

# Aviation International News

**AIN**  
Media Group

Vol.50 | No.11  
**\$9.00**

NOVEMBER 2021 | [ainonline.com](http://ainonline.com)



## Bizav roars back at BACE 2021

by Matt Thurber

The 2021 edition of the National Business Aviation Association's Business Aviation Convention & Exhibition was extraordinary, and not just because it was the NBAA's first live event of the year, signaling a slow but steady reopening after a year and a half of the pandemic. What also made NBAA-BACE significant this year was that so many companies and people chose to say "yes" to traveling and attending a large live event and that companies unveiled exciting new aircraft and products, another sign that business aviation is thriving.

Although some people and companies chose not to attend or exhibit at the show and many companies' exhibits and on-site teams were much smaller than in 2019, the event was a success. There were some who ahead of the show expressed profound

discomfort with the vaccine mandate for attendees, but for those who traveled to Las Vegas, the proof-of-vaccination burden was minimal, and once inside the convention center's West Hall, masks were not required and many elected not to wear them.

### Transcontinental Range

Honda Aircraft unveiled its HondaJet 2600 Concept, which could be the next addition to its light jet line and was the biggest news at the show. Boasting a spacious cabin capable of carrying up to 11 occupants, a 2,625-nm transcontinental range (with four passengers and one pilot), and 450-knot maximum cruise speed, the over-the-wing-engine-mount 2600 promises stiff competition for light jets like the Citation CJ4, Phenom 300, and Pilatus PC-24.

Bombardier unveiled its Global 3500, a much-modified update to the Challenger 350, on September 14.

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Read Our **SPECIAL REPORT**

### Top Flight Awards

Nominations for the 2021 Top Flight Awards have been submitted for candidates in each category, including those selected by AIN readers and AIN's editorial staff. Winners will be announced in the December issue.

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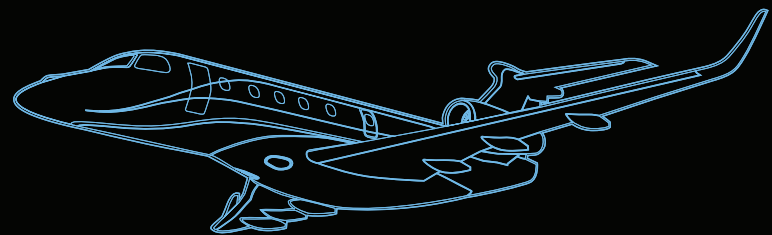
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# PRAETOR 500

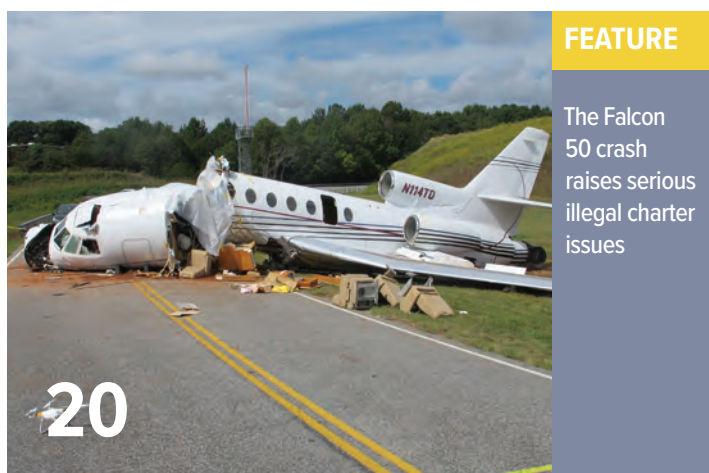
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**Aviation International News** (ISSN 0887-9877) is published thirteen times per year (monthly plus a special EBACE Convention News issue in June). Periodicals postage paid at Midland Park, N.J., and additional mailing offices. Postmaster: Send address changes to Aviation International News, P.O. Box 8059, Lowell, MA 01853 USA. Allow at least eight weeks for processing. Include old address as well as new, and an address label from a recent issue if possible. Subscription inquiries: +1 (201) 345-0085 or email: subscriptions@ainonline.com.

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## As We Go To Press

### EMBRAER BIZJET DELIVERIES RISE 25% IN FIRST 9M

Business jet deliveries in the third quarter at Embraer were flat year-over-year, but are up more than 25 percent in the first nine months. The Brazilian airframer handed over 14 light jets (all Phenom 300s) and seven large jets (two Praetor 500s and five Praetor 600s) in the latest three-month period versus 19 light jets (three Phenom 100s and 16 Phenom 300s) and two Praetor 500s in last year's third quarter. In the first nine months, business jet deliveries totaled 54, including 36 light jets (two Phenom 100s and 34 Phenom 300s) and 18 large jets (six Praetor 500s and 12 Praetor 600s), up 25.6 percent from 43 aircraft—33 light jets (five Phenom 100s and 28 Phenom 300s) and 10 large jets (one Legacy 650, four Praetor 500s, and five Praetor 600s)—from a year ago.

### MILLION AIR FRANCHISEE ACQUIRES ACI JET STAKE

Freeman Holdings Group, the largest franchisee within the Million Air FBO Network, has acquired an ownership interest in California-based aviation services provider ACI Jet. The latter company's founder, William Borgsmiller, will remain in control of ACI's three FBOs—at John Wayne-Orange County (KSNA), San Luis County Regional (KSBP), and Paso Robles Municipal (KPRB) airports, all of which will retain the ACI name for now. Earlier this year, ACI completed construction on a new \$20 million FBO at KSBP, and a major project is planned for KSNA where ACI has operated since 2017 and recently received a new 35-year lease.

### EX-NTSB CHAIR TO HEAD UP NEW ERAU SAFETY CENTER

Robert Sumwalt, who spent 15 years at the NTSB, including nearly five as its chairman, is taking on a role as a distinguished fellow in aviation safety and executive director of a new Embry-Riddle Aeronautical University Center for Aviation and Aerospace Safety. He will step into the position on January 4 to launch the center that will tackle a range of safety issues surrounding new technologies from unmanned aerial systems and urban air mobility technologies to human-machine and machine-to-machine interfaces. Sumwalt also will spearhead other aerospace safety research and outreach activities for the university and will have oversight responsibilities of existing safety initiatives.

### ROLLS-ROYCE FLIES TRENT 1000 ON 100 PERCENT SAF

Rolls-Royce carried out a successful test flight of its 747 flying testbed in mid-October using 100 percent

sustainable aviation fuel (SAF) in a Trent 1000 turbofan. It flew from Tucson International Airport in Arizona, passing over New Mexico and Texas, carrying a Trent 1000 engine running on neat SAF while the remaining three RB211 engines ran on standard jet fuel, arriving back in Tucson three hours and 54 minutes later. Partnering with Boeing and SAF producer World Energy, Rolls Royce reported that the tests showed no "initial indications" of engineering issues.

### MODERN AVIATION MAKES DEAL FOR SHELTAIR'S NY FBOs

Sheltair—the largest privately-owned aviation services provider in the U.S.—has agreed to sell its five New York locations to Modern Aviation. Included are Sheltair's facilities at John F. Kennedy International, LaGuardia, Republic, Long Island MacArthur, and Francis S. Gabreski airports. The deal, subject to regulatory approval, is expected to close by year-end. Modern, supported by Tiger Infrastructure Partners, a middle-market private equity fund, began operations in 2018 with its purchase of Air Wilmington. Since then, the company has grown to include FBOs in other major cities, including Denver, where it recently announced a major expansion, and Seattle.

### MD HELICOPTERS HIT WITH FEDERAL FRAUD VERDICT

Two former MD Helicopters executives could cash in big after a federal jury found the company guilty of fraud in relation to military sales to El Salvador, Saudi Arabia, and Costa Rica in 2011 and 2012. Under federal law, the \$36 million damage award could be trebled, and whistleblowers Philip Marsteller and Robert Swisher, who originally filed the complaint in 2013, could receive up to 30 percent of the final amount. These fraud charges centered on Col. Norbert Vergez, who ran the U.S. Army's non-standard rotary-wing program from 2010 to 2012. Vergez pled guilty to making false statements and criminal conflict of interest in 2015.

### GULFSTREAM UPGRADES SUPER-MIDSIZE G280

Gulfstream Aerospace introduced improvements to its super-midsize G280 that will enhance the passenger experience, reduce pilot workload, and bring safety benefits. The G280 cabin will now include a plasma ionization clean air system, while new flight deck options include SiriusXM graphical weather, dual electronic charts, and a surface management system. Gulfstream has also increased the validation intervals for the aircraft's RVSM from 24 to 96 months. The CPDLC system is now fully FANS-E compliant.

# Honeywell sings new tune with Anthem Avionics

by Matt Thurber

Honeywell has unveiled its next-generation avionics platform—called Anthem—the first "cloud-connected" avionics suite designed to serve all aviation segments from advanced/urban air mobility vehicles to light aircraft, business jets, and the largest air transport aircraft.

With full-time connectivity, Anthem gives pilots and operators many new capabilities, including the ability to create and upload a flight plan away from the aircraft, even if the aircraft is not powered on. Other features, such as customizing the layout of flight deck displays, can also be done remotely. The primary focus, however, is improving the user interface for pilots, and this means not just intuitive gesture control of touchscreens but also voice control.

Anthem is not the next version of Honeywell's foundational Epic avionics system "This is a transformational change compared with Epic, not an incremental or growth version," said Vipul Gupta,

with accommodating hardware and software limitations than with making operation intuitive for pilots. On the Anthem flight deck, pilots will use the pilot interface display unit (PIDU) along with fully touchscreen instrument panel displays.

