has been on several fronts, he added. "We're having quite a few more sales discussions now than we did earlier in the year. So, our pipeline is very robust. We're flying more flight demonstrations, we have more factory visits—all encouraging signs to me, that at least for Gulfstream, customers are engaging, and we've got some very strong prospects for sales opportunities certainly for the end of the year, but into next year as well."

Gulfstream president Mark Burns echoed those sentiments, saying customers remain cautious but are more upbeat than they were earlier in 2020. Burns further said he was encouraged about this year, particularly given the recent advancements in vaccine development. "Our customers now see that there is an end in sight," Burns said. "If the vaccines are as effective as they appear to be, this is a moment where we feel great optimism of getting past the virus."

Further, Gulfstream is seeing an uptick in activity not only from its existing customers but also from new clients, Burns noted. "In the conversations that I've had in the last six months, there are a lot of new buyers," he said. "For all the tragedy that this pandemic has created, it has been an accelerant for a lot of businesses and many of those businesses are new businesses [to us]."

Additionally, the trend of working from home from anywhere has created a "whole new generation of companies" that need to travel, Burns said.

Gulfstream had entered 2020 with a "great deal of momentum," he noted. The company had just announced the flagship G700 and had a flurry of activity with the aircraft and had come off a strong fourth quarter in 2019. But it began to feel the impact of the coronavirus as early as January of that year with its base in the Asia-Pacific region, Burns said. "We actually started to see flying in China slow down in December [2019] and in early January." That impact then spread into Europe and the U.S.

"Things did change...rapidly," Burns noted. "I think there was such great fear and uncertainty about the virus that it did cause a great deal of pause with our customers."

However, he added, "As you move forward to where we stand today, I think there's a great deal more understanding about how to treat the disease...about how to protect ourselves."

The pandemic also spurred novel approaches to enable the company to continue to operate during the pandemic, he said. "It was unusual, some of the things that we had to do," ranging from screening and limiting visitors, to restricting travel and coordinating remote working for some 5,000 employees.

Since then, "we reaggregated those employees back into the business," Burns said. "But we've also found that we can conduct business in a remote manner fairly successfully." This has included communicating with customers directly through remote channels, use of some robotics in manufacturing, and designing aircraft through remote tools.

At the same time, Gulfstream has continued to demonstrate aircraft around the world. "There's a lot of protocols that go along with the ability to do that. We've continued to meet with customers in person with the proper precautions. I will tell you as a business, we've continued to operate very successfully."

Burns further anticipates that the company will be able to deliver aircraft in the fourth quarter without much interference from virus-related issues. "I'm optimistic we're not going to repeat what occurred in the second quarter [2020] when we just couldn't make deliveries due to travel restrictions or concerned customers," he said. "I think most people have worked their way through that." ■

Avanti fleet tops one million flight hours

Piaggio Aerospace's P.180 Avanti turboprop fleet has amassed one million flight hours since first flight in 1986. Of the 246 produced, 213 are currently in service, with 95 in the Americas, 96 in Europe, 18 in Asia-Pacific, and four in Africa/Middle East.

The P.180 with most years of service is S/N 1004, still flying today in the U.S., while the one with the most flight hours is S/N 1007 (operating in Canada), with more than 11,000 logged. Piaggio reports orders for an additional 13 Avantis—its EVO third-generation P.180—and is currently assembling the first one for the Italian Air Force.

"Reaching one million flight hours carries a symbolic value," said Vincenzo Nicastro, the extraordinary commissioner for Piaggio Aerospace appointed by the Italian government. "Two years ago, the company seemed to be close to collapsing. We have instead succeeded in bringing Piaggio Aerospace back to being fully operational, saving thousands of jobs and a more than 100-year-old brand. We now look forward to [finding] soon a new owner."

The twin pusher P.180 features a unique design that incorporates three lifting surfaces. The goal was to create a twin-turboprop faster than a similarly sized business jet with lower operating costs. **M.H.**

News Briefs

Hermeus Gets More Funding for Hypersonic Bizjet

Hermeus, the aerospace startup that landed a U.S. Air Force contract for the development of a hypersonic business jet for presidential travel in August, has closed a $16 million Series A funding round. The company said this new funding will help build "foundational capabilities" in its quest to develop a Mach 5 aircraft. Early last year, Hermeus successfully tested a Mach 5-capable engine prototype, and plans call for an expanded test facility in Atlanta that will also be capable of light manufacturing. The company is working toward the development of a full-scale engine that will power its first Mach 5 aircraft and also is working on the design of that aircraft.

Ricci, Rosen Take New 'Blank Check' Firm Public

Directional Aviation Capital principal Kenneth Ricci, working with Resilience Capital Partners co-CEO Steven Rosen, appears poised to continue on the acquisition trail with the creation of Zanite Acquisition, a "blank check," or special purpose acquisition company (SPAC). The SPAC was formed for the purpose of "effecting a merger, capital stock exchange, asset acquisition, stock purchase, reorganization or similar business combination with one or more businesses," the company said, adding that it plans to focus on aviation, aerospace and defense, urban mobility, and emerging technologies industries.

New Focus on SAF in UK

The UK is considering a mandate requiring the use of sustainable aviation fuels (SAF) from 2025. As part of a plan for a so-called "Green Industrial Revolution" announced by UK Prime Minister Boris Johnson, the government said it will consult on a "possible mandate" this year. Under a 10-point plan covering multiple sectors, £21 million ($27.7 million) in new funding is being made available to support "difficult-to-decarbonize industries to become greener through research projects for zero-emissions planes." This year, the government will also run a £15 million competition to support production of SAF.

VIP Outfitters Eye 737 Max

VIP aircraft outfitters expect the recertification of the Boeing 737 Max to spark an uptick in BBJ Max completions activity. "It's our feeling that the grounding of the Max had a bigger impact than Covid-19 on narrowbody VIP completions," AMAC Aerospace COO Bernd Schramm told **AIN**. Some potential buyers might avoid the model because of its accident history, but given the scrutiny and retesting during the Max's 20-month grounding, others believe "it will be the safest aircraft in the world," he said. "We've experienced both scenarios." One contracted completion client canceled their order; the second customer's BBJ Max 9 is expected to arrive at AMAC's Basel facility in March.

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Experts explain Covid-19 testing and test effectivity

by Jerry Siebenmark

Flight crews should expect several days to pass from a Covid-19 exposure before they can be accurately tested for infection, and they should know that not all tests are created equal. That's according to experts, including Mayo Clinic's Dr. Bobbi Pritt, who spoke with **AIN** and said molecular-based tests are the most effective at detecting the presence of SARS-CoV-2, the virus that causes Covid-19. She explained that detection requires an incubation period of anywhere from three to four days following exposure. It can take anywhere from two to 14 days for symptoms to appear, Pritt said, although for most people they become symptomatic five or six days after exposure.

"There's no evidence to suggest your viral loads are high enough after one day or after your initial exposure to be picked up by even the most sensitive of tests," added MedAire product director for airport and testing services Alexander Smith. "And these molecular tests like [polymerase chain reaction or PCR] tests—there are a few different variants of molecular tests, PCR isn't the only one, it's just the most popular—they're incredibly sensitive and they will pick up even the slightest hint of a viral particle in that genome. But there has to be enough; viruses are very tiny and they have to replicate enough and they have to get to that area where they're actually collecting that sample."

Antigen testing is a less effective means of Covid-19 testing, explained Pritt, who is director of Mayo Clinic's clinical parasitology laboratory. She explained that the antigen test is "good" at detecting coronavirus while a molecular test is "very good." An antigen-based test is "going to miss a certain number of people who are infected," Pritt said. "It's always best if you could use the most sensitive method that's going to have the highest likelihood of detecting someone who's infected."

Smith explained that the pharynx, or throat, is the most likely place where the virus will replicate in the body. That's the reason why clinicians largely use an oropharyngeal or nasopharyngeal swab, which can be uncomfortable for the patient. By far, the swab test is the most widely used. "There's going to be less virus on the tip of your tongue than in the back of your throat," Smith added.

However, there are a few molecular tests approved by the Food & Drug Administration (FDA) that can detect the virus in saliva, which Smith said are obviously not invasive nor painful and are "very accurate." MedAire is offering a Covid-19 testing program for aircrew, passengers, and personnel using an FDA-authorized PCR saliva test.

In terms of so-called quick tests, there's really no difference between their effectiveness and those that take days instead of minutes for the results, as long as the tests are molecular-based. The speed with which the results are delivered is mostly a matter of whether a clinician has on-site, dedicated access to laboratory equipment or has to use a third-party provider to test the sample. Smith noted the testing equipment is expensive and the tests themselves "aren't cheap." It's why, for example, a large hospital might be able to offer a rapid-PCR test while a doctor's office may not.

Mayo's Pritt noted that just because someone tests negative for Covid-19 doesn't mean they are free and clear to do whatever they want. "Testing in and of itself is not a fail-safe," she said. "It doesn't give you a get-out-of-jail-free card that you can go and expose [yourself] to reckless behaviors, go out to a bar, to a restaurant, and not socially distance. Because no test is perfect and because there's that incubation time where someone could be infected but not know it and a test would not be able to detect it, it's clear that testing has to be done in addition to mask-wearing and social distancing." ■

London Biggin Hill Airport offers Covid testing to reduce mandatory quarantine times

Business aviation advocates in Europe have repeatedly made the case for using short-turnaround Covid testing to replace shifting quarantine restrictions that have continued to suppress demand for flights as the continent has struggled to contain a second wave of infections. This has echoed calls from air transport lobbyists, who, as usual, take precedence in the attention of regulators.

In the meantime, frontline service providers have taken the initiative to make testing a viable option for business aircraft passengers and crew. A prime example is London's Biggin Hill Airport, which in mid-November opened its own testing center, where a range of tests are available through specialist contractor G16.

The initiative is timely because, in the UK, the government will allow arriving passengers to be released from quarantine after five days of isolation on the production of a negative test result. The so-called test-to-release plan was due to start on December 15, with passengers required to pay for privately available tests. Other European countries have been introducing similar initiatives.

Passengers and air crew can now get quick access to several different types of Covid tests at the new Mansi Testing Suite at London Biggin Hill Airport

The privately-owned airport views the availability of on-site tests as part of the Contactless Travel Initiative and Return to the Skies program it launched in the early stages of the pandemic. These efforts, claims the management team, have been a significant factor in Biggin Hill keeping its standing as one of the UK's busiest business aviation hubs at a time when other facilities around London have seen higher rates of Covid-led declines in traffic.

Customers can choose to be tested in the new Mansi Testing Suite (named after a prominent local doctor) or be met by clinicians on their aircraft or in the terminal building. The airport offers four different types of tests to give travelers options depending on the requirements of their destination country.

These include the polymerase chain reaction (PCR) test, for which results take 24 to 48 hours, loop-mediated isothermal amplification (LAMP) test, which can be as quick as one hour, as well as antigen and antibody tests, for which results are available in just 15 minutes. Prices range from £140 ($182) for PCR and LAMP tests to £85 for the antigen procedure and £75 for antibody tests.

"We want to make it as easy as possible to get these tests," said Robert Walters, Biggin Hill's commercial director. "There has been some confusion over what tests are needed [in different countries], but there is some very good guidance now and the entry requirements around the world are clearer."

According to Walters, aircraft operators and the network of business aviation support companies at the airport also benefit from having testing capability on-site. All tests can be booked online or via an operator's FBO. **C.A.**

› feature continues on page 30

Full-throttle opinion from former NTSB member John Goglia

A GA accident, a grieving father, and now a documentary film

I have been to the scene of many fatal aircraft accidents, far too many. Major airline disasters, commuter crashes, and even some general aviation (GA) accidents as a member of the National Transportation Safety Board (NTSB). Before serving on the NTSB, I went to the scene of a number of airline crashes as a union safety representative. It is never easy to conduct an on-scene investigation, especially in the immediate aftermath of a crash. The things you see are not ones you ever want to describe but they haunt you for a lifetime. No matter how bad the crash scenes are, the truly hardest thing to do is address grieving family members who need and deserve answers to their most pressing questions. And, yet, as much as families want and need answers, rarely are accident investigations quick, and often getting to the bottom of what happened can take years.

I have briefed grieving family members on NTSB accident investigations, sat with them as they wept, and tried to comfort them as best I could by providing them the factual information we were able to gather to try to help them make sense of what happened. One thing I learned early on meeting with the surviving family members is that they usually have three questions uppermost in their minds: what happened? Could the accident have been prevented? And, most importantly, did their loved ones suffer? In addition, after major crashes, it's also not unusual to see family members come together to lobby for changes that would prevent similar future crashes, at least in part so that their loved ones did not die in vain.

While the NTSB has a worldwide reputation for conducting meticulous, thorough investigations into airline disasters, its worldwide reputation does not extend to conducting typical GA accident investigations. Unless a major public figure is killed—as in the death of John F. Kennedy, Jr. in July 1999 when his Piper PA-32R disappeared en route to Martha's Vineyard—the accident investigations are usually handed off to the FAA and the probable causes are most commonly ascribed to pilot error, even at times when the investigations are, in my opinion, inconclusive, at best.

I understand as well as anyone the reasons for this lack of in-depth attention to GA accidents—the NTSB staff is miniscule (approximately 400 people total) as is its budget (less than $100 million). However, a recent documentary that was scheduled to premiere in December raises important questions about how the NTSB handles GA accident investigations and whether it can't do better. Although the accident that is the focus of the film occurred more than a decade ago, the questions it raises about the NTSB's commitment to GA accident investigations are particularly relevant during this pandemic time.

The NTSB—for reasons inexplicable to me—has refused to conduct GA accident investigations, citing the dangers to its personnel from the pandemic. This reasoning makes no sense to me at all. NTSB investigators are required to take blood-borne pathogen training specifically designed for the unique environment of an accident site. Blood-borne pathogens are clearly not the same as airborne ones that are reportedly the cause of the spread of Covid, but it seems that appropriate training for investigators could have been designed and provided, which mitigate the risk of catching the virus without sacrificing the importance of GA accident investigations. Investigators are already familiar with strict protocols for wearing personal protective equipment and have successfully demonstrated their abilities over the many years that blood-borne pathogen training has been required.

But back to the documentary and the reason for this article. Hopefully, by the time you read this, the film Invisible Sky will be widely available for streaming at www.invisibleskyfilm.com. I think it's an important film for everyone in the GA community to see, as well as anyone who is interested in aviation safety. In brief, the film documents the tragic 2006 crash of a Cessna 206 piloted by a young, aspiring opera singer and carrying four graduate students at Indiana University's music school. The airplane crashed on approach to Monroe County Airport near Bloomington, Indiana in night IFR weather conditions. The pilot, 24-year old Georgina Toshi, was instrument rated and legal to fly the flight. All five persons aboard the aircraft that night died in the crash.

The NTSB delegated the accident investigation to the FAA—as is fairly routine in GA accidents—which sent two investigators to collect evidence. The NTSB ultimately determined that the probable cause of the accident was pilot error caused by the pilot's continued descent below decision height and not maintaining adequate altitude above the trees while on approach. The NTSB's conclusions did not make sense to Ms. Toshi's father, also a pilot, and he engaged his own accident investigators to reconstruct the accident, interview witnesses, and determine an alternative scenario for what may have caused the accident. His investigation revealed information that had either not been discovered by government investigators or was ignored by them for reasons that are not altogether clear.

I won't give away any more of the storyline but the film makes for riveting watching for those of us who have spent much of our careers in accident investigations. It pains me to say that the film does not show the NTSB in its finest hour. Regardless of why the NTSB made the decisions it made in this case, the film raises important questions of the accuracy of GA accident investigations and their probable cause determinations. If the probable cause conclusions are not reasonably defensible, actions taken to prevent future GA accidents are also suspect. How do we know that current recommendations for preventing GA accidents are reasonable if they weren't predicated on rigorous accident investigations? This may be just one accident but it raises questions that all of us should want to know the answers to. ■

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

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Mahindra Aerospace has shut down manufacturing of the GippsAero GA8 Airvan and has placed the Australia-based aircraft manufacturer up for sale.

Despite demand, Mahindra closes Gipps

India's Mahindra Aerospace has exited its GippsAero subsidiary in Australia, announcing during a recent earnings call that it had shuttered this business. "GippsAero is up for sale for someone who wants to buy it. But, if there is no buyer, the business has been shut down already," said Anish Shah, deputy managing director and group CFO at Mahindra and Mahindra. He added there are no aircraft orders currently in hand.

"We have moved to a service model right now and will continue with [that] model to meet the contractual obligations of the planes. But there is no further activity in terms of manufacturing or selling these planes," Shah said.

The company was producing the GA8 Airvan piston single. Certified in 43 countries, more than 250 GA8 Airvans operate globally in a variety of roles.

A former value-added reseller (VAR) for GippsAero contradicted the statement that there were no more orders for the GA8, according to a company representative who asked to remain anonymous. "As a VAR integrating the Airvan for surveillance customers," he told **AIN**, "we were forced to abandon a contract for several aircraft acquisitions with a major state agency. Well before cessation of operations, GippsAero refused to take our order for several aircraft, prompting the cancellation of our contract with the agency. Additionally and by necessity, we have developed new capabilities for competing airframes and are in the process of transitioning current prospects to other platforms."

On track to "reignite value creation," Mahindra officials said that the group would look at products that yield an 18 percent return on equity or are a strategic investment. "GippsAero falls in neither of the categories," said Shah.

AIN has learned that Mahindra had invested more than $100 million into the subsidiary, with little return on investment since 2009 when it purchased Gippsland Aeronautics (GippsAero) and Aerostaff Australia to manufacture aircraft and allied components to service the global market.

The Mahindra Group will continue manufacturing in India. "It has got good long-term potential for us," said Shah. The group's aerospace facility in India produces 100,000 parts and components monthly for OEMs such as Airbus and Boeing. **N.M.**

AIN 2020
Top Flight Awards Winners

by Mark Huber

AIN is proud to highlight the following winners of the inaugural 2020 Top Flight Awards. The awards are designed to recognize the best and the brightest in business aviation and honor creativity and innovation in design and technology as well as quality and passion in business aviation services and people. Each year, **AIN** editors will conduct the Top Flight Awards, with the nominees announced online on December first and in **AIN**'s December print issue and the winners revealed online around January first and in the January issue. The main criteria for qualifying as nominees for Top Flight Awards include service entry, in the case of new aircraft, or availability, for products and services, during the applicable time period, from October first through September 30. The nominees also must illustrate something new and unique such as improved safety and performance, contributions to aviation or public benefit, and more. There were 10 categories for the inaugural 2020 awards, but those could change and grow in future Top Flight Awards years.