The story behind Anthem isn't just about the user interface but also the architecture of the underlying hardware and software. Unlike today's rack-based avionics, where each major function lives inside an electronic circuit board assembly that is slotted into racks in avionics closets or bays in larger aircraft, Anthem is embodied in a network-type architecture.

The architecture is based on distributed processing modules, each of which is the size of a paperback book. If more processing power is needed, then more modules are added. "That's why we can work across market segments," he said.

For Honeywell, the big move into the next generation of avionics is Anthem's full-time cloud-based connectivity. "We



Honeywell's next-generation Anthem Avionics system is always connected to the cloud and features multiple touchscreen displays and interfaces.

Honeywell Aerospace's v-p and general manager of avionics. "It's drastically new, but we are reusing some software elements. Honeywell's synthetic vision system is one of the best out there, so we are reusing that to fit in this architecture."

Epic was designed 20 years ago, he explained, and is very capable, but Anthem is focused on new interfaces and technology that Honeywell wanted to bring to flight decks. "It's almost a 50 percent size and weight reduction compared with current hardware," he said. "We looked at how we interact with our consumer devices and have taken that experience and brought it into the flight deck. It's more user-friendly, more intuitive for the pilot, just like cell phones and tablets. That is our focus."

In other words, Honeywell is finally saying goodbye to the traditional flight management system control display unit, whose awkward design had more to do

focused on the user experience and the user interface to reduce pilot workload," Gupta said, "and brought connectivity to it."

For example, autonomous aircraft will need full-time connectivity for guidance and recovery, if something goes wrong. And future aircraft will likely incorporate some form of simplified vehicle operations requiring smaller flight crews and connectivity, from urban air mobility vehicles to, eventually, cargo- and passenger-carrying aircraft.

"When you combine unprecedented connectivity and new features with our brand-new, intuitive user interface that can be tailored to look and feel exactly how a pilot wants, you've got a truly game-changing system," Gupta said. "It's going to bring us closer to our shared industry goal of autonomous flight, and it won't require high levels of pilot or operator skill to be safe." ■



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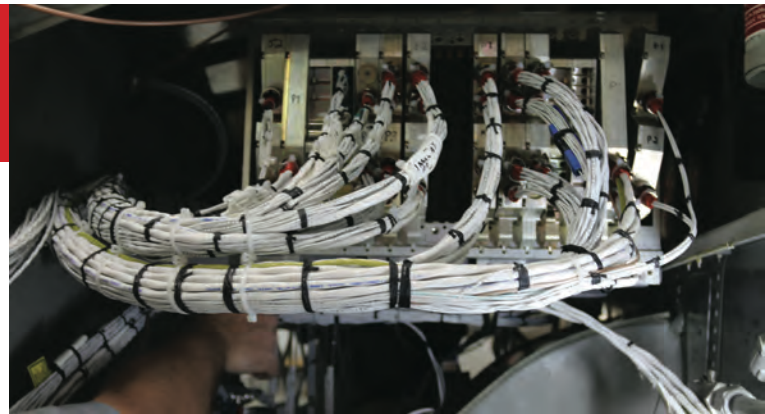


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# AIN Announces 2021 Top Flight Award Nominees

by Mark Huber

The Top Flight Awards recognize individuals, organizations, and technologies for excellence, innovation, and service in business aviation and its related disciplines for accomplishments during the past year, or for people awards a lifetime basis.

Here are the finalists for this year's AIN Top Flight Awards.



**This category recognizes lifetime philanthropic contributions by members of the aviation community.**

## The Duncan Aviation Family

The owners of Duncan Aviation established the Duncan Family Trust in 2004 to support mainly community organizations where it has substantial operations—in Nebraska, Michigan, and Utah. Donations focus on youth, art, education, and the environment.

## Randall Greene (posthumous)

Randall Greene, who died in September, was a former chairman and a driving force behind the Corporate Angel Network, which arranges transportation aboard business jets for cancer patients to and from hospitals. He was also the past president and CEO of Safe Flight Instrument Corp.

## James Raisbeck (posthumous)

The noted aerodynamicist and founder of aircraft performance modification company Raisbeck Engineering died in September. Raisbeck made a considerable fortune developing performance-enhancing kits for Learjets and King Airs and devoted a good portion of it to philanthropy, making grants in support of education, the arts, medical research, Seattle's Museum of Flight, and the Raisbeck Aviation High School.

## Kenn Ricci

The chairman of Directional Aviation

Capital made national news in 2017 when it was announced that his family foundation would donate \$100 million to his alma mater, the University of Notre Dame. Ricci's companies provide a \$5,000 payment to managers who adopt a child. His family foundation substantially underwrote Purdue Polytechnic Institute's Able Flight program, which uses specially modified aircraft to provide flight training to people with disabilities, including disabled veterans. It also supports cystic fibrosis research.



**This lifetime award recognizes individuals who have made a substantial contribution to advancing aviation safety.**

## Don Baldwin

Since he formed Baldwin Aviation in 2004, his company has helped flight departments meet regulatory requirements and establish safety-oriented operating standards and mentoring programs. He has also worked to popularize the implementation of safety management systems and the FAA's Aviation Safety Information Analysis and Sharing (ASIAS) program.

## Robert Sumwalt

Robert Sumwalt retired as chairman of the National Transportation Safety Board on June 30. During his time as chairman, Sumwalt brought a focus on business aviation professionalism. He also pushed to elevate Part 135 standards to incorporate elements that have been successful with commercial airlines. This included stressing the need for greater implementation of safety management systems and flight data monitoring.

## Tim Tucker

Tucker is a 20,000-hour helicopter pilot who spent 27 years in U.S. Army aviation, including a tour of Vietnam. He later joined Robinson Helicopter where he served as a test pilot and chief instructor and started the company's initial pilot safety course. Along with the monthly Robinson factory safety course, Tucker has conducted more than 120 safety courses in 31 countries, added 17 foreign pilot licenses, served as an FAA-designated pilot examiner in helicopters since 1984, and conducted over 8,000 private pilot through ATP practical tests.



**The award recognizes excellence in business or technical innovation and design.**

## Jay Beever

Embraer Executive Jets' vice president of interior design Jay Beever and his team have overseen a rejuvenation of the brand with a series of innovative new interiors since he joined the company in 2012, after a career with Gulfstream and Ford. Recently, Beever led the effort to breathe new life into Embraer's midsize bizjets with the Bossa Nova interiors and worked on the company's eVTOL concept vehicles.

## Kenny Dichter

A consummate salesman, Dichter founded the Marquis Jet card company in 2001, sold it to NetJets/Berkshire Hathaway in 2010, and launched the Wheels Up charter/membership company in 2013. Less than a decade later, Wheels Up has become the largest Part

135 operator in the U.S. with 170 leased or owned aircraft, 170 managed aircraft, and 1,200 more controlled by partner operators thanks to a series of recent and rapid acquisitions, including TMC Jets, Delta Private Jets, Gama Aviation Signature, and Mountain Aviation.

## Rob Weisenthal

Former music industry executive Weisenthal founded Blade Air Mobility, the shared helicopter and seaplane ride-booking service, in 2014 and has built it into a publicly traded company with a recent market capitalization of \$700 million. In 2019, Blade had more than 200,000 users and 40,000 annual fliers.



**The award recognizes companies whose technology and programs have made significant contributions to aviation safety over the last year.**

## Air Charter Safety Alliance

The Air Charter Safety Alliance (ACSA) was formed last year to combat gray market/illegal charters. It works to raise awareness of illegal charters for potential customers, charter brokers, ministries of transport, and national aviation organizations.

## Argus SafetyLinQ

Argus International has launched a flight-risk assessment tool called SafetyLinQ that is part of a line of safety products being developed for looming safety management system (SMS) mandates. SafetyLinQ can be tailored to fixed-wing, rotor-wing, unmanned, or flight school operators.

» continues on page 13



BARRY AMBROSE

Honda Aircraft president and CEO Michimasa Fujino said the HondaJet 2600 concept fits into a new market segment. Introduced at NBAA-BACE 2021, the jet seats up to 11, will fly 2,625 nm with four passengers, and has a max cruise speed of 450 knots.

# Honda Aircraft unveils HondaJet 2600 ‘concept’

by Matt Thurber

Honda Aircraft lifted the curtain and unveiled a “concept” of its next aircraft—a larger light jet with a transcontinental range of 2,625 nm and with a midsize-jet cabin that seats up to 11 occupants—on October 12 at NBAA-BACE in Las Vegas. A mockup of the outfitted cabin and fuselage with stub wings and engines on pylons was on display at the Honda Aircraft BACE exhibit.

The configuration of the HondaJet 2600 is similar to the original HondaJet HA-420, with Honda Aircraft’s patented over-the-wing-engine-mount design, in which the two engines are attached to pylons mounted on top of the wings. This allows for additional space in the cabin because many engine systems do not need to be installed inside the aft fuselage, while also lowering vibration and noise for passengers.

According to Honda Aircraft president and CEO Michimasa Fujino, the HondaJet 2600 is being developed in a similar fashion as the first HondaJet. That means presenting it first as a concept for market research and then later making a decision on commercialization based on market interest.

“There is a lot of activity in R&D with the interior mockup and progress of our design,” he said. “What we are proposing by the HondaJet 2600 is very unique comparing to other business jets.”

The HondaJet 2600 will have a maximum cruise speed of 450 knots and a maximum altitude of FL470. At that altitude, cabin altitude is 6,363 feet thanks to the composite fuselage, similar to the HA-420 fuselage construction. At FL450, cabin altitude is 6,124 feet. For the HondaJet 2600, the fuselage will be more oval-shaped, increasing headroom and shoulder space at each seat. The cabin interior measures 62.5 inches high

from the dropped aisle to the ceiling, and 61 inches wide, 4.5 inches taller and one inch wider than the HA-420’s cabin.

The cabin features a modular design, with options for seats such as two double clubs or a single club seating area and a divan across from two seats. There is a full-height galley, an enclosed lavatory larger than the HA-420’s, and four round skylights (two in the main cabin and two in the lavatory). Distance from seatback to seatback is seven feet. Honda Aircraft engineers have designed a special mattress that lies across two seats for a lie-flat bed, eliminating the need to fold seats down to create a sleep surface.

The genesis of the HondaJet 2600 concept is demand for rapid cross-country travel with more passengers and payload, according to Fujino. The goal is transcontinental capability, and the 2600 will be able to fly to its maximum range with four passengers.

Fitting into the light jet category with a maximum takeoff weight in the 17,500-pound range, the HondaJet 2600 “is very unique compared to other business jets,” Fujino said. “While current jets all can run on sustainable aviation fuel (SAF),” he added, “none were mainly designed around the environment or focusing on fuel efficiency. The [HondaJet 2600] is designed around environmental considerations and a focus is on fuel efficiency.

“Fuel efficiency is 20 percent better than light jets, and if you compare the range, it is in the midsize jet range, but fuel efficiency is 40 percent better than a midsize jet. Generally speaking, many business jet users may not necessarily always fly long-range, but if you want to go transcontinental, you have to go to a midsize jet. This is a new concept of business jet,

with fuel efficiency, high payload capability, and transcontinental range.”

Like the HA-420, the HondaJet 2600’s over-the-wing-engine-mount design has been tested in a high-speed wind tunnel. According to Fujino, the testing showed that the 2600’s natural laminar flow and engine placement delays the drag rise that accompanies high-speed flight, which is a key reason for HondaJet efficiency.

Honda Aircraft is testing the market to assess demand for a jet like the HondaJet 2600, and that is in part why it unveiled the concept airplane at NBAA-BACE 2021. No decision on launching the jet program has been made.

If the 2600 does get the go-ahead, it will be certified in the Part 23 commuter category and will be a single-pilot airplane.

Fujino said he can’t disclose any information about engine selection for now. But GE Honda Aero Engines, which manufactures the HA-420’s 2,050-pound thrust HF120 engine, has long maintained that the engine design could be part of a family with larger siblings. The Citation CJ4, roughly in the same class as the HondaJet 2600 although with a smaller cabin and about 500 nm less range, is powered by two 3,621-pound Williams FJ44-4As.

Avionics will be similar to the Garmin G3000 flight deck in the HA-420, with the addition of autothrottles and a runway overrun awareness and alerting system. Fujino said the design will include “more electrification,” with a brake-by-wire system, auto brakes, electric landing gear, flaps, and spoiler actuation, and Honda Aircraft’s Advanced Steering Augmentation System, which provides directional assistance to the nosewheel steering to increase stability after landing.

The original HondaJet “made a mark on this industry,” Fujino said after unveiling the HondaJet 2600 mockup at BACE. “We became aware of a need for a new kind of aircraft based upon a new market segment. This concept will unlock an entirely new frontier of possibilities, new destinations, and an opportunity to reduce aviation’s carbon footprint.” ■

## News Briefs

### Embraer Lands \$1.2B NetJets Order

NetJets and Embraer inked a blockbuster deal at NBAA-BACE that included orders and options for 100 Phenom 300Es valued at up to \$1.2 billion. The deal calls for deliveries headed to both the U.S. and Europe beginning in the second quarter of 2023. While the mix was not revealed, Embraer Executive Jets president and CEO Michael Amalfitano noted that its first contract from NetJets in 2010 called for 50 firm orders and 75 options and “we’ve now delivered those aircraft to them... they have had a consistent track record of taking every single option and firm order.”

### Dassault’s Falcon 6X Logs More Than 300 Hours

Dassault Aviation reported that it now has three Falcon 6X airframes flying two to three times a week that have collectively logged more than 300 hours over some 100 flights since first flight in March. Transport Canada certification of its Pratt & Whitney PW812D engine is expected by year-end. Around that time, a fourth airframe will fly for the first time and it will be delivered to Dassault’s Little Rock, Arkansas completion facility to get a full interior installed. Upon completion, this aircraft will embark on a tour to demonstrate its performance capabilities at airports around the world. Entry-into-service for the 6X is expected late next year.

### Textron Aviation Unveils Gen2 Citation M2, XLS

Textron Aviation announced upgrades to its M2 and XLS+ light and midsize twinjets last month. For the M2 Gen2, the company added three inches of legroom in the copilot’s position, while entry threshold materials have been improved for durability and maintainability, including the side-facing seat. Deliveries of the M2 Gen2 should begin in the first quarter. Citation 560XL upgrades include a lighted airstair door and a new entry curtain as well as a new pedestal seat design with individual controls. The XLS Gen2 also features an intuitive wireless cabin management system, along with options for a forward, fold-down couch and a Bongiovi speakerless surround-sound system. XLS Gen2 deliveries are expected to begin in the second quarter.

### Bombardier Celebrates 3500 Launch Customer

Bombardier Challenger 350 owner and Entertainment Technology Partners chairman and CEO Les Goldberg is the launch customer for the next generation Challenger 3500. Bombardier revealed the launch customer last month at NBAA-BACE, just a few weeks after revealing plans for the the super-midsize jet, which offers high-end interior features borrowed from its Global family. Goldberg cited the aircraft’s reliability in his decision to return for the next iteration of the aircraft model.



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MATT THURBER

Slated for service entry in 2023, Gulfstream's new \$71.5 million G800 will have a category-topping 8,000-nm range and shares the fuselage of the G650ER and the Symmetry flight deck of the G500/G600.

# Gulfstream large jet lineup grows bigger and longer

by Chad Trautvetter

Gulfstream Aerospace's new G400 and G800 announced on October 4 will book-end each side of its large-cabin jet family and expand that line to six aircraft, beyond the G500, G600, G650ER, and G700. The 4,200-nm G400 derived from the G500/600 fills the gap between the company's super-midsize G280 and G500, while the 8,000-nm G800 that descends from the G650ER throws down a new gauntlet for range in its category.

Three G800s are slated to take part in flight testing, with the first—dubbed T1—already having been rolled out. That aircraft began taxiing under its own power in September at Gulfstream's headquarters in Savannah, Georgia, with first flight expected by year-end and service entry slated for 2023. Meanwhile, the G400 is slated to begin flight testing in early 2023 and enter service in 2025.

According to Gulfstream president Mark Burns, both new models were long planned for—the G400 was envisioned when the G500 and G600 were announced in October 2014, and the G800 was conceived when the G700 was launched two years ago.

When the G800 eventually replaces the G650ER, all of Gulfstream's large-cabin jets will have common flight decks—Honeywell Epic-based Symmetry avionics and BAE Systems active control sidesticks—that will make it easier for pilots to transition between these fly-by-wire aircraft. Further easing training requirements, the G400 through G600 will have a common pilot type rating; the G700 and G800 will

also have a common type rating.

In addition, the G400, G500, and G600 will share the same tail and fuselage cross-section but have slightly different variants of the Pratt & Whitney PW800-series engine. All three of these jets will be made at the Northwest manufacturing facility at Gulfstream's Savannah campus.

Meanwhile, the G700 and G800 will share a wing, tail, and fuselage cross-section, in addition to the 18,250-pound-thrust Rolls-Royce Pearl 700 turbofans slated to receive FAA certification early next year. These ultra-long-range airplanes will be manufactured at the current G650ER production facility in Savannah; G650ER production is in the process of being moved to the former G450/550 manufacturing facility.

Priced at \$34.5 million (2021 \$), the G400 will act as the entry-level product in Gulfstream's large-cabin jet family. It will have seating for up to 12 passengers in three zones and an aft lavatory. Ten of Gulfstream's signature wide oval windows will provide ample natural light in the nearly 42.5-foot-long cabin.

The G400's Symmetry flight deck will be well equipped, including an optional head-up display with a new combined vision system that will allow for landing in low-visibility conditions. As an added layer of safety, the twinjet will also have a predictive landing system.

Power will come from two 13,496-pound-thrust PW812GA turbofans that offer 22 percent lower emissions than other engines

in its class. The twinjet will be able to fly 4,200 nm at Mach 0.85 or 3,950 nm at Mach 0.88, in either case allowing nonstop flights from New York to Los Angeles, Lima, Brasilia, Dakar, London, or Moscow. Mmo is expected to be Mach 0.90.

Boasting the longest range of any currently announced business jet, the \$71.5 million G800 will have the same fuselage as the G650ER but borrows many of the interior elements designed for the G700, including cabin seats, cabinetry, and lighting.

The jet will be able to seat up to 19 passengers and sleeps 10 when outfitted with four living areas, or up to 15 passengers with three living areas and a crew compartment. Both configurations include forward and aft lavatories and a galley for food preparation.

For pilots, the flight deck will be identical to that of the G700, including Symmetry, dual head-up displays with combined vision system, and predictive landing performance system.

According to preliminary performance data from Gulfstream, the G800 will have a Mach 0.925 Mmo and 51,000-foot maximum ceiling. The G800's class-leading 8,000-nm range will be achieved at a Mach 0.85 long-range cruise speed. It will be able to fly 7,000 nm at Mach 0.90 high-speed cruise. From New York, either speed option will yield a nonstop link to Shanghai, Tahiti, Punta Arenas, Johannesburg, or Mumbai.