NEW JET

Bombardier Global 5500/6500

Bombardier's new Globals mate time-tested fuselages to more efficient wings and engines combined with modern avionics and a redesigned cabin and cockpit to deliver superior safety, performance, and comfort.

The re-profiled wing pairs with the new Rolls-Royce Pearl 15 engines to boost fuel efficiency by up to 13 percent compared with the legacy Globals. Maximum cruise speed increases from Mach 0.89 to Mach 0.90 and the airplanes have longer legs than their predecessors: maximum range on the Global 5500 is 5,900 nm (500 more than on the Global 5000) and 6,600 nm on the Global 6500 (600 more than on the Global 6000). The new engines, each delivering 15,125 pounds of thrust, discharge 48 percent less smoke and 20 percent less nitrous oxide, are two decibels quieter, burn 7 percent less fuel, and have 9 percent more thrust than the BR710 engines on the old Globals. The engines also are equipped with an advanced engine health and usage-monitoring system (HUMS) that monitors thousands of engine parameters and sends information to the ground in real-time.

In the cabin, the new airplanes are equipped with the Collins Venue cabin-management and entertainment system, upgraded with the ability to distribute ultra-high-definition 4K content throughout the cabin. Ka-band satellite connectivity enables worldwide seamless Wi-Fi coverage. The cabins can be configured to typically seat 12 to 17 and are available with many custom options, including steam ovens in the galley, newly styled cabinets and countertops, and a stand-up shower in the aft lav. Both aircraft feature the "Nuage" (French for cloud) seat that Bombardier developed for the larger Global 7500. The conference/dining areas are fitted with a related new seat design called the "Nuage Chaise," which allows for the appropriate posture for dining/business meetings but can convert into a lounge chair for reclining. The environmental system features 100 percent fresh air, and "turbo" heating and cooling to quickly bring the cabin to a comfortable temperature. The pressurized baggage hold is accessible in flight.

For the flight deck, the new Globals feature the Collins combined vision system, which merges enhanced vision and synthetic vision system imagery into a single conformal view, allowing take offs and landings in low visibility. Other safety capabilities of the avionics system include advanced weather radar that can predict wind shear, airport moving maps, real-time traffic, and an improved terrain database. ■

NEW TURBOPROP

Pilatus PC-12 NGX

After 25 years of time in service, the PC-12 just keeps getting better. The latest iteration of this versatile and reliable workhorse features single-lever power control, more cruise speed, and optional autothrottle combined with a restyled and quieter cabin and larger passenger windows.

The NGX is powered by the new Pratt & Whitney PT6E-67XP, which offers precise and intuitive engine control, reduced pilot workload, and optimized power. The engine can be operated in a low-prop-speed mode, lowering cabin noise without compromising performance thanks to an electronic propeller and engine control system. Operated with a single power lever, the PT6E-67XP produces 1,825 shp and is flat-rated to 1,100 shp in cruise flight, a 10 percent increase from the PC-12's PT6A-67P. It allows the NGX to reach a maximum cruise speed of 290 knots. The new engine will have a 5,000-hour time-between-overhaul period with hot section inspections only required on-condition. The NGX is certified to fly without fuel anti-ice additive.

Up front, the NGX's Advanced Cockpit Environment (ACE) is built around Honeywell's Epic 2.0 avionics suite with a new touchscreen avionics controller with integrated bezel contour grips intended

to stabilize the pilot's hand in turbulence. ACE's standard safety features include emergency descent mode and tactile feedback to aid in avoiding unintentional excessive bank angles. Other NGX flight deck features include brighter, more vivid displays; night-mode charts; pilot-defined visual approaches; high-resolution 2D airport moving maps; Honeywell's SmartLanding and SmartRunway awareness systems; 3D intelligent audio with ATC playback and Bluetooth interface; electronic checklists linked to crew alerting system messages; worldwide graphical weather; support for European protected mode-controller pilot data link communications (PM-CPDLC) mandates; and faster database loading. A fully-integrated digital autothrottle is optional.

Taking interior styling cues from its PC-24 twinjet sibling, the NGX's new cabin sports windows that have been reshaped and enlarged 10 percent. Redesigned executive seats offer more headroom, full recline, and improved lumbar support. Quick-release seat attachments enable quick cabin reconfiguration without the help of maintenance crews. A new headliner provides indirect lighting, more uniform and quiet air distribution, and increased headroom. Passenger positions now feature dual cupholders and integrated sidewall USB ports. Six different interiors—designed by BMW Group's Designworks—are offered with the executive NGX, as are bespoke interiors and paint schemes. ■

NEW HELICOPTER

Airbus H160

The H160 medium twin melds a basket of new onboard technologies to a dramatically more efficient manufacturing process. The result is a helicopter that is easier and safer to fly, more economical to maintain and operate, and has a smaller noise signature and a more comfortable ride.

The H160's all-composite airframe, unique biplane stabilizer, canted Fenestron, new more efficient and quieter Blue Edge main rotor blades, more fuel-efficient and easier-to-maintain Safran engines, and enhanced Helionix avionics combine to make this new helicopter best in class. It already boasts robust orders from customers flying a myriad of missions including medevac, executive, offshore energy, and military applications.

Visible delights begin with the cabin. An all-composite airframe hosts a flat-floor cabin, oversize cabin windows, and a baggage compartment that can hold 661 pounds. Its cabin can be configured to seat four or eight passengers in executive/VIP layouts, or 12 in a utility configuration. The biplane stabilizer reduces the impact of low-speed rotor downwash to create pitch up.

In the cockpit, the Helionix avionics includes weather radar, synthetic vision, moving map, TCAS II, HTAWS, and automatic airspeed and flight path stability. While Airbus didn't opt for costly and complex fly-by-wire, the H160's full-time autopilot (or automatic flight control system—AFCS) offers many similar benefits to fly-by-wire flight controls. Airbus calls the system "accrued pilot assistance" and it includes flight envelope protection. The AFCS remains on all the time in the H160. In hands-on mode, the pilot can make the H160 do anything the helicopter can do, but the autopilot is still on. With hands off the controls, that just results in the helicopter maintaining the same flight path and airspeed. AFCS offers hands-off automatic assisted takeoff and can automatically set required power for a one-engine-out landing from a hover. Unique to the H160, a new alerting system warns pilots five to seven seconds before the helicopter enters into a dangerous vortex ring state.

The aircraft's new 1,300-shp Safran Arrano engines feature a two-stage centrifugal compressor and variable inlet guide vanes, which cut fuel consumption in all phases of flight. They help propel the H160 to its maximum cruise speed of 150 knots and service ceiling of 20,000 feet and give it a maximum range on standard tanks of 475 nm. The engines are also designed for a two-minute start and quick restarts, features that will expedite dispatches. ■

TECHNOLOGY

Industry Bands Together To Meet the ADS-B Deadline

In 2014, the FAA and industry groups formed the Equip 2020 Team to identify both barriers and solutions to equipping the U.S. aviation fleets with Automatic Dependent Surveillance-Broadcast Out (ADS-B Out) technology by the 2020 implementation deadline. Largely due to the initiatives of this group and industry partners, the U.S. business aviation fleet was 83 percent compliant with the mandated deadline by October 2019, and enough capacity was built into the system to equip more than 200,000 aircraft.

ADS-B Out is a quantum leap in surveillance technology, delivering much faster detection times for air traffic controllers to see equipped aircraft compared to radar as well as much broader coverage in areas where radar is constrained. In the U.S., ADS-B In adds free inflight weather and real-time traffic information on aircraft displays and portable devices. Spotting other traffic is much easier with ADS-B and much safer than relying on eyesight alone.

Business and general aviation-related groups that participated in the ADS-B equipage effort included: AEA-Aircraft Electronics Association; AOPA-Aircraft Owners and Pilots Association; EAA-Experimental Aircraft Association; GAMA-General Aviation Manufacturers Association; NATA-National Air Transportation Association; and NBAA-National Business Aviation Association. While magazine and online articles did their best to explain ADS-B, these groups helped pilots understand not only what the equipage mandate meant but also the benefits of ADS-B Out and In. They also worked closely with the FAA to make sure the final rule made sense and that requirements around installation and operation made equipping easier and ultimately, for many aircraft owners, reasonably priced. ■

NEW FBO FACILITY

Sheltair Rocky Mountain Regional Airport

Florida-based Sheltair's first location west of the Mississippi is a $20 million state-of-the-art facility at KBJC in Broomfield, Colorado. The new 11-acre FBO complex features a 10,400-sq-ft terminal and a 31,050-sq-ft heated hangar that has 4,500 sq ft of adjoining office space. The terminal, with the look, feel, and function of an upscale hotel lobby, features a land-side porte-cochere for passenger drop off and pick up and an airside 162-foot-span aircraft arrivals canopy with direct access to the terminal, which features pine, stone, and exposed raw steel as well as a radiant-heat floor for customer comfort. Amenities include a large conference room, pilot lounge with snooze rooms, concierge, crew cars, onsite car rental, and complementary aircraft cabin cleaning.

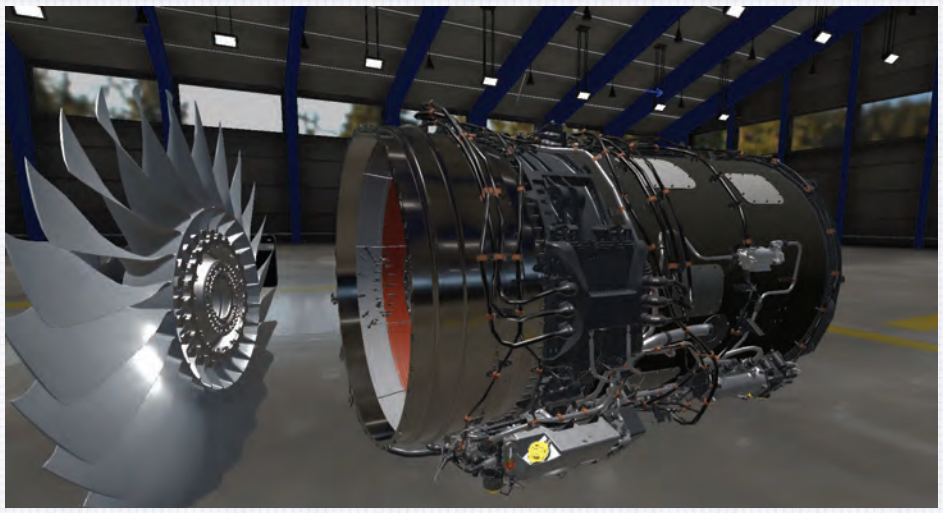
Every detail-from access points and tenant offices to lounges and restrooms was designed with the customer's comfort, privacy, and safety in mind," said Sheltair president Lisa Holland. "Our new complex and the related services we provide the general aviation community ensure that we can not only meet, but exceed the needs of this important and growing market.

TRAINING

Rolls-Royce: Virtual Reality

Rolls-Royce has taken a compelling piece of technology and turned it into a practical

› continues on page 22



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training tool. The company began virtual reality (VR) maintenance familiarization training in March with its BR725 engine for the Gulfstream G650. Participants join the class remotely while wearing Oculus VR glasses and handheld VR controllers. The training is instructor-led, so someone is always there to help explain what the student is viewing. It is free for Rolls-Royce CorporateCare customers, and those not enrolled in CorporateCare can pay to attend.

VR training enables students to learn about engine parts only visible if the real engine was fully disassembled. All the subsystems and components can be seen exactly as they relate to each other, either in an as-assembled view or by virtually taking them apart, assembly by assembly, piece by piece. The student can virtually dive into the engine and visually trace the way air flows through or see how the shafts and bearings relate to one another or take apart an assembly until each part and nut and bolt is floating in the air next to the engine. A student can view the engine in various ways—by virtually walking inside the engine and looking around; by using a cutaway tool to slice into the engine from the side or front; or by highlighting each subassembly and moving it off the engine and then taking a close look at its components. Both the instructor and student can use a virtual marker to draw on any part of the engine. Routine tasks are also possible, like checking the oil level or finding a part-number stamp on a part or component.

CHARTER/ FRACTIONAL/JET CARD INNOVATION

Wheels Up

Wheels Up CEO Kenny Dichter is fond of track suits and now we know why: he never stops running. In a frenetic pace over the last year, the closed-fleet charter access membership company made several large strategic acquisitions, revamped its in-house technology, and opened up new membership channels to further "democratize" private aviation access.

Recent acquisitions include Delta Private Jets, which made Delta Air Lines Wheels Up's largest investor. Other deals included the purchase of Gama Aviation Signature—the largest charter operator in the U.S.—and operator of Wheels Up's wholly-owned fleets of King Air 350is and Citation light jets, and TMC, the Travel Management Company, with its fleet of 26 light jets. Wheels Up's owned and managed fleet now numbers more than 300 airplanes. Using Argus figures, the combined entity logged more than 160,000 flight hours last year—more than number-two fractional provider Flexjet (111,189 hours).

In 2019, the company launched its online charter marketplace, purchased flight management software developer Avianis, introduced its entry-level Connect Membership, and benefitted from further investment from large financial firms including $128 million from Franklin Templeton, boosting its enterprise value to more than $1.1 billion. The Avianis software engine enables Wheels Up to link vetted operators and consumers, increase efficiency, and lower the cost of access, according to Dichter.

In an effort to further democratize the skies, the new Connect membership ($2,995 for the first year; $2,495 annually for renewals) targets those flying 10 or fewer hours per year, offering as-available (rather than guaranteed) access to its fleet and services, including flight sharing. Founded in 2013, Wheels Up currently has more than 8,000 members and a renewal rate of 80 to 90 percent. It also is deeply involved in philanthropic projects in support of cancer research (Wheels Up Cares) and hunger alleviation (Meals Up). ■

DAVID McINTOSH

HERO OF THE YEAR

Business Aviation's Response To Covid-19

Business aviation has been at the forefront of delivering Covid-19 supplies, medical equipment, and soon, the vaccines to fight the pandemic. "Our business aviation community has made a tremendous difference already," said Universal Weather and Aviation chairman Greg Evans. "Now we have a chance to make history by playing our role in helping to end this pandemic." Recently, Universal announced that it will donate feasibility and consulting services to general aviation operators wanting to use their aircraft to support humanitarian missions delivering Covid-19 vaccines. Earlier in the pandemic, Universal donated its services in support of missions delivering Covid-related medical supplies and testing. Universal's response typifies that of business aviation organizations and companies, who all rise to the occasion during times of national and global emergency.

Early in the crisis, NBAA worked in tandem with the American Hospital Association to establish a way for first responders to request emergency flights from a list of operators offering transportation via the industry group's HERO database. On the other side of the Atlantic, the European Business Aviation Association established a Covid resource center to help coordinate the industry's response to rapidly shifting needs. In late March, a pair of long-range NetJets Bombardier Global 6000s flew from the U.S. to Nanjing in China to collect N95 masks and other items needed by the New York-based Mount Sinai Medical System. The operation, which was supported by Goldman Sachs, involved complex approval processes with Chinese officials, U.S. Customs and Border Protection, and the Food and Drug Administration. In a similar initiative, the New England Patriots football team's Boeing 767 was pressed into service for another operation to bring one million masks from Shenzhen in China to healthcare workers in Massachusetts. In this instance, Universal Weather and Aviation provided flight and logistics support.

Dassault Aviation provided a Falcon 8X and a Falcon 900 to fly medical teams and supplies to small airports around France as part of Operation Resilience. The company flew the two jets over 300 legs and 450 hours, primarily transporting caregivers from the South of France to Paris and eastern cities. Dassault also played a big role in supporting Aviation Sans Frontières and its efforts to battle the pandemic, including

› continues on page 24

› continued from page 22

helping more than 300 furloughed flight attendants who volunteered their time to help out in Paris hospitals.

VistaJet also scrambled its fleet of Globals and Challenger 350s to provide complimentary empty leg flights to enable medical personnel and health experts to move around the world in Covid relief efforts. Subsidiary company XO also made private lift available to carry medical supplies to New York City at the height of the first wave of infections.

Manufacturers including Honeywell, Textron Aviation, Embraer, Piper, CAE, Universal Avionics, Cirrus Aircraft, and Husky Corp. adapted their facilities to produce items such as face masks and ventilators. Safe Flight Instrument provided equipment that enabled a single ventilator to be used by four patients simultaneously. Gulfstream worked with two General Dynamics sister companies to use 3D printers to produce adapters for a clinical trial to see if CPAP/BiPAP machines could be converted to ventilators, as well as making bands for face masks.

Private flight provider Wheels Up teamed up with hunger relief organization Feeding America to launch the "Meals Up" campaign with the aim of supplying 10 million meals for people facing hunger in the economic fallout from Covid. By mid-September, the project had raised the equivalent of 47 million meals for Feeding America's network of 200 food banks across the U.S. Air BP donated three million gallons of jet-A to FedEx and Alaska Airlines to assist in the delivery of medical supplies. To support Australia's Royal Flying Doctor Service, Air BP donated 35,000 N95 masks for use by its frontline staff, and in France it has donated nearly 16,000 gallons of fuel for flights to transport medical staff and equipment between hospitals. In the UK, it is providing free jet fuel for numerous air ambulance services customers to assist their life-saving duties during the pandemic. Air BP also made a $2 million donation to the World Health Organization's Covid-19 Solidarity Response Fund. ■

SUSTAINABILITY

The Business Aviation Coalition for Sustainable Aviation Fuel

Sustainable aviation fuel (SAF) is seen as a critical component in reducing business aviation's carbon emissions. The Business Aviation Coalition for Sustainable Aviation Fuel was formed to encourage the use of SAF by increasing the awareness of its safety and availability. Key members include the Canadian Business Aviation Association, Commercial Aviation Alternative Fuels Initiative, European Business Aviation Association, General Aviation Manufacturers Association, International Business Aviation Council, National Air Transportation Association, and National Business Aviation Association. The coalition's recently released guide, "Fueling the Future," details how SAF can be introduced into operations, and in September the coalition hosted the first Sustainable Business Aviation Fuels Summit, a two-day online event that brought together operators, legislators, regulators, fuel suppliers, and others to discuss how to increase SAF acceptance, demand, and supply. The coalition is a key promoter of "book-and-claim," whereby an operator can purchase SAF in an area where it is not yet available but still receive environmental benefits while actual fuel is dispensed where it is available.