While the G800 is intended to replace the G650ER, Burns said the latter jet—priced in the low \$60 million range—will remain as a part of Gulfstream's lineup for the foreseeable future as a "value" airplane. He noted that the backlog for this model still remains strong, to the point where production has even been ramped up this year from earlier projections. ■

## News Briefs

### Raisbeck Reveals Epic Caravan, Orders

Raisbeck Engineering has signed Redding Aero as the launch customer for the aircraft modification company's Epic Caravan drag-reduction system for the Cessna 208B turboprop single. Redding will take 11 systems for deliveries beginning in 2022 for its fleet of Caravan 208Bs. Epic Caravan was designed to address the aerodynamic drag and resultant lower speed and higher fuel consumption on Cessna Caravan 208Bs flying with cargo pods. It features a composite forward cargo pod fairing and metal dual aft body strakes. The system weighs 38 pounds and adds about five knots of speed at cruise power settings or reduces fuel flows and lowers ITT by flying at the same speed as a stock pod-equipped Caravan.

### Bombardier, Signature Explore New Relationship

Bombardier and Signature Aviation have signed an MoU for the latter to provide dedicated concierge service at the airframer's service centers in the U.S. and Europe, including Tucson, Arizona; Hartford, Connecticut; Fort Lauderdale, Florida; Dallas; Wichita; and London Biggin Hill. Also under the MoU, Bombardier will station mobile response teams, including vehicles, technicians, and spare parts at various Signature FBOs across the U.S. and in Europe.

### Gogo Rolls Out SmartShield Warranty Program

Gogo Business Aviation has unveiled SmartShield, a warranty service program that also provides protection for Avance or classic air-to-ground in-flight connectivity users with annual overage forgiveness and the ability to roll over monthly unused megabytes of data. SmartShield costs \$5,000 a year with a three-year commitment. Also included in the coverage is fixed-service pricing, a 50 percent discount on services from field service engineers, free annual training, and a discount on Gogo Vision 360, an on-demand entertainment streaming service.

### CAE To Bring New Flight Training Base to Vegas

CAE will expand its flight-training footprint in the U.S. with construction of a new training facility in Las Vegas. Slated to open in mid-2022, it will be CAE's first training center on the West Coast. This location was chosen as part of the training provider's strategy to situate its centers near where customers fly. The new facility is expected to eventually house eight full-flight business aircraft simulators for platforms including the G550 and G650, as well as the Global 7500. Nick Leontidis, the Canadian company's group president for civil aviation training solutions, said the center will help "the business aviation industry build and grow a strong pipeline of pilots."



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# Bizjet accident fatalities surge in first nine months

by Gordon Gilbert

In the first nine months of this year, there were nearly five times as many fatalities from accidents involving U.S.-registered business jets compared to the same period of the mostly Covid-impacted 2020. According to **AIN** research, 19 people died in five N-numbered bizjet mishaps between January 1 and September 30, 2021 versus four persons who lost their lives in the one fatal accident in all of 2020.

All the fatalities for both years occurred in business jet accidents while flying under FAR 91 personal or corporate operations. Air taxi operations under FAR 135 suffered three non-fatal accidents in the first three quarters of the year compared to just one non-fatal occurrence in the previous three quarters. Meanwhile,

fractional operations under FAR 91K continued their enviable record of no reported accidents or incidents in the current and former comparable periods.

The five fatal accidents this year and the resulting number of fatalities were: January 9, Cessna Citation V, one fatality; May 4, Gulfstream IV (in the Dominican Republic), one fatality; May 29, Citation I/SP, seven fatalities; July 26, Bombardier Challenger, six fatalities; and September 2, Citation XLS, four fatalities.

Meanwhile, still under investigation was the one N-numbered fatal business jet accident in 2020. On February 8 a Citation 501 broke up while climbing through 15,400 feet to 16,000 feet after its pilots reported “problems” with the autopilot

and the left-side attitude indicator. The twinjet, whose rated pilot was flying from the right seat, was on a Part 91 personal flight in day IMC and had filed an IFR flight plan. Four people died in this crash.

The 15 aircraft occupants who died in U.S.-registered business turboprop accidents in the first three quarters of this year matched the number from last year, but one person was killed on the ground bringing the total number of fatalities to 16 this year. All but one of the fatal crashes for both years happened while flying under FAR 91.

The seven fatal turboprop accidents this year and the resulting number of fatalities were: February 7, Cessna Conquest, one fatality; April 23, Swearingen SA226, two fatalities; May 5, Mitsubishi MU-2, three fatalities (plus one on the ground); July 10, Beech C90, two fatalities; July 18, C90 (public aircraft), three fatalities; August 20, Daher TBM 700, one fatality; and September 28, Rockwell 690, three fatalities.

## Zero Serious Accidents in Europe

There were no reportable accidents and only one serious incident in all of last year involving EASA-member-state-registered, turbine business airplanes, according to the agency’s 2021 Annual Safety Review. In addition, there were also no fatal accidents involving European commercial air transport holders, including air taxi and charter operators, in 2020. Through the first nine months of this year, the European nations, except for Italy, continued to be free of serious accidents. However, 14 people lost there lives in four non-European business jet accidents during the first three quarters of last year, of which two were air taxis and one was a private operation.

In the only fatal accident of a non-U.S. registered business jet in the first nine-months, a crewmember perished in the April 20 crash of a Brazilian-registered Learjet 35 during a training flight. After a series of touch-and-goes, the jet touched down with its landing gear retracted, and then slid through a perimeter fence and broke in two, killing the pilot. Meanwhile, non-fatal accidents were unchanged at five in each of the comparable periods.

Fatal accidents involving non-U.S. registered turboprops soared in the first three quarters of this year. Nine people died in two crashes in the first nine months of 2020 versus seven crashes and 36 fatalities in the first nine months of this year. Those seven crashes were: March 1, King Air 300, China, five fatalities; March 2, LET-410, South Sudan, 10 fatalities; March 20, Cessna 208, Kenya, two fatalities; May 14, Turbo Porter, Italy, two fatalities; July 8, Turbo Beaver, Sweden, nine fatalities; August 16, Rockwell 690B, Canada, one fatality; and September 14, King Air 250, Brazil, seven fatalities.

Our charts and narrative do not include accidents or incidents that result from solely cargo operations, illegal flights, shoot downs, and suicides or other intentional crashes.

## News Briefs

### SkyDisplay HUD Now Available For Pilatus PC-12

MyGoFlight has licensed Honeywell’s high-speed ASCB data bus to provide information for its SkyDisplay HUD aboard the Pilatus PC-12. A fully integrated SkyDisplay HUD is available for Pilatus PC-12s equipped with Honeywell Primus Apex avionics, while an interface is also available for PC-12s equipped with Garmin’s G600 flight deck. Other avionics systems that can work with SkyDisplay include Avidyne, Aspen Avionics, and certain other Garmin flight decks. While currently the SkyDisplay HUD is for use only in Part 23 aircraft flying under Part 91 rules, the company is working to extend that to Part 135 operations in the first half of 2022.

### White Paper Examines Decarbonization Needs

A new Deloitte Consulting white paper said that, without the implementation of decarbonization procedures and technologies, aviation emissions could be responsible for 22 percent of the planet’s total emissions by 2050. Among the most promising methods for reducing scope 3 emissions are sustainable aviation fuels (SAFs) and electric propulsion. SAFs are likely to be the best possible solution for reducing emissions in medium-to-long-haul flights, while electric propulsion could be the most feasible zero-emission solution for smaller aircraft and short-haul flights.

### New Global Jet Capital CEO Upbeat about Upturn

Business aviation financier Global Jet Capital (GJC) is encouraged by the “long runway” of demand it sees ahead as the pandemic starts to fade and markets begin to reopen, said CEO Vivek Kaushal. “We believe that there is a ton of pent-up demand,” he said. GJC closed on two asset-backed securitizations (ABS) over the past year, bringing its total assets securitized to more than \$3.6 billion and bonds issued to more than \$2.9 billion. “We reopened the market for aviation related-assets,” Kaushal said, noting that in both issuances the bonds GJC brought to market were oversubscribed.

### Landsberg Sees Pitfalls in Applying SMS to Small Ops

NTSB vice-chairman Bruce Landsberg is concerned that guidance surrounding safety management systems (SMS) may not be the best fit for small operators. One challenge “is the FAA has a predefined view of how SMS should work.” While the components of SMS are fine, the “process sort of breaks down” with the smallest operators that have one or two employees. “The FAA’s answer up to this point has been scalability,” Landsberg said. “But I’m not persuaded of that because as human beings, we’re very poor self-evaluators.” Collectively, he said, industry and regulators need to be a little creative when it comes to small operators.

## Accidents/Incidents Worldwide

(first nine months 2021 vs. first nine months 2020)

### U.S.-registered Business Jets and Turboprops

Business jets	Total		Part 91		Part 91K		Part 135		Public/Gov’t		Mfr.	
	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020
Total accidents	18	8	15	7	0	0	3	1	0	0	0	0
Nonfatal accidents	13	7	10	6	0	0	3	1	0	0	0	0
Fatal accidents	5	1	5	1	0	0	0	0	0	0	0	0
Fatalities	19	4	19	4	0	0	0	0	0	0	0	0
Incidents	57	45	30	28	0	0	25	17	0	0	2	0

Business turboprops	Total		Part 91		Part 91K		Part 135		Public/Gov’t		Mfr.	
	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020
Total accidents	19	21	14	13	0	0	4	7	1	1	0	0
Nonfatal accidents	12	15	8	8	0	0	4	6	0	1	0	0
Fatal accidents	7	6	6	5	0	0	0	1	1	0	0	0
Fatalities	16	15	14	14	0	0	0	1	2	0	0	0
Incidents	49	32	30	23	0	0	18	8	1	1	0	0

All Data Preliminary. Sources: FAA, NTSB, Aviation Safety Network, AIN research

## Non-U.S.-registered Business Jets and Turboprops

Business jets	Total		Private		Charter		Other*		Unknown	
	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020
Total accidents	6	9	1	2	2	3	2	3	1	1
Nonfatal accidents	5	5	1	1	2	1	1	2	1	1
Fatal accidents	1	4	0	1	0	2	1	1	0	0
Fatalities	1	14	0	2	0	9	1	3	0	0
Incidents	24	10	5	5	7	2	4	1	8	2

Business turboprops	Total		Private		Charter		Other*		Unknown	
	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020
Total accidents	18	10	5	3	5	3	8	4	0	0
Nonfatal accidents	11	8	3	3	4	3	4	2	0	0
Fatal accidents	7	2	2	0	1	0	4	2	0	0
Fatalities	36	9	8	0	10	0	18	9	0	0
Incidents	21	8	2	2	15	4	4	1	0	1

All Data Preliminary. Sources: FAA, NTSB, Aviation Safety Network, AIN research

\* For example: air ambulance, aerial survey, ferry, training, testing, manufacturer, government (non-military).



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**A**fter 20 years and 15,000 hours of flight time, Josh Birmingham decided to leave his corporate pilot job and make a career course correction. In 2011 he founded Premier Jet Training (PJT) in Stuart, Florida, to specialize in flight training for the popular Cessna Citations using two company-owned aircraft, a Citation II and a CJ1.

While PJT was successful, Birmingham kept looking to get more utilization out of the two jets. In his two decades of corporate experience, he had seen many instances where charter operators relying on managed aircraft had taken the wrong approach to get into the highly competitive world of on-demand charter. He saw an opportunity to use his own airplanes to allow for better control over product delivery and costs. After purchasing a dormant Part 135 certificate in 2013, Birmingham and his team opened Premier Private Jets (PPJ), based at Witham Field (KSUA) in Stuart.

"You see, start-up and small operators go down the managed aircraft path without an appreciation for how many aspects of reliability and cost control are forgone in favor of what they think is an inexpensive way to get access to an airplane," he explains. "This may have worked in the past but in today's competitive environment it can constrain your operations and economics. I believe that's because it's become such a complex business. It's now a 24/7 operation with changing logistics and demands that can be met only through the right team, scale, and better economic control of the aircraft."

To address the dynamic needs of the marketplace, Premier Private Jets operates owned aircraft on what Birmingham terms a "floating fleet" concept. "It's the complete opposite of what I call 'traditional-style Part 135 operations,' where the aircraft always returns to its home base," he explains. "Our aircraft go where the clients take them and then sit until the next leg is sold."

### **AIRCRAFT OWNERSHIP IS KEY**

Birmingham thinks many smaller and medium-sized charter operators limit themselves to relying on managed aircraft coupled with outsourcing of key cost components such as maintenance and pilot training.

"Managing the expectations of individual aircraft owners takes a lot of time and resources, complicating a high-utilization floating-fleet operation," he explains. "Moreover, high utilization of managed aircraft does not typically result in lower aircraft ownership costs due to increased levels of flying. That's because most of these arrangements pay the aircraft owner by the hours flown regardless of how many total hours are operated."

Instead, so they could "control their own destiny," the management of PPJ committed on day one to owning all its charter fleet. That way, there are no issues with availability and any increased utilization lowers hourly aircraft ownership costs, which can support lower prices to customers.

Premier Private Jets' current fleet includes 15 aircraft, among them Cessna Citations, the Hawker



400XP, and the popular Hawker 800XP. “We identified those aircraft as the biggest opportunities in our market,” Birmingham says. “They are perfect for our current client mix and we’re always on the lookout to acquire more aircraft.”

Birmingham also notes that larger charter operators have historically focused on super-midsize and heavy aircraft while the overall U.S. private jet fleet is weighted toward light jets. “We believe the opportunity for introducing new customers to the experience and benefits of charter air travel is through the light jet segment,” he says. “Once someone is a customer, it’s easier for them to want to upgrade.”

To complement PPJ’s standard retail charter operations, Birmingham identified an opportunity to use its operational flexibility to support membership and jet card segments marketed by big-name banner operators. Since PPJ had been quick to establish itself as a provider of high-quality and reasonably priced charter services, it was the ideal solution to offer additional lift for them, especially for those brands looking for light jet lift. Birmingham is understandably rather proud that nearly 60 percent of PPJ’s flights now operate under these big-name banners and provide services all across the U.S., Canada, and the Caribbean.

### **CONTROLLING COSTS WITHOUT CUTTING CORNERS**

While aircraft ownership is a sure way to better control a big portion of a Part 135 operator’s variable costs, it’s just one piece of the puzzle. Again, Birmingham’s prior corporate operational experience came into play.

“Our objective has always been to in-source all the key functions of our operation that have the greatest impact on our cost structure,” he says. “The biggest of those is maintenance. If you rely on third-party MROs, you lose control, and costs can get way out of hand.

“Early on, we opened our own repair station here in Stuart, which has worked fine,” Birmingham continues. “But, as our floating-fleet territory has grown, we needed another maintenance base. We filled that need in the Midwest with our recent FBO acquisition of Oakland Air at Oakland County International [KPTK] in Pontiac, Michigan. We’d like to fill out our capabilities with a base in the Northeast U.S.”

Along with a bustling FBO, the newly acquired repair station nearly triples Premier Private Jets’ in-house maintenance capabilities in support of its growing fleet.

“It’s an active retail MRO and is an immediate gain,” Birmingham says. “That’s key to our strategy. With our current fleet and the amount of high-utilization flying we’re doing now, we



**JOSH BIRMINGHAM**

PRESIDENT/CEO, PREMIER PRIVATE JETS

“All in all, PPJ’s operations strategy should appeal to big-name brands looking for reliable and cost effective lift...”





are performing phase inspections every eight weeks or so. Having our own maintenance team is the only way we can keep up with that.”

Birmingham says that along with the new MRO, PPJ has also recently added an interior and avionics shop to its portfolio—another step to increase capabilities and control costs.

“We want our aircraft to look great,” he comments, “so each aircraft that joins our fleet gets a major update, including new exterior paint done in Premier Private Jet livery, a refurbished interior, and a Wi-Fi system installation. Our typical light jet upgrade program for inducting an aircraft into our fleet costs about \$200,000. This has been a major selling point to both our retail and banner-brand customers.”

With all their maintenance needs in hand, Birmingham said, the only remaining part of the cost-control puzzle is to bring all their pilot training in-house. While the original company, Premier Jet Training, remains active, it can’t currently handle the large volumes or regulatory requirements of new-pilot training Premier Private Jets requires.

“Hiring pilots as often as we do and the increasing difficulty of getting them trained by a third-party company on our schedule is restricting our growth,” Birmingham explains. “You are at their mercy for both timing and costs and we don’t want that. Controlling the ability to train our pilots on our schedule and budget is critical to our business plan.

“Our next step is a full-on Part 142 flight training program with full-motion flight simulators,” Birmingham continues. “We have been working on a strategic partnership with a company that builds amazing simulators, and we’re about

ready to introduce that company. We will be building a dedicated center to train not only PPJ pilots but also other charter operators and individual aircraft owners when our schedule allows.

“All in all, PPJ’s operations strategy should appeal to big-name brands looking for reliable and cost effective lift,” said Birmingham.

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While Birmingham stresses that, above all, Premier Private Jets wants to be known as a top-tier, on-demand charter provider, he feels it’s important for customers and its industry peers to know how the company was established and the principles it is built on.

“People who understand the complexity of our business will appreciate that we’re not just a Part 135 operator with a handful of airplanes doing charters,” he says. “We are an organization of over 100 professionals, two Part 145 repair stations, and a growing fleet of aircraft. This past June, we broke into the ranks of ARG/US Top 25 on-demand operators, ranking number 22 in terms of flight hours flown, and we are Wyvern Wingman certified. That says a lot, and we’re proud of it all.

“Premier Private Jets has been built to deliver a great flight experience for our retail and sub-service charter customers at reasonable prices,” Birmingham concludes. “That’s the focus of everyone on our team.”

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### MicroShield 360

Covid has placed an increased emphasis on aircraft cabin sanitation and disinfection. MicroShield 360 is a “one and done” anti-microbial application that has been successfully used by leading Part 135 operators to safely and efficiently protect passengers from viral transmission on surfaces.

### NATA Anti-human-trafficking Campaign

The National Air Transportation Association (NATA) has teamed with the U.S. government on its Blue Lightning air carrier awareness and training initiative and has now trained several thousand pilots and hundreds of air carriers on preventative measures to combat human trafficking. Congress has mandated this training requirement for both Part 121 and Part 135 operators. NATA is also helping to extend this training to fixed-base operators.

### U.S. Helicopter Safety Team

In 2020, the United States Helicopter Safety Team produced a safety video that graphically portrays the dangers associated with inadvertent flight into instrument meteorological conditions (IIMC) called *56 Seconds To Live*. The 56-second time period is based on a USHST study of 221 fatal helicopter accidents that occurred from 2009 to 2019, and the video offers a graphic depiction of how those 56 seconds feel to a desperate helicopter pilot. Inadvertent flight into IMC was one of the top causes in 38 of the accidents. Concurrent with the video release, the USHST announced a “56 Seconds to Live” course, available for free on the USHST website.