Working with the coalition, key players in business aviation and aviation fuels also have launched programs to encourage SAF usage. Signature has purchased 5 million gallons from SAF producer Neste to establish permanent supplies of the alternative fuel at its FBOs at San Francisco International Airport (SFO) and London Luton Airport. This SAF purchase is the largest by an FBO to date. Neste announced this summer that it had begun delivering SAF to SFO via the existing multi-product pipeline designed for the transport of fossil aviation fuels. SAF customers at Signature SFO can take advantage of the California Low Carbon Fuel Standard tax incentive programs, while those at London Luton can reduce carbon offsetting needs for the EU's Emissions Trading Scheme. NetJets committed to purchase up to 3 million gallons to cover flights from SFO as well as its Columbus, Ohio headquarters using book-and-claim.

Separately, several other developments are poised to propel a greater acceptance of SAF. A deal struck in 2020 between SAF provider SkyNRG and VistaJet enables the latter's customers to voluntarily pay for the volume of SAF consumed in their flight through book-and-claim. Engine maker Rolls-Royce said it had begun research into the use of pure SAF, as opposed to the current 50 percent blend with conventional fuels. And global energy and commodity price benchmarking index Argus said it will begin including the SAF U.S. West Coast markets price as part of its daily jet fuel report. ■

CONTRIBUTION TO SAFETY

Garmin Autoland

Garmin took the world by surprise with the introduction and then certification of its new Autoland system, which safely flies an airplane from cruising altitude to a suitable runway, then lands the airplane, applies brakes, and stops the engine. Designed to safely bring an airplane to a nearby suitable airport in the worst-case scenario of an incapacitated pilot, Autoland solves the problem of how to rescue an airplane when the pilot is unable to continue flying. Autoland could also help rescue a pilot trapped by widespread zero-zero fog, allowing a safe landing where it would be difficult if not impossible to safely land using an ILS or LPV approach.

Autoland is available for aircraft manufacturers to incorporate in their airplanes equipped with Garmin G3000 avionics and autothrottle. The system is designed only for emergency use and can be automatically or manually activated, via the touch of a single switch. It is now available for the Piper SLS (branded Halo) and Daher TBM 940 turboprop (branded HomeSafe) singles and the Cirrus SF50 G2 single-engine jet (branded Safe Return).

The system is designed so that a non-flying passenger can switch it on and understand what is happening during an Autoland event. When engaged, Autoland immediately turns the airplane toward the nearest suitable airport while displaying on all three cockpit displays carefully designed messages that show the passengers what is happening. A moving map on each PFD clearly illustrates the path that the airplane is taking to get to the selected airport. The PFD shows a split-screen with moving-map on one side and synthetic vision system images on the other. The MFD in the center shows messages for the passengers, as do the PFDs. One MFD message is an animation of the cockpit and the controls, with a warning: "Keep hands and feet away from aircraft controls." On the displays at all times are the words: "Emergency autoland active" and "landing in XX minutes." The MFD also shows how many miles to the destination and how much fuel remains in hours and minutes.

During the event, a smoothly modulated voice tells passengers exactly what to expect. At the same time, Autoland uses information about the state of the airplane to broadcast an emergency radio message on appropriate frequencies, and it resets the transponder to the 7700 emergency code. The radio broadcast might occur on the local approach control or control tower frequency. But if landing at a non-towered airport, Autoland will broadcast on the local CTAF frequency. ■

by AIN Staff

Our 2021 Vision

The coronavirus pandemic has plunged the global economy into depths not seen since the 2008 recession, and until the new vaccines are widely disseminated and readily accepted by a large percentage of the world's population, a return to normal activities and occupations will not be possible.

Nevertheless, although the aviation industry has been hard-hit by the pandemic and people remain wary of traveling by air, aviation leaders are looking to the future and planning for better times. It may be difficult to imagine, but it might not be too long before eating indoors at restaurants and traveling to visit an important business contact or family member becomes normal again.

Meanwhile, activities at general aviation original equipment manufacturers (OEMs) continues, with most programs that were underway continuing toward certification and entry into service. There is no shortage of interest among OEMs vying to become the new urban air mobility market leaders. And there are even signs of stability in the commercial airliner market now that the Boeing 737 Max is resuming flying.

It has been a tough year, but optimism and hope prevail.

Bizjet OEMs to stay the course in 2021

by Chad Trautvetter

After a rocky 2020, the top-tier business jet manufacturers are expected to stay the course this year, continuing work on already-in-development new models and likely announcing only incremental improvements to existing aircraft in lieu of any clean-sheet products.

Confirming the latter point, Dassault said in late July that it had postponed the planned 2020 announcement of its "next Falcon," dubbed NX, due to the pandemic. The French aircraft manufacturer gave no timeline for when it might make that announcement, but Dassault chairman and CEO Eric Trappier said the launch has been "put off until it is easier to travel," adding that he prefers to make the announcement in person with the aircraft's partners. And given last month's cancellation of the 2021 Paris Air Show due to Covid uncertainty, that makes such an event unlikely until 2022.

But Dassault is still going full-throttle on its super-midsize "ultra widebody" Falcon 6X—launched in February 2018—following its virtually broadcast rollout last month at Dassault's Bordeaux-Mérignac final-assembly facility in France. First flight of the twinjet is planned for early this year, with entry into service in 2022.

Likewise, Gulfstream will continue flight testing of its new flagship G700 this year while also looking toward a 2022 service entry for the five-zone, ultra-long-range jet. In a late-November briefing, Gulfstream senior v-p of innovation, engineering, and flight Colin Miller said the five flight-test G700s had amassed more than 850 flight hours, noting that the program hasn't "missed a beat" during the Covid crisis.

He added that the G700 test aircraft have already completed nearly all of the fundamental tests that are needed as the company prepares for certification. This includes flutter testing, stalls, loads, flying qualities, cold weather, and high altitude trials. The company now is "deeply immersed in avionics testing," Miller said, "and we're preparing for certification."

Meanwhile, Bombardier doesn't anticipate significant capital investment in new products in the next five years as the company attempts to manage its debt load after it becomes a standalone business jet manufacturer this year following the sale of its train division. Bombardier president and CEO Eric Martel said in November that except for perhaps a product update, there are no current plans for new models. Even then, he expects any investment in such updates to be "very minimal because we've refreshed our product line pretty much across the board." ■

Jetcraft sees preowned business jet market rebound

by Curt Epstein

DAVID McINTOSH

Though Covid-19 has wreaked havoc on many planning models, aircraft brokerage Jetcraft recently released its Five-year Pre-Owned Market Forecast, which predicts nearly $50 billion in used business jet transactions in the next several years.

"Covid-19 has affected many industries including our own," said Jetcraft owner and chairman Jahid Fazal-Karim. "However, business aviation has started to recover and the reduction in commercial flight activity provides a real opportunity for the sector to further expand its customer base and secure long-term prosperity."

Despite 2020's reduced activity, the World Trade Association projects that volume will rebound in 2021, while the number of ultra-high-net-worth individuals is expected to grow by 5 percent a year through 2024. Based on these estimates, along with its own past transactional data and customer insights, the Jetcraft report forecasts more than 10,000 preowned jet transactions by 2024, worth $48.8 billion. While the number of preowned transactions predicted is nearly 1,000 more than what transpired over the past five years, the estimated value is $3.2 billion less.

"We are predicting a decrease in total transaction value as compared to the last five years, which is largely attributed to segment shifts and price declines in 2020 stemming from the Covid-19 pandemic," explained company president Chad Anderson. "However a return to stability is predicted over the forecast period beginning in 2021."

According to Jetcraft, over the past five years, large jet transaction value accounted for, on average, 45 percent of total annual transaction value and is predicted to average 47 percent between 2020 and 2024. Jetcraft noted that due to the international border shutdowns and quarantines that limited the utility of long- and ultra-long-range business jets, the value of this segment declined in 2020 to 43 percent of the annual value, which has impacted the total value during the outlook period, despite the increase in transaction numbers.

"We are forecasting a continued increase in large jet transactions, albeit at a slower pace than in previous years," noted Fazal-Karim. "Our...transactional data shows large jets representing a strong share of purchases by younger buyers, and that high-net-worth buyers, as compared to corporate or governmental buyers are more likely to invest in this aircraft segment. These trends truly demonstrate the potential of the large jet category which remains poised for long term growth." ■

› continues on page 28

Barrier breaker Chuck Yeager flies west | by Kerry Lynch

Chuck Yeager, the first pilot to break the sound barrier, died on December 7 at age 97. His wife, Victoria, tweeted: "It is w/profound sorrow, I must tell you that my life love General Chuck Yeager passed just before 9 pm ET. An incredible life well lived, America's greatest Pilot, & a legacy of strength, adventure, & patriotism will be remembered forever."

Born Feb. 13, 1923, in Myra, West Virginia, Charles Elwood "Chuck" Yeager reached Mach 1.06 in his Bell X-1—known as "Glamorous Glennis"—over the Mojave Desert on Oct. 14, 1947. The flight broke the sound barrier in a mission that was kept secret for seven months, according to the National Aviation Hall of Fame (NAHF). Yeager would then exceed twice the speed of sound on Dec. 12, 1953. He flew his final supersonic mission at age 74 on Oct. 14, 1997, in commemoration of the 50th anniversary of the historic flight.

Chuck Yeager, who died on Pearl Harbor Remembrance Day, charted a new course in aviation when he broke the sound barrier in 1947.

The trailblazing pilot, who served in World War II flying North American P-51 Mustangs, was drawn into the world of experimental test flight in July 1945 when he was a captain in the U.S. Army Air Force's Flight Test Branch at Wright Field near Dayton, Ohio. Graduating from Flight Performance School in 1946, he was selected in early 1947 to pilot the X-1, the first rocket-powered research aircraft. Propelled by a 6,000-pound-thrust, liquid-fueled rocket engine, the aircraft was the culmination of 10 years of research, NAHF said. Yeager worked toward the speed of sound by conducting a series of drops from a B-29. He reached that point while on the October 14 mission from Muroc Air Force Base, dropping from the B-29 at 20,000 feet above the Mojave Desert.

Yeager made 40 flights in the X-1, but that was only one of 10 test programs he was involved with while stationed at Edwards Air Force Base, NAHF noted. He later commanded the 417th Fighter Bomber Squadron and became commandant of the Aerospace Research Pilot School at Edwards, training close to half of the astronauts in the Gemini, Mercury, and Apollo space programs.

Enshrined into the NAHF in 1973, Yeager had his accomplishments highlighted in Tom Wolfe's book "The Right Stuff," which was later made into a movie.

In general aviation circles, Yeager was also known for his dedication to the Experimental Aircraft Association's Young Eagles program, which he chaired for a decade, and for regular appearances at EAA AirVenture Oshkosh. "Chuck Yeager's aviation accomplishments are well documented and legendary," said EAA chairman and CEO Jack Pelton. "His personal support of EAA and its programs helped take them to new levels, and thousands of people had the opportunity to meet and hear him when he was at Oshkosh." ■

by AIN Staff

While in transition, Wash. DC leaders stay optimistic

by Kerry Lynch

The year 2021 will be a time of transition in Washington, D.C. as the Biden Administration sets up shop, new cabinet members get appointed, new members of congress arrive, and congressional committees and caucuses reform.

Biden is a familiar face to Washington, and organizations such as the National Air Traffic Controllers Association are anticipating a collaborative environment as a result of its past interactions with the president-elect. FAA Administrator Steve Dickson, in the middle of a five-year term, is anticipated to continue in his role, but the Department of Transportation will have a new chief. Early rumors had suggested that Rahm Emanuel, who has previously held roles as White House chief of staff and the mayor of Chicago, was under consideration for that slot.

Congressional committees, while slightly more balanced in both chambers, are anticipated to remain relatively stable. By early December, Rep. Sam Graves (R-Missouri) had already been announced as the returning ranking Republican on the House Transportation and Infrastructure Committee. Graves, also a long-standing co-chair of the House General Aviation Caucus, will face the task of rebuilding the caucus, which lost dozens of members, primarily to retirements. The caucus has ranked among the largest on Capitol Hill and plays an important educational role on general aviation issues.

While in transition, Washington is expected to move forward on a number of issues and some early in the year. Notably, for the business aviation community, the FAA's electronic Pilot Records Database proposal, which had generated opposition for its inclusion of corporate operations in the recordkeeping requirements for the first time, was undergoing the final Office of Management and Budget (OMB) review late in the year, suggesting it could be released in January if it is not out by the end of the year. NBAA had a meeting with OMB in early December to present data on how that rule would affect its members without providing commensurate safety benefits.

Doug Carr, v-p of regulatory and international affairs for NBAA, further advised listeners during a regulatory and legislative session held during NBAA-VBACE, that safety management systems are taking priority at the FAA and that proposals covering requirements for Part 135 charter and 145 maintenance operations could be expected by 2022. Also, the FAA is remaining focused on drones, advanced air mobility, privacy, and air charter duty and rest time.

On Capitol Hill, workforce issues are expected to remain a center of focus, and Christa Luca, NBAA senior v-p of government affairs, was encouraged that lawmakers were primed to act early on legislation permitting public service campaigns to promote transportation career opportunities, including those involving aviation.

Capitol Hill also is anticipated to continue its focus on certification. Bills have been introduced in both the House and Senate aimed at improving the FAA's certification activities and are a high priority for the House Transportation and Infrastructure and Senate Commerce Committees. Similar legislation, if not already passed in late December, is expected to take priority next year.

Regardless, as the aviation community continues to suffer under the lingering effects of Covid, the industry and lawmakers will continue to push for aid and relief. The FAA has continued to grant extensions to key medical, training, and other requirements. Carr said the agency, however, is beginning to question how and when these can wind down.

Negotiations were uncertain in early December on another Covid aid package, but the aviation organizations were continuing to push for relief. By December, Luca noted, "We are nowhere near where we were a year ago" and that business aviation operations remain down. ■

Textron marking production milestones

Next September will mark the 50th anniversary of FAA type certification for the Cessna Model 500—the first of its Citation variants that fundamentally changed the company from primarily a general aviation manufacturer to a business aviation one. Also on tap in 2021 are the expected certification and first delivery of the high-wing Cessna SkyCourier 408 turboprop. The Wichita, Kansas, airframer expects to mark those two milestones in the second half of the year.

FedEx Express is the launch customer for the SkyCourier and is slated to take delivery of 50 of the airplanes in a cargo configuration with an option for 50 more. The aircraft will replace FedEx's aging fleet of Caravans and ATRs. The SkyCourier is also available in a configuration for 19 passengers.

What's not clear at this point is whether another Cessna airplane under development, the Denali, will see its first flight in 2021 because company officials declined to put a timeline on the turboprop single's milestones. Powered by the clean-sheet GE Aviation Catalyst engine, the Denali was originally expected to have its first flight in 2019 but that has not occurred because of delays in the engine program. However, GE began ground testing of the Catalyst on a Beechcraft King Air flying testbed in December and delivered the safety-of-flight engine to Textron Aviation, which put the airplane closer to the start of its flight-test program. **J.S.**

The launch customer for the Cessna SkyCourier 408 is FedEx.

Commercial OEMs look to 2021 for stability

While airliner OEMs would like to look forward to a fresh start in 2021, this year holds little promise for a so-called V-shaped recovery as the industry girds for the spike in Covid-19 cases over the winter. Still, new vaccines and more readily available testing has raised hopes that air travel can begin to pick up as confidence among the traveling public returns. But for Boeing, Airbus, and suppliers involved in their programs, a return in 2021 to 2019 levels of sales and production activity apart from the 737 Max appears unlikely.

Rather, 2021 will hopefully bring with it some measure of stability following a year that saw the loss of tens of thousands of jobs throughout the aerospace industry.

For Boeing, 2021 heralds the return of the Max, whose grounding in 2019 served to suppress production output even before the onset of the Covid-19 crisis. In a departure from plans to raise the 737's peak rate of 57 a month to as many as 63, Boeing now sees 737 Max rates gradually increasing to 31 per month next year and modestly rising with any increased market demand thereafter. While Boeing narrowbody deliveries can do nothing but increase due to the 20-month grounding, widebody production will remain suppressed as 787 rates fall from 10 to six per month and 777 output falls from five to two.

Airbus, meanwhile, will see production of its A330neo settle at two per month from 3.25 and A350 output to six from 10, reflecting an extended softening of demand for widebodies. Conversely, it believes its rate of 40 A320s per month provides for the right balance between supply and demand. "There might be some small adjustment, but we will keep it for the second half of 2020 and entering into 2021," said CEO Guillaume Faury, adding that a production ramp-up of the single-aisle "potentially could start in the second half of 2021," and will "very likely" happen in 2022. **G.P.**

Lilium's late 2020 announcement of plans to launch an eVTOL service network in Florida seem likely to be an omen for more growth in the sector in 2021 and beyond.

New wave of eVTOL aircraft set to keep surging in 2021

by Charles Alcock

Some expected the Covid-led calamities of 2020 to have a devastating impact on the large cohort of start-ups seeking to bring new, largely eVTOL, aircraft to market. Some wondered whether investors might lose their appetite for this much-hyped precocious sector. Others pondered how consumers might rethink their attitudes toward getting into small cabins to rideshare with complete strangers, as per some of the new urban air mobility business models.

As the year closed, the fallout appeared to be somewhat minimal, or at least not especially visible. Some of the supposedly 250-plus new programs appear to have hibernated to a degree, but the acknowledged front-runners seem to be pressing ahead, with the likes of Volocopter, Joby Aviation, Lilium, Vertical Aerospace, and Wisk to some extent appearing to pull away from the pack.

The new year could see the more visible separation of the wheat from the chaff because the consensus among independent observers seems to be that no more than a dozen or so of these new aircraft will see the commercial light of day. Also, as Covid disruption hopefully dissipates in 2021, there will likely be more scrutiny as to whether new aircraft developers are meeting the exacting timelines that will be required to meet highly ambitious commitments to achieve initial service entry by as early as the end of 2023—now scarcely 24 months away.

Also on the radar during 2021 will be the extent to which the regulatory outlook for the new wave of aircraft will become less opaque, giving programs a clearer path to type certification. As 2020 closed, there were reasons for optimism that leading regulators FAA and EASA were edging closer to defining safety means of compliance to cover new architectures and propulsion systems. Consensus as to how to approve plans to operate some of the new aircraft autonomously are far from resolved yet.

One trend that emerged during 2020 was a shift in emphasis away from the much-vaunted urban air mobility models towards a broader array of applications that may prove easier to get up and running in the short-term. These include operations in less densely-populated areas in support of functions such as emergency medical support and freight deliveries.

This trend also seems to be favoring fixed-wing designs using conventional or hybrid propulsion for which the technology risks of getting to market are lower. It also saw the more inclusive designation advanced air mobility increasingly vie for favor with the more specific urban air mobility.

Another trend to be alert to is more of the long-anticipated consolidation involving start-ups either being acquired by larger entities with deeper pockets or disappearing after running out of financial runway. After all, 2020 started with Japanese carmaker Toyota shelling out $394 million to become Joby Aviation's sugar-daddy as part of a $590 million Series C funding round. Korean rival Hyundai announced it had allocated $1.5 billion to buy a place in the eVTOL stakes with a direct investment in a new aircraft program. And now Joby is buying Uber Elevate. Expect more of the same. ■

FutureFlight

This story comes from FutureFlight.aero A resource developed by **AIN** to provide objective, independent coverage of new aviation technology, including electric aircraft developments.

ICAO stops short of branding testing a panacea for airlines

by Gregory Polek

Despite recent positive news about the development and imminent start of distribution of Covid-19 vaccines, global airline lobbyists continue to stress the importance of a speedy implementation of a harmonized testing protocol as a means to lift national quarantine requirements. However, the International Civil Aviation Organization (ICAO) cannot mandate states to adopt identical procedures but only encourage the application of risk assessment to decide what mitigation measures to take. In fact, ICAO's recently published Testing and Cross-border Risk Management Mitigation Manual makes clear that each country will need to adapt testing protocols based on their individual circumstances and gives guidance on when quarantines might remain appropriate.

Nevertheless, the International Air Transport Association (IATA) welcomed the publication as "encouraging progress" in the effort to reopen travel. The group cited a comment from the WHO's International Health Regulations Emergency Committee chairman, Didier Houssin, who IATA said foresees a role for testing as a means of re-opening international travel without quarantine measures.

"Clearly the use of the tests is certainly now supposed to have a much larger place compared to quarantine, for example, which would certainly facilitate things considering all the efforts which have been made by airlines and by airports," said Houssin following the WHO Emergency Committee Meeting on October 30.

For his part, IATA director general Alexandre de Juniac said that he sees encouraging signs of progress in terms of his group's efforts to loosen quarantine requirements. "Momentum is building in support of our call for systematic testing to safely reopen borders without quarantine measures," he claimed. "ICAO, working with health authorities and industry, has produced a high-level framework. Health authorities are beginning to explore how testing could supersede quarantine to stop the cross-border spread of the virus. Encouraging results from testing pilot programs should now give states the confidence to move forward quickly,"

De Juniac also applauded ICAO's apparent shift in focus from purely risk elimination to risk mitigation. "Our mindset must be focused on managing the risks of the virus while maintaining the overall well-being of the population," he said. "That would be a shift from current government policies entirely focused on risk elimination until a vaccine is available and at any cost to people's lives and livelihoods. Even with recent encouraging news, it will be well into 2021 before we can expect large-scale vaccination. In the meantime, denying people the freedom of mobility will do irreparable damage to jobs and our way of life." ■

Covid is no hoax, and no joke either

I don't know exactly how I contracted Covid-19, but it was three days after my return from an annual industry event in March when I began feeling off. This was back in the days before the call for mask-wearing in public. Yet, I attempted to keep my distance during the event, declining handshakes and hugs, skipping all after-hours socializing, grabbing take out food each night to eat in my hotel room while writing, and watching reruns on TV. Even so, inescapably, there was the navigation through crowded airports, and on the flight itself, you couldn't ignore the sounds of people coughing and sneezing around you.

During a walk around my neighborhood I noticed I was uncharacteristically short of breath, and the next day, while working at my dining room table during my self-imposed post-travel quarantine, my hands became so cold I had to put gloves on. Grabbing a thermometer, I logged a low-grade fever.

New York State had just set up a major drive-through Covid testing center near my home, so I called the Department of Health, explained I had recently traveled, gave my symptoms and my information, and was ordered to report there early the next morning, along with my oldest son who had also begun exhibiting symptoms.

While the drive through the early morning fog was surreal enough, the arrival at the testing facility was even more unsettling. The parking lot of a large park had been commandeered, with dozens of tents and trailers set up. A sign at the parkway exit ordered visitors to keep their car windows closed as masked National Guard members passed us along through a series of checkpoints, where my ID was tallied against lists of those with appointments. Paperwork, already printed out with our information, was held up to the car window for me to review and approve. It was then folded and stuck under the windshield wiper blade.

There were few cars there at that hour and we were waved forward into one of the drive-through testing tents. There, medical technicians in hazmat suits took the paperwork, instructed us to recline in our seats and roll down the window while they gave us "the brain tickle." After 10 unpleasant seconds it was over, the windows were closed, and just outside the tent, there was a large sign with a phone number to call for the test results.

CURT EPSTEIN

Drive through Covid test sites such as this one in New York have attempted to streamline the process and add to the volume of testing done.

Within three days, my county health department informed me of the positive test results for myself and my son. I was told to assume everyone else in the household had it as well. We were lucky in that our symptoms did not become life-threatening. My doctor told me to go immediately to an emergency room if I experienced difficulty breathing, but other than that, stay away. I had a persistent fever for 11 days, along with exhaustion, and my family members experienced symptoms of varying intensity. We quarantined for nearly a month, and even now, eight months later, members of my family are still experiencing Covid aftereffects. **C.E.**

› feature continues on page 34

Aerion breaks ground on Florida campus

by Chad Trautvetter

Aerion Supersonic said it has started development of its $300 million, 2 million-sq-ft headquarters complex at Florida's Orlando Melbourne International Airport (MLB). Dubbed Aerion Park, the 110-acre campus will house facilities for research, design, production, and interior completions of the company's AS2 supersonic business jet and future hypersonic aircraft. Production of the Mach 1.4 AS2 is slated to begin in 2023, followed by first flight in 2025 and service entry in 2027.

"This is a truly exciting day for Aerion as we launch our new home and the future of sustainable supersonic flight here in Melbourne," said Aerion chairman, president, and CEO Tom Vice. "We are building the future of mobility—a future where humanity can travel between any two points on our planet in three hours or less. We will change the world and bring a new sustainable means of supersonic and hypersonic flight to reality, and it will happen here at Aerion Park."

Aerion chairman, president, and CEO Tom Vice, left and MLB executive director Greg Donovan fist bump in front of a rendering of Aerion's $300 million, 2 million-sq-ft future headquarters.

Flanking the main site will be a new Aerion customer experience center with a completions center and a full-size AS2 cabin mockup where customers can customize interior designs.

The company said its aircraft assembly facility at MLB will span the equivalent of 14 football fields, while a systems integration laboratory will house the AS2 "iron bird." Also included on the site will be the engineering flight-test center.

In line with the company's plans for the AS2 to fly sustainably, Aerion Park is planned to be powered by clean energy. Thus, it will use solar power for manufacturing, have on-site electric vehicle charging stations, and reuse rainwater. Locally-sourced recycled materials will be used in the construction of Aerion Park wherever possible.

Aerion plans to deliver 300 aircraft over 10 years of production, supported by an order backlog that now has grown to $6.5 billion. ■

Airbus may plan hydrogen helo

Airbus is laying plans to develop hydrogen-powered helicopters. During a December 9 presentation to the Wichita Aero Club on the European aircraft maker's zero-emissions commercial airliner program, Airbus Americas v-p of research and technology Amanda Simpson said its ZeroE project could be adapted to its rotorcraft.

"Our focus right now is on the airliner," Simpson said. "I cannot go into some of the specifics that are planned for the helicopter side...because we haven't made those public, but there's some interesting ideas out there and some are actually in demonstration today."

In her presentation, Simpson reviewed Airbus's proposed fixed-wing platforms for ZeroE—a conventional, narrowbody turbofan jet with 2,000-nm range; a 100-seat twin turboprop with 1,000-nm range; and a blended wing turbofan. She also identified challenges of hydrogen power in aviation, including cost, availability, infrastructure, and regulatory acceptance of the technology. **J.S.**

› continued from page 1

shared some thoughts about the late Serge Dassault, who passed away in 2018. "This is the first rollout since we lost him. He would have liked and would have been proud to assist with this event. He was very fond of development of new programs, and the 6X progress and success would have been very important for him.

"We would also like to address thanks to our shareholder, Dassault Holding, led by Charles Edelstenne, and to the Dassault family—Marie-Hélène, Thierry, Laurent, and Oliver Dassault—they are always supporting the company in development of such new programs.

"Before we go to the next step," he continued, "it's time to address congratulations to the teams, the engineering teams, the manufacturing teams, for the job they have done to now. I would like to say good luck to them for the future because they still have a lot of work to perform up to the deliveries of the 6X to our customers."

Addressing the test pilots, who stood near the 6X during the rollout ceremony, Trappier told them, "Now the bird is yours."

Dassault Aviation chairman and CEO Eric Trappier proudly celebrated rollout of the Falcon 6X.

Longer Legs

When Dassault engineers were tasked with designing a new airplane to replace the canceled 5X, one challenge was how to manage the greater weight of the newly selected Pratt & Whitney PurePower PW812D engines. The basic dimensions of the cabin didn't change, but the engineers added 20 inches to the cabin length to balance the increased weight. This not only enabled retention of the unique skylight in the galley area but also the 30 larger windows as well as more room in the forward galley or crew rest area or more space in the aft lounge.

Both the 5X and 6X cabin feature the largest cross-section dimensions of a purpose-built business jet—Dassault calls it an "ultra widebody"—with a height of 78 inches (1.98 meters) and width of 102 inches. By comparison, the flagships of competitors Bombardier (Global 7500) and Gulfstream (G700) have smaller cabin dimensions, although they are much longer. The Global 7500 cabin measures 74 inches high and 96 inches wide. The G700 cabin is 75 inches high and 98 inches wide. Baggage is accommodated in a 155-cu-ft compartment inside the 6X pressure vessel, plus there is another unpressurized compartment of 76 cu ft.

Up to 16 passengers can fly on the 6X in three lounge areas. With the increased cabin width, the aisle is five inches wider than earlier Falcon models.

The 6X carries more fuel than was planned for the 5X and thus can achieve a maximum range of 5,500 nm at Mach .80 or 5,100 nm at Mach .85 with eight passengers and three crew. One significant difference is that the 6X is Dassault's first business jet with a nitrogen-based fuel pressurization system to lower the risk of fuel tank ignition (although earlier Falcons do have pressurized fuel tanks).

The 6X's maximum operating Mach number is Mach 0.90 and maximum altitude is 51,000 feet. Powered back to Mach 0.85, the 6X can link Los Angeles and London, New York and Moscow, or Paris and Beijing while maintaining a 3,900-foot cabin altitude at 41,000 feet.

Maximum landing weight is 85 percent of the 77,460-pound maximum takeoff weight, making possible short flights followed by longer unrefueled legs. Takeoff distance at sea level and mtow is 5,480 feet. Approach speed at typical landing weights (eight passengers and three crew) is a low 109 kias, and coupled with steep approach capability to 6 degrees, landing can be safely done at smaller airports such as London City, Lugano, and Saint-Tropez.

A feature that facilitates short-field performance is the fly-by-wire flight control system's use of electrically driven flaps and flaperons. The flaperons act as both flaps (increasing lift) and ailerons (roll control) and are a first for a business jet. With the control surfaces working in tandem, lift-over-drag augmentation improves steep approach visibility, control, and comfort.

The 6X's wing is updated with new structural architecture and a curved trailing edge, adding to the buffet margin and lift/drag ratio to lower the impact of turbulence, according to Dassault.

Nosewheel steering is integrated into the fly-by-wire flight control system "for safer runway handling in strong crosswinds or on wet runways."

Fabrice "Tom" Valette will fly the 6X first flight, and he has spent 40 days flying the simulated test bench 6X. Despite its larger size, he said, "We'll still have the agility that we we're used to with Falcon 7X. We still have the comfort because we have the same standard as the Falcon 8X. So regarding the flying qualities, the agility of the aircraft, the performance of the aircraft, it will remain the same. There's a lot of pressure on this [first flight], but this aircraft is going to be very sure and we're going to be very quick to get it in service. I feel very confident about it."

Pratt Power

The Pratt & Whitney PurePower PW812D ("D" for Dassault) engines that power the 6X each deliver 13,500 pounds thrust. The PW812D has a 44-inch single-piece fan and 4.5:1 to 5:1 bypass ratio and features the low-emissions Talon X combustor. Specific fuel consumption of PW800s is some 10 percent less than that of current in-service engines, according to Pratt & Whitney.

In a departure from previous designs, Dassault elected to source the nacelle design, integration, and production from Collins Aerospace (formerly UTC Aerospace Systems) instead of developing a proprietary system or working with the engine OEM to deliver the nacelle along with the engine.

In preparation for the 6X first flight, Pratt & Whitney has completed 2,500 hours of ground testing as well as 300 hours of flight testing of the PW812D on its Boeing 747SP flying testbed. The testing included bird strike, ice ingestion, and blade-off scenarios.

Updated Avionics

On the 6X flight deck, pilots will manage the jet with the latest version of the Honeywell Epic-based EASy III avionics, which also features four 14.1-inch displays, Honeywell's IntuVue RDR-4000 radar, and the FalconEye head-up display with combined vision system (overlaid synthetic vision and enhanced vision system imagery). FalconEye is standard in the 6X and was developed with Elbit Systems. Dassault expects to receive operational credit approval for use of FalconEye's enhanced vision system for instrument approaches to 100-foot minimums in the 6X.

FalconSphere II electronic flight bags are mounted in the console. Updated processors and displays make the EASy III avionics power up and down faster than ever.

The widebody cabin extends into the flight deck, giving pilots more headroom and 30 percent more window space and allowing entry and egress to the front seats without having to climb over the center console. Pilot seats recline to 130 degrees.

Product Support

Dassault's product support teams have been working alongside engineers since the beginning of the program to prepare the 6X for entry into service and normal operations. There are more than 60 Dassault service centers, 16 regional spares distribution depots, and more than 100 field representatives worldwide to support Falcon jets.

A new feature on the 6X is the FalconScan onboard integrated maintenance system. FalconScan monitors more than 100,000 parameters and Dassault experts have designed algorithms to facilitate fault detection and troubleshooting, as well as trends across the 6X fleet. ■

IATA: airline crew need Covid-19 vaccine priority

by Cathy Buyck

Airlines are playing a critical role in the transport of Covid-19 vaccines using their extensive global networks and expertise in the efficient shipment of time-sensitive and temperature-controlled pharmaceuticals. According to estimates by the International Air Transport Association (IATA), a single dose of the jab to 7.8 billion people worldwide would require the capacity of some 8,000 Boeing 747 freighters for the airlift.

"This will be the largest and most complex logistical exercise ever," IATA director-general and CEO Alexandre de Juniac noted at the trade body's annual general meeting on November 25. "The world is counting on us. And we will not disappoint."

An early inoculation of crew against the coronavirus would keep pilots and other airline staff healthy and therefore operational.

The IATA meeting endorsed a resolution that asks governments to ensure that aviation staff—and international travelers—are prioritized for Covid-19 vaccination once safe and effective treatments become available and health care workers and vulnerable groups have been protected. "Further to this, the World Health Organization has identified transportation workers, including aircrew and other aviation workers, as one of the priority categories for vaccination," an IATA spokesperson told **AIN**, asserting that "any crew or passenger who has been vaccinated should not have to undergo tests or quarantine."

The U.S. Cybersecurity and Infrastructure Security Agency also has included staff who support air transportation for cargo and passengers in a list of essential critical infrastructure workers.

Asked whether the association had already lobbied countries' health authorities to prioritize airline workers for early vaccine distribution and whether some governments are open to the idea, the spokesperson said IATA is "encouraging governments to follow the WHO guidance."

The European Cockpit Association, which represents the interests of more than 40,000 pilots from the national pilot associations in 33 European states, has not yet discussed the issue internally, a spokeswoman for the Brussels-based trade body told **AIN**.

Meanwhile, Abu-Dhabi-based Etihad Airways has started a Covid-19 inoculation program for pilots, cabin crew, and other airline staff in cooperation with the emirate's Department of Health after the UAE government in September granted emergency approval for China's Sinopharm Covid-19 vaccine to be made available to frontline workers. The vaccination is voluntary, and in a letter to staff, management stressed that an employee's decision to receive or not receive the vaccine is "in no way linked" to their employment at Etihad.

IATA said it does not take a position on whether vaccines should be mandatory for flight crew, maintaining that "is a matter for states to decide." Who should pay for the vaccine is also a matter for individual states, according to the spokesperson, "but we welcome the approach of governments who recognize the importance of aviation in distributing vaccines and in making vaccination accessible and who are therefore providing vaccines free of charge." ■

A pilot's own Covid fight

by Rich Pickett

My cough was very slight. A few days later the cough worsened and my lungs started to fill. Within a week, a fever started and a Covid-19 test was ordered. My taste and smell were fine, so it couldn't be SARS-COV-2, I thought. Testing labs were overwhelmed in March and my symptoms worsened over the next few days. I measured my blood oxygen (SPO2): 80 percent while standing and mid-80s sitting. Thirty minutes later my wife Jane dropped me off at the Kaiser Medical Center ER. I agreed to be ventilated and signed a do not resuscitate (DNR) order. I didn't expect to survive. I texted my family my love and turned off my phone. The Covid-19 test results from the previous week wouldn't arrive until the next day—after I was ventilated.