**The award recognizes aviation companies whose culture and programs foster diversity, equity, and inclusion in the workforce.**

### Duncan Aviation Refugee Hire Program

Duncan Aviation’s Lincoln, Nebraska location is recruiting workers in partnership with local organizations that help prepare refugees for employment. “Our goal has been to provide additional tools, resources, and support within our current hiring process to address the unique needs of the refugee applicants who pursue careers here,” said Leon Holloway, Duncan’s human resources manager. “Hiring refugees not only assists them on their return to self-sufficiency but also adds richness and diversity to the workforce and ultimately to the community at large.”

### Flexjet

The Employers Resource Council (ERC) has consistently ranked Flexjet as one of the 99 best places to work in northeast Ohio, with special recognition for the company’s efforts to achieve diversity and inclusion. The company is headquartered in Richmond Heights, Ohio, and employs 1,550 private jet travel professionals worldwide.

### GE Foundation Next Engineers Program

In April the GE Foundation announced that it was committing \$100 million to create a Next Engineers program aimed at readying a more diverse universe of young people for college and a career in engineering. The program is focused on reaching 85,000 students in grades eight to 12 in 25 cities worldwide. The foundation announced that it would invest \$5 million in the Cincinnati area, home of GE Aviation, and that the University of Cincinnati is working with GE Aviation to help launch the program.



**The award recognizes recent programs and technology that advance environmental sustainability in aviation.**

### AvFuel Book-and-Claim

With Avfuel’s book-and-claim program, customers can buy a full load of sustainable aviation fuel (SAF) and receive credit for the emissions reductions benefit it provides no matter where they are in relation to where the fuel is delivered. The system is conducted in a compliant manner so that the benefit of the SAF molecules can’t be double-counted. Only the SAF purchaser receives credit for its emissions reductions.

### CoSAFA

The Council on Sustainable Aviation Fuels Accountability (CoSAFA) was formed in 2021 to provide clarity, transparency, and accuracy to the accounting practices documenting the use of sustainable aviation fuel in multi-party transactions. Initial group members include NATA, NBAA, EBAA, IBAC, GAMA, and Airlines for America. The council’s mission is to ensure that the scale-up of SAF production will be enabled by well-designed protocols for its chain of custody through the supply chain life cycle, allowing for product and transaction tracing, a means of verifying relevant data, and proper accounting or claiming of environmental benefits.

### Clay Lacy Aviation

Clay Lacy Aviation’s sustainability

program has enlisted the assistance of World Fuel Services’ World Kinect Energy Services and 4Air. World Kinect gave Clay Lacy managers a three-month workshop to help them develop a sustainability plan and tactics for implementation. Then 4Air helped with auditing the new processes after implementation. The FBO, charter, and aircraft services company’s sustainability program has three main focuses: complying with future related regulations, competitive gains from sustainability, and environmental stewardship for future generations.

### GAMI G100UL

In July 2021, General Aviation Modifications Inc. (GAMI) received FAA STC approval for use of its high-octane unleaded avgas, initially in all models of the Cessna 172. The STC will be expanded using the approved model list process to cover additional aircraft and engine combinations for GAMI’s G100UL avgas. G100UL avgas is a drop-in replacement for the current 100LL avgas, which uses tetraethyl lead to boost octane so engines with high compression ratios can avoid damaging detonation.

### Neste

Neste is a leading supplier of sustainable aviation fuel (SAF) to the U.S. and European markets and has invested hundreds of millions of dollars in related refining capacity. The recently announced expansion at its Rotterdam refinery represents a \$231 million investment that will add another 500,000 tons of sustainable aviation fuel (SAF) a year to the plant’s capacity.

### Rolls-Royce SAFinity

Rolls-Royce’s SAFinity initiative is designed to make it easier for operators to meet their commitments to boost the use of sustainable aviation fuel. The service is based on an app that allows customers to verify the fuel burn for each engine time and then buy the amount of SAF required for the planned trip. While the fuel doesn’t necessarily get pumped into that specific aircraft, Rolls-Royce and partners will ensure that it does get used, issuing a certificate independently verifying the transaction.



**The award recognizes recent advances in aviation training.**

### APS Virtual Recovery Upset Training

Aviation Performance Solutions (APS) is now using virtual-reality technologies for the maximum transference of

upset prevention and recovery training (UPRT) skills to a customer’s specific aircraft type. Loss of control in-flight (LOC-I) is responsible for nearly 50 percent of all fatalities in aviation worldwide, and UPRT is the most effective mitigation. Virtual reality allows pilots to consolidate knowledge on their own aircraft type following APS’s integrated academic, on-aircraft, and advanced simulator training.

### VRM Switzerland

In April EASA granted the first certificate for a rotorcraft virtual reality-based flight simulation training device to VRM Switzerland. Depending on the training concept, EASA will provide users of the device with up to five hours of training credit for a private pilot license, 10 to 20 hours of training credit for a commercial certificate, and five hours of night-time credit.



**The award recognizes recent major advances in general aviation technology.**

### MyGoFlight HUD

MyGoFlight’s SkyDisplay head-up display (HUD) was approved first for the Cirrus SR piston singles and is available as part of an approved model list STC for other Part 23 aircraft operating under Part 91 regulations. While HUDs have long been available in midsize and larger business jets and commercial aircraft, the SkyDisplay brings the safety benefits of HUD to four-seat piston-powered airplanes through piston twins, single-engine turboprops, and light jets.

### Garmin Smart Glide and Smart Rudder Bias

Garmin Smart Glide helps pilots deal with engine failures by recommending a suitable nearby airport and engaging the autopilot to fly to it at the appropriate airspeed. According to Garmin, the key benefit of Smart Glide is to free up the pilot to focus on dealing with the emergency situation—for example, running the engine-failure checklist. Smart Glide is being provided as a free software upgrade for compatible avionics.

Garmin’s Smart Rudder Bias autopilot enhancement adjusts rudder force to help control sideslip after engine failure, but it also works with Garmin’s Electronic Stability and Protection (ESP) autopilot feature to help the pilot control bank and avoid flying too slowly in an engine-out situation.

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# Safety pioneer, CAN chair Randall Greene dies

by Kerry Lynch

Randall Greene, who steered Safe Flight Instrument Corp. for nearly two decades and was a past chairman of the Corporate Angel Network (CAN), died September 29 after a prolonged battle with amyotrophic lateral sclerosis (ALS), or Lou Gehrig's disease.

Greene took over the company his father and inventor Leonard Greene founded in 1946 in 2001 as president and CEO and expanded its mission of safety innovation surrounding flight performance systems, becoming a leading supplier of instrumentation and safety systems for general and business aviation, commercial, and military fixed-wing and rotorcraft.

That company has pioneered numerous safety enhancements involving AoA, stall warning, landing and approach indicators, automatic throttle systems, wind shear recovery guides, and safe takeoff rotation computation, among others.



Former Safe Flight president and CEO Randall Greene

A pilot who amassed 9,500 hours in 270 types, Randall Greene earned degrees from Boston University, General Theological Seminary, and Yale University. Born the year before Safe Flight was established, he began his aviation career as a charter and U.S. Forest Service pilot in Taos, New Mexico.

He later joined Bendix-General Aviation Avionics Division as a program manager and engineering test pilot and served as director of international government

relations for AlliedSignal Aerospace, both businesses now part of Honeywell.

In 1988, he founded Commander Aircraft Company in Oklahoma City after acquiring the type certificates of the former Rockwell Commander single-engine 112/114 series of aircraft from Gulfstream Aerospace. By 1991 he had led a successful public offering of the company and later served as president of flight test and marketing consulting company Aeronautical Systems Corporation in Boulder, Colorado, before joining Safe Flight.

Over the years, he garnered 19 U.S. patents, won numerous awards for his safety innovation and charitable contributions, and became an associate fellow of the Society of Experimental Test Pilots and an FAA-designated test pilot for FAR Part 23, 25, 27, and 29 aircraft.

He was long affiliated with CAN, which arranges transportation aboard business jets for cancer patients to and from hospitals, serving as chairman and then chairman emeritus, and also is a former vice-chairman of the board of the Smithsonian Air & Space Museum.

Greene handed over the role of president of Safe Flight to Matthew Greene in 2019, carrying on the family tradition, and earlier this year the company was sold to Loar Group. ■

## News Briefs

### SD Trials Confirm Plane Simple Antenna Performance

Satcom Direct (SD) completed transatlantic and European validation trials last month that confirmed the successful functioning of its tail-mounted, Ku-band Plane Simple antenna system. Spanning more than 16 hours over three days using a G350, the tests demonstrated the compatibility of the Plane Simple antenna with the Intelsat FlexExec satellite network. According to SD, consistent data streaming was delivered across multiple devices even as the flight transitioned between three satellites on the Intelsat network—from along the U.S. East Coast, across the North Atlantic, and to Ireland before returning to Melbourne, Florida. SD's SDR Gateway router supported Wi-Fi distribution among a number of personal electronic devices for simultaneous use of multiple streaming applications and videoconferencing calls. The company is developing STCs to support installations, anticipating the first will be for the Dassault Falcon 2000.

### Avfuel Launches SAF Book-and-claim Program

With the business aviation industry's focus on increasing utilization of sustainable aviation fuel (SAF) despite its currently limited geographical distribution, Avfuel has stood up its book-and-claim program. This process allows customers who wish to use SAF but are not in an area where it is available to purchase the fuel and receive credit for it under the various emission accounting programs. The fuel is then dispensed into and ultimately burned by another aircraft elsewhere. "SAF is the most effective way to reduce a flight's carbon footprint, and book-and-claim is the single most effective way to make SAF attainable for customers no matter where they fly," said Keith Sawyer, Avfuel's manager of alternative fuels. Avfuel will continue to operate its carbon offset program and has forged a new partnership with carbon credit provider CBL Markets.