I thought I had been careful flying around the country teaching in jets, but obviously not careful enough. None of my clients were infected, however unbeknownst to me at the time, I ended up infecting my wife.

Jane approved a clinical trial of Remdesivir for my treatment. Ten days later I awoke from a coma, on my stomach with the respirator stuck down my throat and into my lungs, and heard Ana, one of my nurses, insisting that I open my eyes. She knew from my family and others that I was a pilot, volunteered with Angel Flight West, and my passion for aviation. Ana and the other nurses and doctors were amazing and tireless.

Once semi-upright, I motioned a desire to have the tubes pulled from my lungs. With the ventilator removed, body weight 12 percent lower, and still with double pneumonia, I developed my own physical and mental recovery regimen and started it that day.

Three days after they removed the ventilator, I told one of my doctors, Sapna Iyer, I would be out in three days. She diplomatically told me it was her decision, not mine. Having FaceTimed with Jane and my family after the tubes were removed, I worked to prove her wrong. Two days later she said she didn't know how I did it, but I was released—a day earlier than my initial goal. I was exhausted and wondering why the hell did I suggest leaving so quickly!

The next morning, I was rolling myself down the hall to the elevator, still with pneumonia. I left the hospital without any prescriptions or oxygen—just three physical therapy appointments. I was fortunate; many others during that time did not see their loved ones at the end of their Covid-19 hospitalizations.

My recovery was challenging, however, I was determined to gain strength quickly. I wrote a long letter to the Kaiser Board of Directors naming and thanking the many people who saved my life. In the hospital my blood panel showed an incredible immune response—some were 40 times above normal. When discharged, they were still elevated. A week later my blood tests showed everything at the low end of normal ranges. The following week I flew our Cirrus and completed a 61.58 recurrency checkride in my Eclipse. One week later I was at FlightSafety for my Part 135 Pilatus PC-12 recurrent, a month later I was in Wichita for 19 days adding a Beechcraft Premier type rating, having just renewed my first class medical.

At 66, in good physical shape, and with no pre-existing conditions, I was fortunate, while others were not. Later in the summer, the FAA requested my Covid hospitalization records and current observations. I sent them 1,055 pages for review. Having flown 300-plus hours since my quarantine ended (with a mask), three aircraft recurrents, and a new type rating, it will be interesting to see their response. Standby for my next update and the FAA's response. ■

Pilot Rich Pickett survived a nearly fatal bought of Coronavirus.

Respondents pick apart aircraft emissions proposal

by Gordon Gilbert

Two-thirds of the more than 350 comments submitted to the U.S. Environmental Protection Agency's (EPA) proposed rule to control and set standards for turbine airplane emissions said the intended rule falls far short of what it should be and that it should be more stringent. Meanwhile, about a third are generally satisfied with the proposal as written and intended.

In addition to some 50 individuals, comments were submitted by trade groups, engine and airframe manufacturers, and NGOs representing environmental interests.

The proposal, published on July 20 with a comment period that closed on October 19, is intended to bring emissions standards and test procedures in line with those of the International Civil Aviation Organization (ICAO). Critics want a rule that actually reduces greenhouse gas (GHG) emissions. As one environmental organization put it: "This proposed rule is meant solely to comply with the minimum standards set by ICAO with no foreseeable reduction in emissions that can be attributed to the proposed rule."

Voicing the view of many industry commenters, business and commercial aircraft manufacturer Embraer said the EPA should "replace the currently proposed rule with one that: applies to in-service aircraft, not just to new aircraft and new aircraft designs; include the emissions reductions achievable through both airframe design and operational improvements; and include a ratchet mechanism to decrease emissions over time and fully decarbonize the industry by 2045 or sooner."

NBAA noted in its comments an international program to significantly reduce business aviation's harmful emissions over the next 30 years.

Other commenters criticized the proposal for not recognizing the successes made in the use of sustainable aviation fuel (SAF). For example, this from Shell Oil: "By setting more challenging, yet achievable, mandates, EPA can create an environment for investment that can support additional production and use of SAF to help the aviation sector reduce emissions."

Several aicraft manufacturers and associations protested the proposed annual reporting requirement as requested. The NPRM requires that all civil aircraft manufacturers worldwide submit their respective volume and rate of specific aircraft models produced in the previous year.

Said Bombardier: "Like all business aircraft manufacturers, Bombardier Aviation considers its annual production rate as confidential information, proprietary to the company. Regardless, Bombardier currently reports its aircraft deliveries on a quarterly basis to several public and industry organizations. Bombardier requests that this publicly available aircraft delivery information be considered by the EPA for usage in its technical assessments, as an alternative."

The EPA believes that by aligning U.S. standards with those from ICAO, rather than adopting more stringent standards, the rule "will have substantial benefits for future international cooperation on airplane emission standards, and such cooperation is the key for achieving worldwide emission reductions."

Nonetheless, the EPA also analyzed the impact of two more-stringent regulatory alternatives but concluded that the additional emission reductions associated with those alternatives "are relatively small."

> **"Requiring U.S. manufacturers to certify to a different standard than has been adopted internationally (even one more stringent) could have disruptive effects on manufacturers' ability to market planes for international operation"**

In addition, "requiring U.S. manufacturers to certify to a different standard than has been adopted internationally (even one more stringent) could have disruptive effects on manufacturers' ability to market planes for international operation," the EPA said. Engine manufacturer General Electric agreed: "These (EPA) analyses show that the alternatives would lead to minimal reduction in [greenhouse gas] emissions, while imposing significant costs associated with deviating from the ICAO standards. Consequently, EPA appropriately decided against proposing either of these alternatives."

The General Aviation Manufacturers Association (GAMA) supports the proposed standards. However, GAMA said it has "serious concerns" about requiring manufacturers to report information that is already publicly available, "as well as information that ICAO does not request, such as RGF [a measure of fuselage size] and production volumes for airplane submodels."

Finally, aircraft manufacturers and operators alike said the EPA should clarify that the final rule applies only to "civil aircraft" and that public, military, government, and special missions aircraft are outside the scope of the standard. ■

Garmin adds Smart Rudder to piston twins

by Matt Thurber

Modern avionics create opportunities to add new safety features to older aircraft, and Garmin has taken advantage of these technologies to help pilots during the critical time when an engine fails on a twin-engine, piston-powered airplane.

Garmin's new Smart Rudder Bias not only adjusts rudder force to help control sideslip after engine failure, but it works with Garmin's Electronic Stability and Protection (ESP) to help the pilot control bank and avoid flying too slow. This sets Smart Rudder Bias apart from typical rudder bias systems, which are found in many multiengine turboprop and jet airplanes but aren't connected to envelope-protection systems.

Loss of control after failure of one engine in twin-engine piston airplanes is a significant safety issue and may in part explain why piston twin popularity has dwindled as buyers flocked to high-performance single-engine airplanes, especially those carrying full-airframe parachutes. Smart Rudder Bias technology could help revive interest in piston twins when owners upgrade them with modern Garmin avionics, possibly spurring new interest in this type of airplane.

Smart Rudder Bias is certified in the Beechcraft Baron B58/58A and Piper Navajo PA-31-300 through 325. Garmin is working on other piston twin types but hasn't yet identified which will be next, although plans call for adding more airplanes that are on the GFC 600 approved model list. The required equipment for Smart Rudder Bias includes Garmin's G500 or G600 TXi configured as a primary flight display with Engine Indication System (EIS) and GFC 600 autopilot with yaw axis option. There is no extra charge for the Smart Rudder Bias software, and airplanes already equipped with G500/G600 TXi and EIS can be upgraded to take advantage of Smart Rudder Bias with the addition of the optional yaw servo (once that particular model receives Smart Rudder Bias approval).

Automation Features

Smart Rudder Bias is part of Garmin's Autonomi family of automated technologies, which includes Autoland. Garmin test pilot Brandon Tilby explained the rationale behind Smart Rudder Bias, pointing out that its primary purpose is to reduce the pilot's workload and give the pilot more time during an engine-failure event when the airplane remains fully in control. That time can be used to identify the failed engine, shut it down safely, and run the emergency checklist. "There is a lot going on [during an engine failure in a twin]," he said. "The pilot might need a little bit of help."

Smart Rudder Bias primarily helps overcome the consequences of asymmetric thrust, which causes the big yawing moment in the direction of the failed engine, as well as loss of lift on the failed engine wing and airspeed loss because of sideslip and increased drag.

Even after helping the pilot by automatically applying the correct rudder control to help counteract the yaw—which is what ordinary rudder bias systems do—Smart Rudder Bias goes a few steps further.

First, it lights up a yellow annunciator next to the autopilot "scorecard" or mode annunciator on the PFD, so the pilot can instantly see which engine has failed before there is even time to sing out the "dead-foot, dead-engine" mantra or to look at the engine instruments to decipher which ones might signal an engine failure. In some normally aspirated piston twins, the manifold pressure gauge on the failed engine, with its propeller still turning, might still show the same indication as the good engine, which can further confuse the pilot. The fuel flow gauge would show the true story, but by then, the pilot will have lost valuable time.

Garmin's Smart Rudder Bias automatically applies rudder to help when an engine fails in a piston twin, identifies the failed engine on the PFD, and applies Electronic Stability and Protection assistance, giving the pilot more time to deal with the emergency.

At the same time, ESP automatically assists when an engine fails. If the pilot does nothing, ESP will eventually tell the autopilot to engage, and although this isn't the correct process according to the Smart Rudder Bias engine-failure checklist supplement, this can add an extra layer of assistance.

In normal operation, ESP has thresholds where the autopilot servos "nudge" the controls to tell the pilot that the airplane is nearing a bank or pitch limit. The nudge tells the pilot to reduce the pitch or bank to remain safely within limits. But in the case of an engine failure and the attendant yaw, which only gets worse as the airplane slows closer to Vmc (velocity minimum control), the bank threshold needs to be reduced, and it moves lower, to 10 degrees on the failed engine side in the Baron, for example. These new but temporary bank thresholds are shown on the PFD. The pitch attitude threshold adjusts to help the pilot maintain control, and the underspeed ESP feature helps the pilot avoid getting too close to Vmc.

Of course, with a Garmin G500/G600 autopilot, the pilot could simply push the LVL button at any time, and the autopilot will do its best to stay level but will also protect from underspeed by lowering the nose if sufficient power is not available to stay level. In any case, the LVL button push is also not in the checklist during this engine-failure emergency. The idea is to keep the pilot in the loop, not to remove the pilot from understanding what needs to be done to operate the airplane safely and deal with the emergency.

Smart Rudder Bias isn't available during takeoff, at least not until the airplane exceeds Vmc, but it remains armed unless the pilot turns off the Smart Rudder Bias switch on the panel. The pilot can also disable ESP functions, including Smart Rudder Bias, by pressing and holding the autopilot disconnect switch on the yoke. Doing so for more than 10 seconds turns ESP off.

Garmin is preparing training videos to help pilots learn how Smart Rudder Bias works. "There's not a lot for the pilot to do once the system is engaged," Tilby said. "It can stay on during the identify, feather, and securing engine procedures. The system is designed to aid the pilot and not take over decision making. We didn't want to override the control forces the pilot would feel to normally identify the problem. We can control the amount of yaw output based on airspeed [and other parameters] to undershoot so the pilot still has that feel and can recognize it."

Development and Testing

Garmin engineers have been working on Smart Rudder Bias for about two years, with proof-of-concept flight testing beginning in October 2019.

"We did a lot of analysis on the ground to determine if we wanted it full-time from the start of takeoff," said Tilby. "That's why we elected to use Vmc as the engage point. We didn't want the system to do things on the ground that the pilot didn't know about. There's nothing new from the start of takeoff to landing gear coming up so you can abort the takeoff as you normally would if you have an engine problem." Testing was done at a variety of speeds with the failed engine's propeller feathered and unfeathered. "We were able to augment yaw forces with the rudder servo and tune roll and pitch in ESP based on what we saw in the aircraft," he said.

Engineer Travis Locke is product manager for the Smart Rudder Bias retrofit program at Garmin's Salem facility and worked closely with software engineers at Garmin's headquarters in Olathe, Kansas.

"I was involved with the initial discussions of the vision of what we were hoping to accomplish with this," Locke said. "We met the goal we set out to meet. My biggest moment in development is the first time we were actually able to try it out on the airplane."

"It was a great experience," said Tilby. "This was one of the few times in my career where I got to flip the switch the first time. It worked just as well as we hoped."

Phil Straub, Garmin executive v-p and managing director of aviation and a longtime pilot, has always been bothered by the old aviation saying, that the purpose of a twin's second engine is to lead you to the crash site. Piston twins, he added, are capable but get a bad reputation. "In rare occasions where you have an emergency, you do have to be proficient and on top of your game, especially at lower speed, high angle of attack, and close to the ground."

Although Smart Rudder Bias isn't like a full fly-by-wire flight control system, which could easily be programmed with a hard barrier to prevent loss of control due to asymmetric thrust, Smart Rudder Bias uses a "soft barrier" to "continue the philosophy of encouraging you not to go there," Straub explained. "It makes you aware you have an engine out and asymmetric thrust. We help you determine which engine is out. You don't have to say, 'dead foot, dead engine' and possibly get it backwards. We apply that bias. By offering the offset like that, it buys you time."

Straub believes strongly that pilots flying typical piston twins deserve technology that helps keep them safe and that Smart Rudder Bias can add value to these airplanes, not just new airplanes. "I feel that anyone flying airplanes like [these], their expectation should be they ought to have a flight control system that has this capability. It should be a normal expectation for a modern flight control system. It really is not a complex function." ■

HAI, FAA call for voluntary rotorcraft safety retrofits

by Mark Huber

In separate appeals issued in early December, the president of Helicopter Association International (HAI) and the FAA administrator called on helicopter operators to retrofit their legacy aircraft with crash-resistant fuel systems, seats, and structures.

Writing to his members, HAI president James Viola, a former FAA director for general aviation safety assurance, called for operators to voluntarily upgrade their aircraft to improve safety. Viola noted that while these improvements are mandated for new helicopter fuel systems manufactured after April 5, 2020, and that crashworthy seats and structures have been required on all new helicopters certified after 1989, only 10 to 16 percent of the total helicopter fleet met that requirement due to low turnover. Citing FAA data, Viola said that "from 2009 to 2017, non–crash-resistant seats caused the deaths of 307 people in helicopter crashes; 58 deaths were attributed to postcrash fires during the same period.

HAI president James Viola

> "As aviation professionals, we share a duty to reduce the risks inherent in aviation."

"As aviation professionals, we share a duty to reduce the risks inherent in aviation. Once a hazard has been identified, we can't pretend it doesn't exist—not when that hazard has been demonstrated to be both likely and severe in consequences," Viola said. "Retrofitting aircraft to include these features will increase the likelihood of accident survival for your most precious resources—your employees and customers—and will make a clear statement of your commitment to safety. I know times are tough right now for most operators. A large portion of the industry is merely trying to hang on, make payroll, and stay insured. However, when times are tough, the strongest survive and thrive because they conduct their operations with safety as a foundational principle."

At a subsequent HAI webinar, FAA Administrator Steve Dickson echoed the call for these retrofits on a voluntary basis as part of the agency's "data-driven approach to safety."

"We're taking a scientific approach that is data-driven and urging, not mandating, the adoption of safety proposals," he said. "We're advocating for operators to make voluntary safety upgrades where it is beneficial." He added that improved helicopter occupant protection was an obvious area where improvement could and should be made. "We know that blunt-force trauma injuries are linked to more than 90 percent of helicopter fatalities," Dickson noted. He acknowledged that retrofitting these improvements into legacy helicopters was an additional expense for operators, but said that they are already required in new production helicopters. "We'd really like to see these same systems available and operators voluntarily installing them in our legacy helicopter fleet."

While praising the industry for not posting a single rotorcraft-related fatality in the 90 days leading up to December 1, Dickson said the 15-year trend for fatal helicopter accidents had not improved overall, and more needed to be done, particularly with regard to the adoption of safety management systems (SMS).

"No accident, certainly no fatal accident, is acceptable," Dickson said.

Speaking again of the FAA's anticipated 2022 rule to widen the SMS requirement for Part 135 and 145 operators and PMA parts providers, Dickson urged helicopter operators to "not wait for the rule. You can voluntarily implement it. You can identify hazards, and you can head off accidents or incidents by putting safety risk management processes in place. The key is being able to proactively identify and understand the risks in your operation. That is what an SMS really provides. It's not a stand-alone process. It's a business process that is integrated into your business. It leads to good data and good situational awareness, and good data drives good decisions.

"The aviation system is so data-rich," Dickson continued. "The machines [aircraft] are generating data. The air traffic control system is generating data. We have data from voluntary safety programs and flight data monitoring. A lot of the time when something bad happens, there was somebody in the world who knew there was an elevated risk. The challenge is to get that data, synthesize it, and present it in a way so that we cannot just be proactive, but actually predictive."

Rotorcraft ASIAS

Dickson also said the FAA is working in concert with the aviation community to bring the agency's Aviation Safety Information Analysis and Sharing (ASIAS) system "into the rotorcraft community.

"This is a big deal," he emphasized. "We are working with the [rotorcraft] industry and HAI and other industry partners to push ASIAS to the forefront of helicopter safety. We've stood up an ASIAS rotorcraft analysis team. It can take us to the next level of safety in rotorcraft. A centralized database allows [helicopter safety] teams to dive into that data to be predictive of hazards and risks while maintaining key protocols and data protection critical to the success of the program. You can scan data from flight operations that could potentially lead to accidents and ideally have operators share that data with the [U.S.] helicopter safety team to develop mitigation strategies to reduce the risk of fatal accidents for the entire community," Dickson said. He also touted the value of virtual safety workshops and the FAA's newly instituted helicopter Infoshare program. "You can share stories and see how others have handled similar safety risks." He also praised the work of the Helicopter Safety Advisory Council, which has developed best practices for the offshore energy sector.

FAA Administrator Steve Dickson

> "We're advocating for operators to make voluntary safety upgrades where it is beneficial."

Dickson expressed concern that the Covid pandemic and other recent "disruptions" have diluted human capital from commercial carriers and OEMs with the potential to negatively impact safety. "There have been a lot of retirements and there's been a lot of change, people getting laid off. Instability and unpredictability are the enemies of safety. You don't like for things to change. We've had a lot of change introduced into the system and a lot of disruption in a matter of months, sometimes weeks. The aviation system we had in February and March of 2020 is really not there anymore in the same way." Dickson said this change made it imperative that the industry and the FAA be even more collaborative when it comes to safety and identifying risks. The risks, Dickson said, "may not be the same ones that were here seven or eight months ago." ■

News Update

Heli-Expo 2021 Going Ahead

The Helicopter Association International is reaffirming its commitment to holding its in-person, annual Heli-Expo trade show in 2021, March 22 to 25 in New Orleans. More than 350 companies to date have committed to exhibiting. Covid-19 safety protocols will be in place, including social distancing; building extra time into the event schedule for thorough, repetitive cleaning; setting up additional mobile badge-printing stations to limit touchpoints; hand-sanitizer stations throughout common areas and the show floor; limiting show floor attendance to industry professionals; providing safety kits with masks and hand sanitizers to all attendees; mandating masks in the convention center; and temperature checks at convention center entrances.

Drone Hits LAPD AStar

Federal agents arrested Andrew Rene Hernandez, 22, for criminal "unsafe operation of an unmanned aircraft" after his drone collided with a Los Angeles Police Department (LAPD) AStar helicopter. If convicted, he faces up to one year in federal prison. Hernandez said he launched his DJI Mavic Pro drone shortly after midnight on September 18 because he said he was curious about LAPD response to a break-in at a nearby Hollywood pharmacy. While the helicopter was flying above the pharmacy at approximately 12:35 a.m., its pilot saw and unsuccessfully attempted to avoid the drone, which struck the helicopter, damaging its nose, antenna, and bottom cowling. The helicopter then proceeded direct to the LAPD Hooper Heliport (4CAO) and made a precautionary landing.

NTSB: Pilot Disorientation Caused Aeromed Fatal

The NTSB has concluded that the probable cause of a fatal June 2019 helicopter air ambulance crash at the Brainerd (Minnesota) Airport was the result of pilot spatial disorientation and loss of control during a night-time instrument approach. Both the pilot and flight nurse were killed, while the flight paramedic survived with serious injuries. According to the NTSB, the 2008 Leonardo AW109S, operated by North Memorial Air Care, entered into a spin near the runway and hit terrain. Weather conditions at the time of the accident were one-quarter mile visibility with a 200-foot ceiling in fog.

Lemmo Takes Over At Sikorsky

Lockheed Martin announced that Sikorsky Aircraft president Dan Schultz is retiring and will be replaced by Paul Lemmo, currently Lockheed Martin's v-p of integrated warfare systems and sensors. Schultz, a former U.S. Marine helicopter pilot, assumed Sikorsky's top spot shortly after it was acquired by Lockheed Martin in 2014.

UK to suspend EU tariffs on Boeing jets

by Gregory Polek

Boeing jets delivered to the UK will no longer be subject to a 15 percent tariff now that Britain's Department of International Trade has decided to suspend the duties still imposed by the EU.

The United Kingdom government last month said it will suspend retaliatory European Union tariffs on Boeing airplanes resulting from the EU-U.S. dispute over subsidies to their respective commercial airframe makers, in an effort to smooth relations with the incoming Biden Administration after the Brexit transition period ends on December 31. The suspension, which the UK calls "an effort to bring the U.S. towards a reasonable settlement and show the UK is serious about reaching a negotiated outcome," accompanies a UK commitment to adopt "an independent approach" on longstanding trade conflicts between the U.S. and EU in general, including those involving steel and aluminum tariffs.

"The twin announcements are part of the government's strategy to de-escalate trade tensions so the U.S. and UK can move forward to the next phase of their trading relationship and ultimately draw a line under a dispute that harms industry on both sides of the Atlantic," said the UK Department of International Trade in a statement.

"As an independent trading nation once again, we finally have the ability to shape these tariffs to our interests and our economy and to stand up for UK business," added International Trade Secretary Liz Truss. "Ultimately, we want to de-escalate the conflict and come to a negotiated settlement so we can deepen our trading relationship with the U.S. and draw a line under all this."

The UK's concession on aerospace subsidies signals another effort to draw attention to Britain's independence from the EU, which imposed retaliatory tariffs worth some $4 billion annually on the U.S.—including a 15 percent duty on Boeing jets—after the World Trade Organization authorized the bloc to impose countermeasures in response to illegal U.S. subsidies to Boeing.

In a parallel case related to Airbus, the WTO allowed the U.S. in October 2019 to impose countermeasures against European exports worth up to $7.5 billion. The trade body based the amount on an appellate body decision in 2018 that had found that the EU and its member states had not fully complied with previous WTO rulings relating to repayable launch investment for the A350 and A380 programs.

Although the UK move might appear to put it at odds with the EU, the European Commission also has said it stands ready to work with the U.S. to settle the dispute and to agree on long-term disciplines on aircraft subsidies.

"We have made clear all along that we want to settle this long-running issue. Regrettably, due to lack of progress with the U.S., we had no other choice but to impose these countermeasures," said European commissioner for trade Valdis Dombrovskis in early November. ■

IATA laments slow state action on quarantines

by Gregory Polek

Governments have not received calls from the International Air Transport Association (IATA) for the lifting of quarantines with much enthusiasm or responsiveness, despite the group's persistent efforts to draw attention to scientific evidence of the ineffectiveness of such restrictions, IATA director general Alexandre de Juniac conceded last month. Speaking during the latest of a series of media briefings on Covid-19 effects on the industry, De Juniac expressed some frustration with governments' failure to respond to a recent study by EASA and the European Centre for Disease Prevention and Control (ECDC) that called for states to treat travelers in the same way they treat members of the local populations who have not had any direct contact with a person infected with Covid-19. He did, however, concede that the methods of rapid testing that IATA recommends taking the place of quarantines remain comparatively immature, a point that he said might explain authorities' slow response.

"It takes time because our call for systematic testing using new technologies such as antigen testing is based on very recent improvement in the technology of the test," remarked De Juniac. "So it's not surprising that governments and health authorities are cautious and are slow-moving. But we are pushing hard for them to implement this type of testing. We see some governments moving; the French government is moving; the German government is also thinking of moving in that direction; we see some Asian governments moving in that direction—Singapore, for instance. So progressively, it is coming into force but the way still is pretty long."

De Juniac's comments come in the context of accelerating Covid cases around the world, resulting in what could become airlines' most challenging period of the pandemic. Also speaking during Tuesday's briefing, IATA chief economist Brian Pearce lamented the slow recovery of international traffic in particular, which, he said, remains some 88 percent below 2019 levels. Although calling international markets "exceptionally weak," Pearce noted that more testing in Central America has generated "some growth" between that region and North America. On a more optimistic note, however, the IATA economist cited an improvement in domestic revenue passenger kilometers (RPKs), which have reached some 40 percent of last year's levels. In fact, load factors seen in domestic markets have reached 70 percent, or above break-even, said Pearce.

Noting the group's estimate that the industry will not return to "cash positive" until the fourth quarter of next year, IATA global airport infrastructure and fuel director Hemant Mistry called for further public support beyond the $173 billion in aid governments have provided so far, not on ly through direct subsidy to airlines but through market stimulation schemes. Mistry cited the U.S. Coronavirus Aid, Relief, and Economic Security (CARES) Act as an example of an effective means of such market stimulation through, for example, the suspension of the domestic ticket tax, the federal flight segment tax, and the international arrival and departure tax.

› continues on next page

News Update

EASA Expects To Clear 737 Max in Mid-January

A proposed airworthiness directive (AD) issued by EASA on November 24 outlines conditions that would allow Boeing's 737-8 and -9 Max to resume flying in Europe following their worldwide grounding in March 2019.

Comments on the EASA proposed AD were due 28 days after the proposed AD's issuance, and EASA expects to finalize the AD in mid-January.

Two key differences exist between the EASA AD and the FAA AD, according to the European agency. "EASA explicitly allows flight crews to intervene to stop a stick shaker from continuing to vibrate once it has been erroneously activated by the system, to prevent this distracting the crew," it said in response to the stick shaker activation that occurred in the two fatal Max accidents, which apparently confused the pilots. The other difference involves an expected short-term restriction against the use of the autopilot for "certain types of high-precision landings."

Singapore-Hong Kong Travel Bubble Delayed

Singapore and Hong Kong have decided to further delay the start of the so-called travel bubble between the two territories into sometime next year following a review of Covid-19 case counts in Hong Kong, the Civil Aviation Authority of Singapore (CAAS) said on December 1. Originally announced on November 11, the Singapore-Hong Kong air travel bubble (ATB) would have subjected travelers between the South Asian city-state and the Chinese territory to Covid-19 tests in lieu of quarantines or seven-day stay-at-home notices for Singapore residents. Singapore Minister for Transport Ong Ye Kung on November 21 announced a two-week deferral of the planned November 22 launch of the ATB flights due to "the evolving Covid-19 situation" in Hong Kong.

Singapore and Hong Kong planned to issue an update on further developments by the end of December.

MOU Accompanies Gulf Air Launch of Tel Aviv Service

Bahrain's Gulf Air became the latest Middle East airline to signal an intention to forge ties with Israel's El Al with the signing of an MOU to discuss codeshare and other cooperation during an official visit from the Kingdom of Bahrain to Israel. The MOU accompanied an announcement of the planned launch of twice-weekly Gulf Air flights to Tel Aviv starting on January 7.

Along with talks about potential joint codeshare operations between Manama and Tel Aviv, the agreement lays the foundation for discussions on plans for greater commercial cooperation in cargo, engineering, travel technology, and "any area that can benefit both airlines and their customers."

Boeing lands milestone Max order from Ryanair

by Gregory Polek

Boeing's 737 Max program received a major boost December 3 with a milestone order from Ryanair for 75 more of what the manufacturer now calls the 737-8-200, increasing the European LCC's Max order book for the high-density, 197-seat variant to 210. Signed during an online press briefing from Boeing offices in Washington, D.C., the contract calls for deliveries to start early in 2021 and run until December 2024.

Ryanair hopes to take between 25 and 30 of the aircraft in time for the European summer flying season, according to CEO Michael O'Leary, who noted that the airline's fleet plans assume passenger traffic to increase to between 95 and 130 million from just 35 million this year. In 2019 the airline carried 149 million passengers. Over the next five years, Ryanair plans to expand the size of its fleet from 450 to 600 aircraft and increase its traffic to 200 million passengers.

O'Leary, who valued the incremental order at some $7 billion, called the discount on the sale and the compensation from Boeing for failed deliveries due to the Max grounding "modest."

The Ryanair boss added that the airline's shareholders raised $1.25 billion in the bond market in September in preparation for the purchase financing.

Ryanair's latest Boeing Max order, for 75 of the 197-seat Max 8-200 variant, brings its commitment total to 210. Deliveries begin in early 2021.

Boeing CEO David Calhoun insisted that the company will not try to pad its backlog for the Max with unsustainably low prices, noting he will allow the performance of the aircraft "to speak for itself."

"I'm not concerned about price discounts as incentives to move airplanes," said Calhoun. "It will require patience by Boeing, which we have. We believe strongly in a recovery and therefore we will stay patient. So we don't feel a need to discount our way into the marketplace."

For Boeing, the deal marks the biggest Max order since the airplane's grounding in March 2019, following the twin crashes of the airplane that claimed 346 lives. "We have had one rough year," said Calhoun. "Michael [O'Leary] visited with me during my first couple of weeks on the job in January. At that time there was no Covid...there was no discussion on Covid, it was a discussion on safety. And since that moment, every couple of weeks [we have] been on the phone to talk about the progression of this airplane through the regulatory process and reaffirming our faith in the airplane and our commitment to safety, every step of the way, and our willingness to allow the regulators do anything and everything they wanted to do to this airplane."

On the subject of the apparent decision not to call the airplane the 737 Max in its press literature, Calhoun denied any effort to rebrand the product. "There is no rebranding going on; there is nothing cute about the way we're emphasizing the 737 family because the Max is an airplane inside the 737 family," he said. ■

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Quarantine relief

The IATA official also recommended route subsidies for rural communities and tourism markets, per-seat subsidies to encourage airlines to fly more frequencies with low load factors, advance purchase of tickets by governments to support liquidity, and general travel subsidies in the form of packages supporting fares, hotel accommodations, and tours.

Examples include a Cypriot connectivity scheme begun in July 2020 involving a €7 to €17 per passenger subsidy based on load factor. Mistry said that program helped restore airline operations to/from about 40 countries.

In Greece, the government offered an incentive for airlines to restart operations with a €20-per-seat subsidy, resulting in a marked improvement in passenger numbers during April and May. In Hong Kong, the airport authority bought 500,000 tickets in advance of borders opening. It plans to issue the tickets, allocated among the four home carriers, in a so-called "Lucky Draw" to both Hong Kong residents and foreigners. Finally, in Thailand, the government released three stimulus packages to subsidize airfares, accommodation, and services as well as travel for health care workers.

"The initiatives that we're looking at should be easy for governments to implement but also easy for governments to exit when they see conditions improve," said Mistry. "The more governments can help, the more we can be in a situation where the industry is able to recover." ■

Embraer sees Covid leading to a return to 'rightsizing'

by Gregory Polek

Embraer's projections of persistent downward pressure on airline travel demand due to Covid-19 influences—even beyond the time it expects the industry to return to 2019 levels in some three or four years—will serve to reinforce the Brazilian company's market position as a return to "rightsizing" takes hold, company executives said during a presentation of its latest 10-year market forecast for aircraft carrying up to 150 seats.

The company, whose forecast calls for a total demand for 5,500 aircraft in that capacity category through 2029, sees not only a resulting reversal in the trend toward larger-capacity aircraft, but a process of "regionalization," in which companies seek to protect their supply chains from external shocks by bringing business closer together and thus generating new traffic flows. The company also envisions a decentralization of offices from large urban centers resulting in more diverse air networks and passenger behavior trending toward a preference for more short-haul flights and more environmentally friendly modes of transport.

Speaking during the online event, Embraer Commercial Aviation vice president of marketing Rodrigo Silva e Souza called the Covid pandemic the most serious crisis the industry ever has faced, citing a 60 percent decline in revenue passenger kilometers (RPKs) in 2020 compared to the 1.8 percent decline resulting from the 9/11 tragedies and a 1.5 percent fall during the financial crisis of 2008-2009. Embraer sees RPKs returning to 2019 levels by 2024, but remaining 19 percent below the levels the company previously forecast through 2029.

"The commercial aviation industry will be smaller," said Silva. "It will also have a different shape, so changes in global trade flows, changes in passenger behaviors, will for sure lead to changes in the air travel industry and passenger flows, leading to a different industry."

Those changes will, consequently, lead to a different fleet profile, favoring aircraft in the categories in which Embraer's product line resides, Silva asserted.

"Of course, we saw how much stimulus was necessary to keep the economy running," he added. "We believe this will have consequences over the next years. So it's not only about the short-term impact but also about the mid-to-long-term impacts... on trade and consumer confidence."

Silva also highlighted the social consequences of the pandemic, which, he said, has most affected low-income people, whose upward mobility had effected much of the growth in the airline industry. The resulting deceleration in the growth of the middle class will also contribute to what Silva called a re-calibration of the industry at large, leading to a shift, most significantly for Embraer, in the demand profile for commercial airplanes.

"People are talking about the great reset—a significant change in the profile of the industry," he said. "To create value in a sustainable and responsible way is all about rightsizing. It's all about using the right aircraft size for the demand that is out there. With a lower demand, we believe this will drive the average aircraft size downward."

Meanwhile, what Silva characterized as regionalization, or companies "turning inward," has already resulted in imports accounting for a smaller proportion of GDP since the great financial crisis. Embraer sees the pandemic accelerating that trend and, therefore, strengthening of domestic air travel markets—yet another factor favoring smaller aircraft, said Silva.

Finally, the accelerating trend toward telecommuting will not only reduce the demand for business travel overall but result in a sort of decentralization in which people choose to live in smaller cities, Silva suggested. "Instead of a daily commute inside a city, perhaps we will see short flights between secondary cities and big centers once, twice a week, or three times, and people prioritizing the quality of life in smaller centers." ■

FBO and Airport news by Curt Epstein

Lynx To Build New FBO at FXE

Lynx FBO, which acquired the World Jet facility at Florida's Fort Lauderdale Executive Airport (FXE) last year, announced it will break ground on a new multi-million dollar facility there in the first half of 2021. Since January 2019, the company, which currently has eight FBOs across the country, has been operating from an existing facility on the northeast side of the field and, since its purchase, has invested $1.5 million in upgrades to the location's hangar complex.

New plans call for the construction of a 6,700-sq-ft terminal on the northwest side, directly off Taxiway F, near the Marriott Courtyard hotel. The project also includes 40,000 sq ft of new adjacent hangar space able to shelter the latest ultra-long-range business jets. That will bring the FBO to approximately 300,000 sq ft of hangar space, along with four new acres of ramp.

The new facility is slated for completion by the second half of 2022. "We have made significant investments at [FXE], including the addition of a highly-qualified and experienced management team, as well as the training and development of our associates," said Lynx president Tyson Goetz. "We are excited to be developing a world-class FBO campus that is representative of our service culture for the customers of Fort Lauderdale."

Lynx FBO's planned 6,700-sq-ft terminal at Fort Lauderdale Executive Airport.