### Argus Provides ClearView with Global Picture

Argus International is bringing to market a new service, ClearView, that aggregates mass amounts of "big data" to enable the user to select and benchmark information that is most helpful to plan their operations and business decisions. An interactive data service, ClearView enables specific benchmarking, filtering, dynamic flight mapping, and data-integrity monitoring. Customers can use the information to analyze the market to determine aircraft utilization, market share, and new growth opportunities. The service slices information into "digestible chunks," allowing users to drill data down to a specific aircraft type, category, global region, time period, operational category, airport, or fleet.

# Honeywell: Bizjet deliveries to reach pre-covid levels

by Curt Epstein

Business aviation successfully emerged from the Covid pandemic with flight activity near 2019 levels, but it will be several years yet until aircraft delivery rates match those of the pre-pandemic period, according to Honeywell Aerospace's Business Jet Delivery Outlook.

The company's annual 10-year delivery forecast calls for 7,400 new business jet deliveries during the next decade worth an estimated \$238 billion, up 100 units from last year's forecast, but still down from the 7,600 that the forecast prognosticated back in 2019.

The company's longer-range forecast through 2031 projects a 3 percent average annual growth rate of deliveries, in line with expected worldwide long-term economic growth. Released ahead of this year's NBAA-BACE in Las Vegas, this year's forecast marks Honeywell's 30th anniversary of doing the outlook.

For this year, while airframers are seeing their order books and backlogs swell, Honeywell predicts deliveries of between 575 and 620 business jets, as they continue to ramp up production amid lingering supply chain and labor issues.

Javier Jimenez Serrano, the senior strategy specialist in charge of this year's survey, told AIN, "We expect expenditures for new jet purchases to recover to 2019 levels by

late 2022 to 2023, and in terms of units, that will be by the mid-point of the decade."

According to Serrano, 90 percent of the operators surveyed indicated that their purchase plans are not being postponed in the post-Covid environment, and this is up 10 percent over last year's total. Of those with plans to purchase a new business jet over the next five years, nearly one-third expect to make those purchases within the next two years.

Each year the company conducts its research along with a survey of more than 1,500 operators to gain insight into their aircraft purchase and usage plans over the next five years. It then extrapolates that data out to cover the next five years. This year the survey window began in June and wrapped up last month.

The preowned business jet market has seen record transaction levels over the past year as operators and buyers scramble to acquire more lift capacity in the face of rising demand brought about by the pandemic's negative impact on commercial aviation and the first-time private aviation charter customers that have resulted. Honeywell added that its actual fleet aircraft replacement and expansion rates could be even higher than those gleaned by the survey results, due to that influx of new private aviation users.

Among the most striking survey results this year is that used jet purchase plans rise by an estimated 12 percent over the next half-decade, equivalent to approximately 800 additional aircraft transactions over that span. Operators indicated that 28 percent of their fleet is expected to be replaced by or expanded with used aircraft over the next five years, an increase of 3 percent from last year's survey.

"The increased demand for used jets at more than 6,500 units over the next five years [is] putting pressure on an already low inventory and driving additional demand for new jets," stated Heath Patrick, president of Honeywell's Americas aftermarket division. "Our latest operator survey results support continued private jet usage growth."

The survey this year indicated that 65 percent of all respondents plan to fly their aircraft more in 2022, while the remaining third believe their flight hours/activity will remain the same as in 2021. Only 2 percent said they thought they would fly less next year.

Serrano explained that most of the continued growth is in the domestic private charter market. "In the short term we've seen more deliveries of light and medium jets than we had expected, so the impact of Covid in 2021 was not as sharp there," he said.

"We see light jets outpacing the other categories just because that is the entry-level jet where a lot of the new consumers of business or private aviation start. In the long-term, however, we see the larger, heavy jets, the long-range categories growing in demand." ■



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### Mid-Continent Flex

Mid-Continent Instruments and Avionics' Flex MD23 Custom Function Display is a series of forward-fit and retrofit displays that can be customized to fit hundreds of applications. The Flex display is a blank slate on which avionics and systems engineers and designers can create almost any kind of instrumentation

display and control output. Mid-Continent has already obtained FAA certification for the hardware and the software that runs inside the instrument. All that remains is for the customer to work with Mid-Continent on the design of what shows up on the Flex's display and how it interacts with the aircraft, and the result is a much quicker method of adding display functionality and system control into many aircraft types.



**The award recognizes facilities that have recently opened for excellence in design and convenience.**

### ACI Jet, San Luis Obispo

ACI Jet, the lone FBO at California's San Luis Obispo County Airport, began operating its newly built, \$20 million facility in 2021. The 28,000-sq-ft, two-story terminal features an expansive lobby; mezzanine seating overlooking the ramp; a pilot suite with two large snooze rooms, shower facilities, and a flight-planning area; a trio of conference rooms seating four, eight, and 18, respectively; and a refreshment bar.

### Jet Aviation, Scottsdale

Jet Aviation's FBO and hangar complex at Arizona's Scottsdale Airport consists of an 8,500-sq-ft terminal and a 30,000-sq-ft hangar, which can accommodate aircraft up to the size of a G650. The new FBO is the third at the airport.

### Million Air, El Paso

The FBO boasts 10,000 sq ft of VIP lobby space, 20,000 sq ft of total hangar space, a dramatic aircraft porte-cochere, and expansive ramp space capable of supporting any aircraft type. Inside the general aviation terminal, guests will find a refreshment bar, café, pilot lounge, snooze rooms, a state-of-the-art flight planning room, and a multimedia conference room.

### WACO Aircraft, Battle Creek

WACO Aircraft's new FBO at Battle Creek Executive Airport at Kellogg Field in Michigan is part of an overall expansion of the airframer's facility. On the first floor are an open passenger seating area, business center, pilot lounge with a snooze room, shower facilities, four private offices, and café bar. Upstairs is the WACO Kitchen restaurant, featuring locally sourced farm-to-table ingredients.

### StanCraft, Coeur d'Alene

StanCraft Jet Center at Idaho's Coeur d'Alene Airport-Pappy Boyington Field is a new \$15 million complex. The 15,000-sq-ft, two-story atrium lobby displays one of the company's mahogany boats. Amenities include a golf simulator; a "crew club" with private communication pods, bathroom with showers, and a pair of snooze rooms; business center; concierge; coffee shop; tenant offices; and even a dog park for those traveling with their pets.

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**The award recognizes recent innovation and excellence in this industry segment.**

#### Wheels Up

Thanks to an aggressive acquisition program in 2020 and 2021 and a recent public stock offering, Wheels Up is now the second-largest Part 135 charter provider in the U.S., trailing only NetJets.

#### Sentient Jet

Directional Aviation Capital's jet card division had \$450 million in sales in pandemic-ravaged 2020 and is looking to expand its programs for international travelers on charter business jets. The company's 2021 summer flight volume was expected to exceed pre-pandemic seasonal volumes by 30 to 50 percent, reflecting growing demand for charter.

#### Jet It/Jet Club

North Carolina-based Jet It is a fractional-ownership program that flies HondaJets and recently expanded to Europe with a sister brand called Jet Club. The European launch comes after Jet It recorded 400 percent year-over-year growth in the U.S. Jet It utilizes a hybrid-fractional-ownership model based on days, not hours, which provides owners with the freedom to use the fleet freely and is ideal for customers making multiple stops in a single day.

#### Volato

Atlanta-based Volato operates a share program with HondaJets. The company will also have a jet card product and offer specially curated, all-inclusive "jet experience" travel packages. Volato manages all aircraft maintenance, fees, and flight operations, while owners simply schedule flights through the company's app.



**These categories recognize innovative new aircraft or derivatives.**

#### NEW JETS

##### Cirrus SF50 G2+

The single turboprop Cirrus SF50 G2+ Vision Jet adds features including optimized engine performance, Gogo Wi-Fi, and new color configurations. Modifications to the Williams International FJ33-5A engine provide customers with a 20 percent improvement in take-off performance in hot-and-high conditions, allowing for access to more airports, including Aspen, Colorado, in the summertime.

##### Textron Aviation Cessna Citation CJ4 Gen 2

Textron Aviation has begun deliveries of the \$10.75 million Cessna Citation CJ4 Gen2, which is equipped with enhanced features including new folding airstairs with a lower step to the ground, step lighting, and a handrail; added seating options; new ambient lighting; and a galley with improved storage.

##### HondaJet Elite S

The \$5.4-million HondaJet Elite S features an increase in maximum takeoff weight (mtow), flight deck

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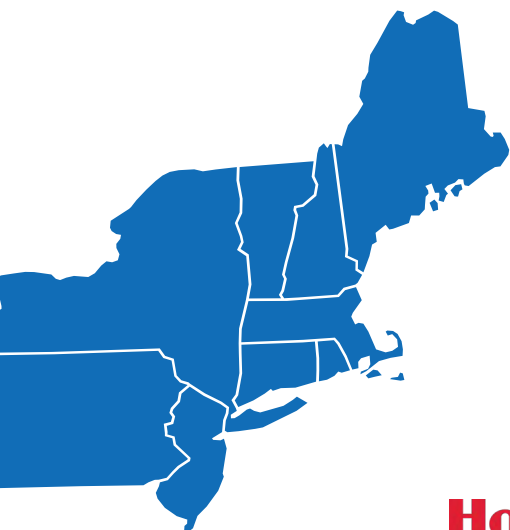
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When Falcon 50 N114TD crashed after a runway overrun on landing at Greenville, South Carolina, NTSB investigators focused on known discrepancies with the braking system but failed to dig deeply into the legality of the “charter” operation.