Jet Aviation Debuts Scottsdale Location

Jet Aviation introduced its new FBO and hangar complex at Arizona's Scottsdale Airport late last month. In 2019, the company acquired a stake in the Scottsdale Jet Center project and later expanded that to include the entire location, which is now the third FBO on the field. It consists of an 8,500-sq-ft terminal with a passenger lounge, pilot lounge with snooze rooms, two conference rooms, flight planning area, business center, concierge, onsite car rental, crew cars, rampside vehicle access and available U.S. Customs service. The facility also features a 30,000-sq-ft hangar that can accommodate the latest ultra-long-range business jets. "We have promised our customers that we will expand to locations where demand is high and are fully committed to delivering industry-leading services as required," said David Best, the Switzerland-based company's senior v-p of regional operations and U.S. general manager. "With Scottsdale Airport in the top 15 business aviation hubs in the U.S., this new opening underscores our commitment to strengthening our position as a leading FBO provider."

SAF Now Flowing at Signature San Francisco, London Luton

Following up on an announcement made in September about the establishment of permanent supplies of sustainable aviation fuel (SAF) at two of its FBOs, Signature Flight Support said the fuel is now available at its facilities at San Francisco International Airport (SFO) and at London Luton Airport in the UK.

"We're filling aircraft right now—thousands of gallons a day, every day—at SFO and LTN to meet the growing market demand," said Tony Lefebvre, Signature's COO. "SAF is the cornerstone of aviation's answer to environmental responsibility. Creating an affordable alternative to traditional jet-A is vital to ensuring we're able to help our customers reduce their carbon footprint." He added that the company, the world's largest FBO operator, plans to add SAF capacity at other locations over the coming year, as it makes a commitment to fuel all private and business aircraft at SFO with blended SAF starting in the first quarter of 2021.

NetJets, part of the original announcement, which also included SAF producer Neste, took on the initial load of more than 1,000 gallons in one of its Bombardier Challenger 350s at SFO. As the primary launch customer, the fractional jet operator has agreed to purchase up to three million gallons of SAF through the Signature Renew program for its flights at SFO and, via a book-and-claim scheme, at the company's Columbus, Ohio headquarters.

Sky Valet Joins Paragon FBO Network

The Paragon FBO Network has bolstered its European footprint with the addition of the Sky Valet chain to its ranks. Sky Valet, a subsidiary of Aéroports de la Cote d'Azur, has a presence at 30 airports across the continent in France, Spain, Portugal, Italy, and Bulgaria, including popular destinations such as Cannes, Madrid, and Barcelona. It handles more than 40,000 business aircraft movements a year. The move brings the Paragon Network to more than 100 locations in 24 countries, with its upscale member FBOs covering many predominant business regions, including many of the major cities in the U.S.

"It's a perfect fit to have Sky Valet join our network of outstanding FBOs that already focus on safety, customer service, and value," said Paragon Aviation Group president Megan Barnes. "With the addition of their impressive network to our already strong presence overseas, we are now among the largest FBO networks around the globe."

Before any new location is welcomed to the network, each must pass an audit conducted by Paragon, evaluating its facilities and services, to ensure a uniform level of quality.

Universal Tapped for UK's Northolt GAT Management

Universal Aviation, the ground support division of Houston-based Universal Weather & Aviation, has been selected to manage the general aviation terminal at London's Northolt Airport.

Starting on January 1, Universal—which already has a presence in the UK capital through its FBO at London Stansted—will have designated areas set aside in the facility at the Royal Air Force-operated airport for the handling of business aviation. This will include a reception area, a small operations section, a passenger lounge, and security screening, as well as food storage areas. A separately-run cafe will also be available for crewmembers. Fueling is provided by World Fuel Services, which has several tankers on-site and accepts fuel releases, while Universal will be responsible for all over-the-wing aircraft handling.

"Because it's a military airport, it has historically been a little tricky to get in and out of for some operators," said Universal Aviation UK and Ireland managing director Sean Raftery, who added that Northolt's close proximity to Central London makes it an attractive option for business aircraft operators. "By partnering with the Royal Air Force and extending our ground support operations to Northolt, we are going to be focusing on making this an easier, more accessible option that business aircraft operators will want to use as an alternative to other more congested airports close to the city."

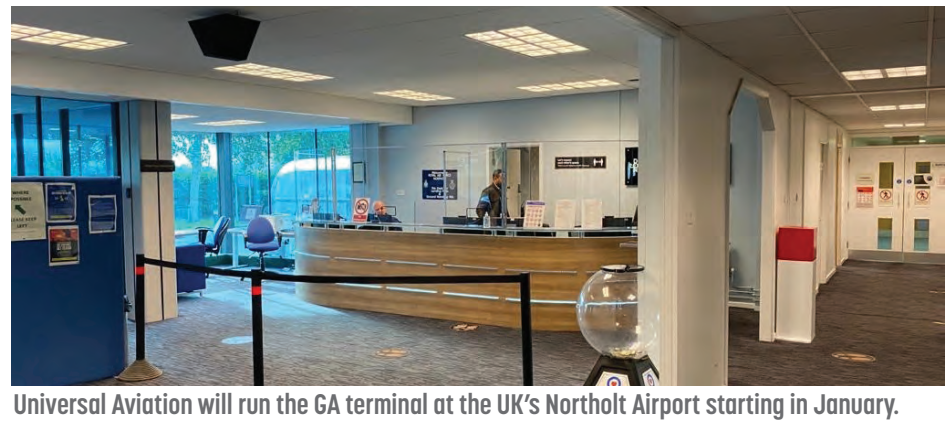
Threshold Aviation Group Adds New Hangar at Chino

California-based Threshold Aviation Group has acquired an additional hangar at Chino Airport, where it operates one of three FBOs on the field.

The company—which offers a full spectrum of aircraft-related services, including aircraft management, charter, and sales—occupies the approximately 50,000-sq-ft Hangars 3 and 4 in the airport's commercial complex, one of which it uses for its maintenance operation. It has now added the similarly-sized Hangar 1, which had been dormant after a previous tenant's deal fell through.

Each of the hangars includes 8,000 sq ft of office space, plus another 8,000 sq ft of upstairs space used primarily for spare parts storage. "The fact is we needed more space before Covid-19 hit and then things looked somewhat bleak for a while," said company founder and chief executive Mark DiLullo. "Now people are looking for a more reasonable option to get to and from where they need to go, and private aviation is a more reasonable option than ever due to health and safety concerns with flying commercial." ■

A NetJets Challenger 350 accepted bizav's initial load of blended sustainable aviation fuel at SFO.


Universal Aviation will run the GA terminal at the UK's Northolt Airport starting in January.

Spirit Aeronautics's new hangar will allow it to accommodate large-cabin business jets such as the Bombardier Global 7500 as well as regional jets.

Larger Hangar Enables Spirit To Serve Broader Clientele

MRO and modification specialist Spirit Aeronautics has relocated to a larger hangar that will allow it to serve a broader range of clients. Located at Signature Flight Support's FBO at John Glenn Columbus (Ohio) International Airport, the new hangar encompasses more than 120,000 sq ft with doors measuring 120 ft wide and 29 ft high.

The new hangar is large enough to accommodate Bombardier Global 7500s as well as regional airliners configured for VVIP transport, enabling Spirit to serve a wider clientele.

For the past 19 years, Spirit's three hangars—two of which were 6,000 sq ft and the third at 3,500 sq ft—could only accommodate midsize business jets such as the Learjet 60 and Hawker 1000, CEO Rick Ochs told **AIN**. Previously, its VVIP modifications on larger aircraft required the company to perform the work at remote hangars.

GTCR Partners with CEO To Recapitalize JSSI

Private equity firm GTCR will take a majority stake in Jet Support Services (JSSI) in what officials are calling a recapitalization of the provider of power-by-the-hour maintenance programs and technical support services to business aviation operators. Under the deal, JSSI CEO Neil Book and family will retain a "significant" minority stake in the company. "I'm so pleased to announce our partnership with GTCR, a proven winner in the business aviation industry," Book told **AIN**. "Both organizations are hyper-focused on growth and innovation. I'm excited to see what we can achieve together."

According to GTCR, it will partner with Book and JSSI's management team on the expansion of the company's capabilities and market presence.

GTCR's past portfolio companies include FBO network Landmark Aviation and Camp Systems. It also is currently an investor in aviation broadband connectivity provider Gogo.

Bluetail Establishes Records-scanning Network

Nearly seven months after its launch, Bluetail has established through various partnerships a digital aircraft records scanning network comprising more than 120 locations in the U.S. and Canada. The centers are located in cities and near general aviation airports, including Teterboro, New Jersey; White Plains, New York; Las Vegas; West Palm Beach, Florida; Dallas/Fort Worth; Scottsdale, Arizona; Seattle; and San Jose and Van Nuys, California.

The network itself took about nine months to vet partners and build, Roberto Guerrieri, who co-founded Bluetail with Stuart Illian, told **AIN**.

Scanning centers adhere to both FAA Advisory Circular 120-78A (electronic signatures, recordkeeping, and manuals) and FAR 43.12 (falsification of maintenance records). They also follow the same physical security and best-practice scanning protocol and are SOC 2 and HIPAA-compliant.

PAG Grows Brazilian Footprint Through EFIX Acquisition

Precision Aviation Group (PAG) will expand its business in landing gear and hydraulic and pneumatic component services through its acquisition of São José dos Campos, Brazil-based EFIX Aviation Support, the Atlanta-based company announced. The deal also gives PAG, an MRO provider and fixed-wing and rotorcraft supplier to the civil and defense markets, its 11th global repair station.

"Additionally, EFIX expands PAG's footprint in Brazil—where we've had a presence since 2015—enabling our customers to benefit from in-country MRO support and expanded local inventory levels, quicker turnaround times, and expanded AOG support," said PAG president and CEO David Mast.

Precision Aviation Group will see an expansion in landing gear MRO services following its acquisition of Brazil-based EFIX Aviation Support.

EAP Sees Double-digit Enrollment, Engine Growth

Engine Assurance Program (EAP) has seen enrollments in its hourly engine maintenance program increase 40 percent this year while it has also added engines to its program and expanded its capabilities, the Dallas-based company announced at NBAA-VBACE. Of its recent enrollment growth, 30 percent are first-time aircraft owners.

EAP has added the Rolls-Royce AE3007C/C1 and AE3007A1E engines to its coverage. Those engines are found on the Cessna Citation X and Embraer Legacy 600 business jets, respectively.

In addition, EAP has added four variants to its Honeywell TFE731 turbofan engine coverage. They include the -4 (Dassault Falcon 50-4, Citation VII), -20 (Bombardier Learjet 40/40XR and 45/45XR), -40 (Astra SPX, Falcon 50EX, and Gulfstream G100/G150), and -60 (Falcon 900EX/LX).

Kaman Enters Bizjet Aftermarket Through C&L Partnership

Kaman Composites is partnering with C&L Aerospace to provide composite repair services to the business jet aftermarket. Under the arrangement announced at NBAA-VBACE, Bangor, Maine-based C&L will serve as the exclusive distributor for composite structural repairs offered by Kaman Composites' Part 145 repair station in Wichita.

The partners will support a variety of business jet platforms, including those from Textron Aviation and Bombardier.

Goodyear Aviation Tires Appoints Canadian Distributor

Goodyear Aviation Tires has appointed Kadex Aero Supply as a Canadian distributor. Kadex director of business development Jordan Lavery said the Goodyear aircraft tires will be available from the company's three locations in Canada: Peterborough, Winnipeg, and Calgary.

Duncan Secures VA Approval for Apprentice Benefits

The Department of Veterans Affairs has approved the use of VA benefits to cover living expenses for participants of Duncan Aviation's Airframe and Powerplant Apprenticeship programs. Duncan already covers the costs of the programs, including books, training, and testing. Under the VA approval, participants can use benefits to help offset the cost of tools and their monthly housing allowance toward living expenses while they are taking classes, learning new skills, or working toward the A&P certification. Technicians working full-time are paid while in training.

TAG Maintenance Services Adds PC-24 Support

TAG Maintenance Services (TMS) has been appointed by Pilatus Aircraft to provide base and line maintenance for the PC-24 twinjet in Geneva, the Stans, Switzerland-based airframer announced. This authorization expands TMS's support of Pilatus business aircraft beyond maintenance services for the PC-12 single-engine turboprop.

ExecuJet Australia Approaches Full Falcon Mx Capability

ExecuJet MRO Services Australia will have full capability on all in-production and most out-of-production Dassault Falcons by the end of 2020. The milestone comes as the maintenance, repair, and overhaul group marked 20 years in operation.

The company, which Dassault Aviation acquired from Luxaviation in March 2019, includes maintenance facilities in Brisbane, Sydney, Melbourne, and Perth, as well as Wellington, New Zealand. It is also an authorized service center for Bombardier, Embraer, Gulfstream, Honeywell, Rolls-Royce, and GE Aviation, and is certified to work on certain Beechcraft, Cessna, and Hawker aircraft. ■

by David Jack Kenny

PRELIMINARY REPORTS

Compressor Blade Failure Detected in Submerged Helicopter

GARLICK HELICOPTERS UH-1H, JAN. 9, 2020, BEN BOYD RESERVOIR, NEW SOUTH WALES, AUSTRALIA

In a second update published October 30, the ATSB reported that a borescope examination found a broken rotor blade in the compressor section of the engine of a firefighting helicopter that ditched in the Ben Boyd Reservoir following a loss of power. A subsequent teardown inspection by the manufacturer found that the number 21 roller bearing, which supports the front of the power turbine shaft, and the number 1 ball bearing, supporting the front of the rotating compressor assembly, had worn to the point that they could no longer maintain centerline alignment of their respective rotating assemblies.

The helicopter had rolled inverted after touching down in the water, and the pilot credited his recent helicopter underwater egress training with his escape. The wreckage was subsequently recovered for examination.

EMS Flight Crashes on Hospital Roof

AGUSTA A109, NOV. 6, 2020, LOS ANGELES

Two passengers escaped unharmed and the pilot suffered only minor injuries after a helicopter EMS flight crashed onto the rooftop helipad of the USC Keck Medical Center following an apparent loss of tail rotor authority. During a steep approach offset to the left to improve his view of the landing zone, the pilot saw no indication of wind from either the pad's windsock or nearby trees. As he slowed the ship to 45 knots, he increased power for the approach. At about 40 feet above the pad, a slight right yaw began that he could not correct with full left pedal. It increased "violently" as he began to contemplate flying away, rendering the helicopter uncontrollable. He "dumped" the collective while trying to remain above the pad. The helicopter touched down hard and rolled onto its left side, destroying all four main rotor blades and strewing debris across the pad and onto the ground. The pilot shut down the engines, and he and the passengers were able to evacuate the wreckage without assistance.

Footage filmed from an adjacent building shows the helicopter rotating slowly clockwise about its vertical axis during the approach, then arresting its descent while rotating another 360 degrees before rotating another 180 degrees during its final descent onto the helipad. The tail rotor and 90-degree gearbox were among the components recovered from the accident site.

PC-12 Ditched on Ferry Flight

PILATUS PC-12 47E, NOV. 6, 2020, PACIFIC OCEAN ABOUT 1,000 MILES EAST OF HILO, HAWAII

A new, 2020-model Pilatus PC-12 NGX ditched in the Pacific on the first leg of a planned ferry flight from California to Australia following a total loss of engine power at FL 280. The two-pilot crew evacuated the aircraft through the right overwing exit and boarded their covered six-person life raft, escaping without injury. The crew of a container ship rescued them some 22 hours later.

The airplane had been fitted with an auxiliary fuel system, including a factory-installed ferry fuel fitting and check valve in the left wing, two aluminum tanks inside the cabin, transfer and tank valves, and two 30-psi transfer pumps. The flameout occurred just after the copilot transferred the last usable fuel from the rear tank. She shut off the transfer pump with fuel still visible in the transparent pressurized line, but the low fuel pressure indicator illuminated within 15 seconds, and the engine stopped and the propeller feathered before she could return to the cockpit.

The crew made multiple unsuccessful attempts to restart the engine, then committed to an ocean ditching as they descended through 8,000 feet. The pilot landed the airplane gear-up with full flaps at an angle to swells he estimated as five to 10 feet, spaced 20 feet apart. They reached Oakland Center via satellite phone and the Coast Guard initiated rescue efforts. A C-130 reached the scene about four hours later and attempted to coordinate rescue efforts by an oil tanker, but the rough seas and the speed of the ship prevented the pilots from being able to grasp the lines. A container ship using rope cannons rescued them the following afternoon.

After initially remaining afloat, the airplane is now considered lost at sea.

FINAL REPORTS

Cause of Inflight Breakup Remains Undetermined

CESSNA 441, NOV. 17, 2018, HARMON, NORTH DAKOTA

The NTSB was unable to identify a definitive reason why the pilot of a Conquest II air ambulance lost control of the airplane eight minutes after takeoff, causing an inflight breakup that resulted in a debris field some 2,500 feet long and 750 feet wide. A flight nurse and a paramedic also perished in the accident, which occurred at about 10:40 p.m. local time in instrument meteorological conditions. Examination of the engines and propellers found no sign of malfunction or mechanical failure, and the points at which the wing spars failed in overload showed "no evidence of any pre-existing conditions that would have degraded the strength of the airplane structure." Weather models indicated a high probability of icing conditions, but no evidence of structural icing was found at the scene.

The flight was dispatched from Bismarck to Williston to bring a patient back to Bismarck for emergency medical treatment. The pilot filed an IFR flight plan with a cruising altitude of 14,000 feet, estimating 45 minutes en route at 281 knots. No alternate airport was filed. The 1982-model twin took off at 10:31 p.m., climbing to 14,000 feet on a direct course to Williston. Eight and a half minutes later it entered a right descending turn, losing 7,800 feet in the next 39 seconds. Radar contact was lost nine seconds later with the airplane now turning left.

The 48-year-old airline transport pilot had nearly 4,000 hours of pilot-in-command experience but only 70 in the accident make and model. The extent and currency of his experience in actual instrument conditions was not reported. The Board concluded that the failure signatures were "consistent with the pilot initiating a pull-up maneuver that exceeded the airplane spars' structural integrity during an attempted recovery from the spiral dive" but could not pinpoint a cause for the initial deviation from his intended course.

Messages retrieved from his mobile phone contained reports of discrepancies involving the portable backup attitude heading and reference system and the panel-mounted horizontal situation indicator on earlier flights. No data could be retrieved from the enhanced ground proximity warning system or multi-hazard awareness unit.

Tail Rotor Fouled by Tether Line

AIRBUS HELICOPTERS AS350, FEB. 17, 2019, WAKEFIELD, NELSON, NEW ZEALAND

The loss of directional control necessitating a forced landing of a helicopter conducting firefighting operations was caused by the tether line suspending its monsoon bucket coming into contact with the tail rotor blades, disabling the tail rotor. TAIC investigators found that one or more of the hook-and-loop fasteners that secured the stainless-steel shape ring to the fabric bucket had detached, causing a deformation of the bucket's shape that abruptly changed its aerodynamic stability. It then streamed out behind the helicopter until the tether rose into the tail rotor.

The pilot responded to a series of uncommanded yaws and a loud bang by jettisoning the bucket and initiating an emergency landing. When the helicopter began to spin, he made an emergency autorotation into light brush and was met within minutes by firefighters on the scene. He suffered a minor injury to one ankle. Later generations of monsoon buckets from the same manufacturer discontinued the hook-and-loop fasteners in favor of a two-piece composite ring permanently attached to the fabric.

Software Quirk Caused Engine Shutdown

GULFSTREAM G650, JULY 7, 2019, OVER CO. WATERFORD, IRELAND

A discrepancy between the commanded and detected positions of the aftmost stage of the variable stator vanes (VSV) led the electronic engine controller (EEC) to shut down the Gulfstream's left engine as it climbed through FL290. The shutdown command was peculiar to the software governing the Rolls Royce BR700-725 series engines; in other engines in the BR700 family, a VSV discrepancy would trigger a "Do Not Dispatch" maintenance message without affecting engine operation. Teardown of the left engine found that corrosion in the bore in the compressor casing increased the torque required to activate the VSV3 vane to 129 Nm, more than 2.5 times that specified in the relevant service bulletin, and was not reduced by lubrication.

The flight departed Shannon International for Farnborough, U.K., with two pilots, one passenger, and one cabin attendant. Climbing through FL290, an amber "L Engine Maintenance" warning on the Engine Indicating and Crew Alerting System was followed almost immediately by a red "L Engine Fail" message. Electrical load-shedding after the shutdown caused a momentary loss of air data to the right engine, which reverted to an alternate control mode and disabled the onboard satellite telephone.

The crew leveled the ship at FL310 and, after some discussion, chose to return to Shannon via a gradual descent profile. En route, they declared an emergency, and after discontinuing the first approach due to a gear-door warning message, landed without further incident.

Rolls-Royce had modified the BR725's EEC software to conform to that of other BR700-series engines following a similar event in September 2018, but operators were given two years to perform the update. It had not yet been done on the subject airplane. Following this episode, the update was expedited and completed on all BR725 engines by September 2019. Rolls-Royce also issued a service bulletin mandating torque checks on all engines older than 24 months and added a scheduled maintenance task of re-lubrication every 1,200 flight hours or 48 months, whichever comes first. ■

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Coulson Aviation has acquired four Cessna Citation 550s to use for aerial firefighting operations including as lead aircraft in water- and retardant-dropping operations.

Coulson presses Citations into firefighting operations

by Jerry Siebenmark

Coulson Aviation is expanding its global aerial firefighting capabilities with the acquisition of four Cessna Citation 550 High-Performance Aircraft (HPA) previously operated by U.S. Customs and Border Protection to lead tankers to retardant drop points and collect intelligence for fire commanders on the ground. "It's a growing piece of our industry that we plan to expand into," president and COO Britt Coulson told **AIN**.

Coulson said the Port Alberni, British Columbia-based company chose the Citation IIs because of their special-missions configuration, as well as their speed and range compared with older turboprops used by competitors. "While we started to get into the lead plane and aerial intelligence business on the fixed-wing side...we purchased these four from Border Patrol specifically for the unique mission suite that they have in them," he said, adding the jets came to the company with camera ports and other modifications that were designed by and installed at the factory, in addition to updated glass cockpits.

"The Citation platform, for a reasonably fast, newer-generation single-pilot aircraft, it's just a really good fit for firefighting," Coulson said. "It's got a straight wing, so it's got good low-and slow-characteristics, it's easy to fly, it's got great visibility out of the cockpit, and they're readily available. So it was an aircraft model that we were planning to move into anyway. We also like repurposing government aircraft...the U.S. government does an amazing job looking after its aircraft."

Previously, the company's only intelligence-gathering aircraft was a Sikorsky S-76 helicopter that couldn't be used as a lead aircraft in firefighting missions. The 550s will be able to serve both roles. As a lead aircraft, Coulson explained, they will be equipped with smoke kits. In advance of the tanker dropping retardant or water, the Citations will fly a dry run with the tanker crew watching, rejoin and lead the tanker through the drop using the smoke to signal to the tanker when to begin dropping retardant. "They'll pop up some smoke and then the air tanker...starts its drop as the nose of the [tanker] is starting to go through the smoke," Coulson said.

In terms of intelligence gathering, Coulson will use the 550s to gather information from fire scenes—including weather, maps, drop analysis, and video—and transmit it to fire agency command centers. "Kind of leveraging off the military model where you would have like an AWAC-type aircraft up above the battlefield monitoring, tracking, relaying data," he said.

The first of the four 550s have been delivered to the company following maintenance at Flightcraft in Portland, Oregon. Coulson Aviation is completing the twinjet's interior at its in-house upholstery shop.

In addition to maintenance and new paint, all of the 550s are outfitted with new equipment such as high-resolution imaging systems, FLIRs, gimbals, and satellite uplink. Coulson said the 550s were already equipped with Universal Avionics glass flight decks.

These are not the first business jets in Coulson Aviation's stable. Earlier, the company acquired two Citation 560s that it modified as lead and intelligence-gathering aircraft and sold them to New South Wales Rural Fire Service in Australia, where it has an agreement to operate them. All told, the company's fleet comprises fixed-wing tankers—a mix of C-130s and Boeing 737s—and helicopters, including Sikorsky S-61s and S-76s, UH-60 Blackhawks, CH-47 Chinooks, and Bell 412s. ■

by Gordon Gilbert

Within 6 Months

Jan. 28, 2021

Australia: Commercial Drone Registration

A registration and accreditation process for commercial drone owners and operators in Australia must be completed by Jan. 28, 2021. The country's Civil Aviation Safety Authority (CASA) requirement covers all remotely piloted aircraft flown for work, research, training, and community service. Both registration and accreditation must be completed using the myCASA online portal. Registration will be free of charge and valid for 12 months.

Feb. 14, 2021

EASA: Pilot Mental Fitness

February 14 is the effective date for complying with revised air operations safety rules that incorporate provisions to better identify, assess, and treat the psychological fitness of air crew. Compliance with the new rules, applicable to commercial aircraft operators, includes mandatory alcohol testing during ramp checks.

March 31, 2021 **NEW**

EASA: Maintenance Licenses

This proposal from the European Union Aviation Safety Agency (EASA) aims to facilitate the maintenance license type-rating endorsement for certain legacy aircraft, enhance the efficiency of on-the-job training, and update the basic knowledge syllabus. In addition, the proposal provides a solution for maintenance licenses with regard to new products without adding a new license type. Comments are due March 31, 2021.

June 2, 2021

U.S.: Aircraft Fuel Truck/ Farm Fire Standards

The National Fire Prevention Association (NFPA) has proposed the installation of automatic shutdown systems on aviation fuel trucks and fuel farms. The NFPA standards, typically adopted as requirements by regulatory agencies, would apply to in-service trucks and fuel farms, as well as for new equipment. In-service equipment would need to be retrofitted by June 2, 2021. The National Air Transportation Association has requested that the retrofit feature be removed.

Dec. 2, 2021

Australia: Flight Operations

Ten new flight operations regulations consolidate the operating and flight rules, as well as certification and management requirements. The rules apply to all pilots and operators in Australia and will commence on December 2, 2021. The regulations covered include: general operating and flight rules; certification and management of commercial aircraft operating certificates; and small and large airplanes and rotorcraft.

Within 12 Months

Nov. 4, 2021

Runway Surface Assessment Format

In response to the on-going Covid-19 pandemic and the associated challenges facing the aviation industry, ICAO has delayed for one year the applicability date of the new global reporting format (GRF) for assessing runway conditions to Nov. 4, 2021. The GRF was scheduled to go into effect Nov. 5, 2020. The agencies, in partnership with key international organizations, will continue to provide support to member states and stakeholders as they emerge from the current crisis and revise their implementation plans.

Dec. 31, 2021

New Zealand: ADS-B Out Mandate

New Zealand is expected to adopt its proposal to make ADS-B mandatory for all aircraft in controlled airspace below Flight Level 245 starting on Dec. 31, 2021.

Beyond 12 Months

Dec. 31, 2022

Mexico: CVRs and FDRs

Cockpit voice and flight data equipment requirements for commercial turbine aircraft operations (including air taxis) that were adopted in 2011 by Mexico's aviation authority become effective and go into force incrementally from Dec. 31, 2020 through Dec. 31, 2022 based on the number of aircraft that are in an operator's fleet. Generally, the rules apply to turbine airplanes with 10 or more passenger seats and large turbine helicopters flying in Mexico airspace under an international air operator certificate.

June 7, 2023

European ADS-B Out Mandate

Aircraft that obtained their certificate of airworthiness (C of A) between June 6, 1995 and Dec. 7, 2020 must meet the ADS-B Out mandate by June 7, 2023. The deadline applies to aircraft with a maximum takeoff weight exceeding 12,500 pounds or having a maximum cruising true airspeed capability greater than 250 knots. Aircraft receiving their C of A on or after December 7 are currently required to be in compliance. Aircraft with C of A's dated before June 6, 1995 are exempt from ADS-B requirements.

For the most current compliance status, see: https://www.ainonline.com/aviation-news/compliance-countdown

by Kerry Lynch

BEN HOCKENBERG

MICHAEL (DOC) DWYER

LEE APPLBAUM

VLADIMIR SIP

Chuck Kegley has joined *Hawthorne Global Aviation Services* as president. Kegley steps into his new role with 35 years of aviation experience, including serving as president of corporate aviation services for Advance Aviation Services, president of Gateway USA (dba Clay Lacy Aviation), general manager of Galvin Flying Services, and as an engineer with Boeing.

JSSI Parts & Leasing has named **Ben Hockenberg** as president and **Jim Sellers** as chief commercial officer. Hockenberg previously worked in the aerospace sector as an investment banker at Deutsche Bank, the Pritzker Organization, Venor Capital, and Greenbriar Asset Management. Sellers helped start JSSI Parts & Leasing and has an aviation background in the buying and selling of parts, including at Heico Aerospace's Prime Air, Chase Aerospace, and AAR Corp.

Guardian Jet promoted **Michael (Doc) Dwyer** to president and **Michael Mikolay** to COO. Dwyer, who is on the board of directors of the International Aircraft Dealers Association, joined Guardian in 2009 and was named v-p of sales in 2013. Mikolay co-founded Guardian Jet in 2002 and since has served on the senior leadership team.

CB SkyShare named **Tommy Aoki** president and **Jonathan Schaedig** director of maintenance. Aoki formerly was senior v-p of operations and digital strategy for Spring Mobile and the company's Simply Mac division. Schaedig has more than 15 years of maintenance experience, including 10 as an IA.

Lee Applbaum was named to the newly created role of chief marketing officer for *Wheels Up*. Most recently CMO for Surterra Wellness and before that Patrón, Applbaum joins Wheels Up with more than 25 years of experience working with brands including Patrón, Grey Goose, Target, and Coca-Cola.

Jet Linx named **Ron Silverman** chief commercial officer. Silverman has more than 30 years of business aviation experience, previously serving as chief business officer for XO and as president for VistaJet US.

Flying Colours named **Scott Meyer** COO. Meyer, who joined Flying Colours in December 2019 as v-p and general manager of its facility in St. Louis, Missouri, has nearly 30 years of aerospace and management experience.

Mente Group promoted **Vince Restivo** to COO. Most recently v-p of program management for Mente, Restivo has 37 years of business aviation experience, including as v-p of completions for Hawker Beechcraft and also as regional v-p of aircraft sales and director of completion sales for Gulfstream Aerospace.

Wyvern promoted **Andrew Day** to COO. Day has more than 30 years of experience with regional airlines and Part 135 operators.

ABS Jets named **Vladimir Sip** chief technical officer. Sip, who will be responsible for the MRO facility's growth and development, has served as line maintenance manager for ABS.

CPI Aerostructures named **Richard Caswell** to its board of directors and chair of the Audit and Finance Committee. Caswell previously spent 22 years with United Technologies in multiple roles.

Damon Ward, **Maggie Severen**, and **Dayna Reynolds** joined *US Trinity Aviation* to form the leadership team at the startup FBO at Denton Enterprise Airport in Texas. Ward brings 30 years of leadership experience to his new role, including founding Business Air and serving as operating partner at Catalyze Dallas and executive chairman of Metro Aerospace. Severen formerly spent nine years as the FBO manager at US Aviation, which is also at Denton. Reynolds, meanwhile, most recently was general manager of Cornerstone Air Center at Meacham Field in Fort Worth.

FXAir, a Directional Aviation company, named **Robert Shaplen** senior v-p of sales and **Michael Hall** senior v-p of operations. Shaplen previously served as senior v-p of sales at PrivateFly and as an adviser at XOJet. Hall comes to his post at FXAir from several senior sales roles he held at other Directional Aviation companies.

Argus International hired **Mike McCready** to serve as senior v-p of operations and business development. McCready, who brings 25 years of aviation experience to his new role, previously founded the consultancy World Jet Group and has served with Jet Aviation and The Boeing Company/Jeppesen.

JetHQ appointed **Sherif Abouzeid** v-p of sales for Egypt. Abouzeid was most recently CEO of Cairo-based Global Countertrade & Offset, an import-export firm.

Mente Group appointed **Mariana Santos** v-p of strategic consulting. Santos has 15 years of business and commercial aviation experience, including more than eight years at Embraer Executive Jets. She replaces **Cole White**, who was named v-p of transactions, responsible for Bombardier and Embraer leases, acquisitions, and dispositions for Mente.

The Ritchie Group hired **Ed Henry** as v-p of aircraft sales. Henry brings 50 years of experience, previously in maintenance, sales, and management roles with Airwork, Midcoast, K-C Aviation, and West Star Aviation.

Inflite The Jet Centre appointed **Sebastien Albouy** as general manager of its MRO business. Albouy previously was chief technical officer for ABS Jets and also has held consulting roles in the MRO industry as well as general manager of Embraer's first Executive Jets Service Center in Paris.

Western Aircraft hired **John Kochel** as director of the parts and logistics business unit and **Russell Crouch** as Gulfstream service manager. Kochel most recently managed the western territory for GlobalParts and also has served with GKN. Crouch a former aircraft mechanic in the U.S. Army, spent 25 years with Gulfstream Aerospace. ■

AWARDS and HONORS

The *Flight Safety Foundation* (FSF) recently honored former U.S. National Transportation Safety Board (NTSB) board member, airline maintenance professional, and safety advocate **John Goglia** with its Laura Taber Barbour Air Safety Award. Goglia was recognized during FSF's 73rd annual International Air Safety Summit (IASS) held virtually.

The organization further presented an honorary Laura Taber Barbour Air Safety Award to former FSF president and CEO Stuart Matthews. FSF said the award recognizes "remarkable worldwide contributions in method, design, invention, study, or other advancement in the field of aviation safety."

Goglia, who is an **AIN** contributor, was the first, and to date only, airframe and powerplant mechanic appointed to become an NTSB board member, serving from August 1995 to June 2004. During his time, he participated in numerous accident investigations, including of TWA flight 800 in 1996, Alaska Airlines flight 261 in 2000, and ValuJet in April 1996.

He has since remained active in aviation safety initiatives, serving as senior v-p with JD Aviation Technology Solutions and then with his own firm, John Goglia LLC.

Matthews, who became a pilot at age 17, served as president and CEO of FSF between 1994 and 2006. Before that, he had served on the FSF board of governors since 1989, including as chairman. ■

FINAL FLIGHT

Guy Gribble, an American Airlines pilot who became known in corporate pilot circles for his international operations education leadership, died on October 26. Born on Sept. 24, 1959, Gribble attended the Army's Warrant Officer Candidate Aviator program and earned his wings in 1978.

Gribble also earned naval aviator wings in 1986 and was assigned to the USS Midway in Yokosuka, Japan, as an A-6E attack pilot. He continued as a Navy Reserve pilot after his full-time service in 1991 and spent the next 25 years as a pilot for American Airlines.

In 2012 he became general manager of *International Flight Resources*, a flight operations research and training provider with an emphasis on international flight ops and human factors. In this venture, he presented on a range of international topics at various aviation safety events.

Tracy Forrest, who served as president of the *Bob Hoover Legacy Foundation* and *Citation Jet Pilots Association*, died of brain cancer on October 12. He was 70. The AOPA said Forrest would be remembered as a "philanthropist, an accomplished pilot, and a mentor to the next generation of aviators."

He founded Winter Park Construction in 1974 and built that company into one of Central Florida's largest construction firms before selling it in 2007 to his brother Jeff Forrest and three partners, according to the firm.

Forrest also pursued his passion for aviation, becoming an airline transport pilot with numerous ratings.

Over the years, Forrest had formed a friendship with Bob Hoover. Before Hoover's passing in October 2016, Forrest partnered with Mike Herman to form the Bob Hoover Legacy Foundation and became its president.

Franck Bouillon, CFO for *Rotortrade*, passed away unexpectedly on November 4 at the age of 54. Bouillon's career began with IBM and then with the financial markets in France. Bouillon joined the aviation industry 21 years ago, holding CFO positions for various Airbus Helicopters subsidiaries and as head of group strategic procurement financial controlling and ultimately regional CFO for North Asia, before joining Rotortrade.

David North, a former U.S. Navy and airline pilot who later became editor-in-chief of *Aviation Week & Space Technology*, died on November 24. Born in 1934, North graduated from the U.S. Naval Academy in 1957 and flew 107 missions in A-4 Skyhawks and made 500 carrier landings. He later flew for Pan Am and then became an aviation journalist, retiring as editor-in-chief in 2004. ■