# Illegal Charter and the Falcon 50 Crash

by Colleen Mondor

On Sept. 27, 2018, a Falcon 50 overran the runway at Greenville, South Carolina. Both pilots died and the two passengers received serious injuries. Air America Flight Services, a Part 135 charter company based at St Petersburg-Clearwater International Airport in Florida, operated the aircraft, N114TD. Company management insisted it was not a revenue flight but invoices presented by the passengers, and the assessment of investigators, proved otherwise. Air America’s owner died in the accident, leaving unanswered questions about the company’s murky history of Part 91 versus Part 135 operations, and the almost total absence of documentation from the FAA has made it difficult to obtain clarity on the issue. The convoluted sequence of events that led to what went wrong during the landing in South Carolina offers proof yet again that an accident’s cause is often far more complex than what occurs in its final moments.

In its investigation, the National Transportation Safety Board (NTSB) determined that discrepancies in N114TD’s anti-skid system likely caused a braking system failure right after touchdown. On the flight deck voice recorder, the pilot-in-command can be heard repeating in rapid succession, “whoa, whoa, whoa,” and “where are the brakes,” “I have no brakes,” “no brakes,” and “get on the brakes,” until the aircraft went over an embankment and then stopped on the airport perimeter road. Photographs of the Falcon 50, its fuselage broken in half, circulated widely on the internet.

As the investigation expanded, the NTSB learned that the anti-skid system discrepancies were known prior to the accident by multiple people associated

with the company, including its owner, Steve Fox, who served as the copilot on the Greenville charter. Investigators further found that neither Fox nor the other pilot, John Caswell, was rated to fly as pilot-in-command of the aircraft. Specifically, Fox held no type ratings nor did he even have an instrument rating. Finally, the aircraft, N114TD, was not airworthy and had not been released from maintenance for any flight.

In separate interviews weeks and months later, the company’s director of operations (DO), Joe Vigil, as well as chief pilot Charles Presley and director of maintenance (DM) Tim Fox (Steve’s son), would all insist they did not know the flight was being conducted. They claimed to have no knowledge that the aircraft, or indeed the company, was involved in FAR Part 135

charter operations. John Caswell, whose name they learned after the crash, was a complete mystery. “Nobody knew who this man was,” asserted Vigil. Tim Fox and Vigil, both of whom were at work when the aircraft departed, declared they did not even know N114TD had taken off until hours after the fact. Vigil said he found out the airplane was gone only when the company’s FAA principal operations inspector called to tell him it had crashed.

## Many Open Discrepancies

The Falcon 50 had been in storage for about four years, receiving only occasional engine run-ups, until June 22, 2018, when a work order was opened to track its extensive maintenance issues in an effort to return it to service. At the time of the accident, there were several incomplete

inspections, airworthiness directives yet to be addressed, and over 100 open discrepancies. Maintenance records also showed that the landing gear was last overhauled in July 2002; it was four years past due when the crash occurred.

Steve Fox and another pilot, Luis Hernandez, flew the Falcon 50 on four “maintenance flights” in the month prior to the accident. Hernandez later told investigators that during those flights, one of which went to Cleveland with a passenger, he found that with the brake system switch in the “#1-ON” position, braking was normal at speeds up to about 15 to 20 knots. Over that speed, the brakes would function only with the system in the “#2-OFF” or “#1-OFF” position and even then without anti-skid protection. Hernandez, who was qualified to serve as pilot-in-command in the aircraft, conveyed this information to Tim Fox and told the NTSB after the accident that Steve Fox was aware of both the problem and remedy. No discrepancies were recorded by either of them in the aircraft logs, however.

In a conversation with the company’s FAA principal maintenance inspector two weeks after the accident, Tim Fox acknowledged that his father had relayed the braking issue to him but added that he also told him the “brakes were fine.” He told the inspector he did not perform any troubleshooting or maintenance on the aircraft’s braking system after the conversation. In an interview with the FAA seven months later, as part of an investigative inquiry, he said he could not recall speaking to Hernandez about any issues with the aircraft. At that time, he said he did not know anything about the four Falcon 50 “maintenance flights” until after they occurred. As to why his father took the aircraft out for those flights, Tim Fox had no idea. Separately, he told the NTSB that as his father owned the aircraft, he had little control over it. This situation, he said, had created “some tension” between them.

According to the NTSB’s final report, at the time of the accident, a placard placed near the braking switch stated: “ATA #32-5 ‘INOP’ DATE: 9/27/18” (ATA code 32-5 involves the anti-skid system). The NTSB assumed it was “likely” placed there by maintenance personnel. Regardless of its source, investigators found that the item was not on the aircraft’s Minimum Equipment List which, according to the DM, had not been used “in a long time.”

In its investigation, the NTSB focused primarily on the braking discrepancy, devoting 180 pages of the 239-page report to that issue. (An additional 33 pages comprised the flight deck voice recorder transcription.) In its probable-cause finding, the board cited the operator for flying an aircraft with “known, unresolved maintenance discrepancies” and the flight crew for its “failure to properly configure the airplane in a way that would have allowed the emergency or parking brake system to stop the airplane during landing.” But to



Among the many discrepancies that rendered the Falcon unairworthy, the brakes barely worked with the switch as shown, and worked better but without anti-skid in the other positions.



solve the puzzle as to why the conditions existed that permitted this accident to happen requires going beyond the report to information available in the multiple lawsuits spurred by the crash and the FAA's investigative inquiry. Thousands of pages of depositions and exhibits can be found in these documents, which highlight the complicated relationship Steve Fox had with his employees, and the fealty they offered to the man who dominated every aspect of the company.

Air America's corporate offices were in West Palm Beach, placing it under the purview of the FAA's South Florida Flight Standards District Office (FSDO), but the aircraft and operations were based in Clearwater, about 200 miles away on the state's opposite coast. According to the company principals, the West Palm Beach office existed only for in-person visits with the South Florida FSDO; the DM had never even been to the office. (He also told the NTSB that the principal maintenance inspector had never been out to see the aircraft or his facilities in Clearwater. The principal avionics inspector, he added, had been there once.)

Joe Vigil was hired as DO for Air America in 2013 and said his initial agreement with Steve Fox called for him to fix Fox's "manuals for him and make sure he was in compliance with the FAA." By Vigil's recollection, this took about two years, and in that time, because the company lacked "certified pilots," only Part 91 flights were conducted. Vigil communicated with the South Florida FSDO, submitting updates for the manuals and obtaining approvals. In 2015, he moved from that focus into pilot hiring, but the company continued to operate only under Part 91 as the prospective pilots "never got to the full certification process." Throughout his tenure, Vigil explained in a deposition, the Part 135 operation was current and active, but the company conducted only Part 91 flights. When directly asked whether Air America ever conducted a Part 135 flight, he said he could not remember any. A former chief pilot was the only pilot he could recall as "identified on the certificate" who "might have" flown Part 135. He left Air America at some point, however, and was replaced, perhaps two years before the accident, according to Vigil, by Charles Presley.

Presley's recollection of working for the company was quite different. He was actually first hired as chief pilot, according to his deposition, in "about 2010" after answering an ad on the climbto350 website. At that time he also served as Air America's sole pilot. After about a year, during which he said he conducted multiple flights under Part 135 in the company's King Air, he left Air America and then did not hear from Steve Fox again until early 2018. Fox told him the Part 135 had fallen out of use and asked, "Would I help him maintain it so he can start using it again?" Presley agreed and was approved as chief pilot and took an FAA checkride so he could serve again as line pilot in the

King Air. By his estimation, he was hired the second time only "six to 10 months" before the Falcon 50 crash. He did agree with Vigil on one point, however: Presley also said Air America conducted no Part 135 flights in 2018. As for Tim Fox, the DM, he claimed he had no idea what kind of flights the company was operating.

The question of Part 135 versus Part 91 is critical not only to the accident but to analyzing Air America's operations and because it raises reasonable concerns about FAA oversight. The NTSB has focused on Part 135 safety in recent years, including it in its annual Most Wanted Lists, but the agency neglected to interview Air America's management, or the FAA inspectors assigned to the company, in its investigation. In fact, investigators never addressed the potentially illegal nature of the flight's operation, leaving the passengers to pursue that issue on their own.

#### Invoices for Charter

From the beginning, the company's surviving management has been in direct conflict with the passengers on the accident flight. Communicating through their lawyers, passengers Steve Rose and Marci Wilhelm provided copies of 12 invoices, all dated prior to the accident in 2018. The invoices detail specific flights and include taxes and segment and landing fees. All of them, with the exception of the accident flight, are stamped "PAID" and they are all on the letterhead of Clearwater Aviation. According to the passengers, Travis Fox (Tim's brother) provided the invoices.

Steve Fox owned Clearwater Aviation, Inc., a Part 141 flight school also located at St Petersburg-Clearwater International Airport. N114TD and the other aircraft on the Air America Part 135 certificate, a King Air 200 and a Piper Navajo, were based at the Clearwater Aviation facilities and maintained by the flight school. Tim Fox was director of maintenance for the school and Travis was the administrator, according to his remarks to the FAA investigative inquiry. (He described his duties as serving as manager of the school.) All three of the Fox family members were also corporate officers for Clearwater Aviation and its parent company.

Travis Fox professed to have no knowledge of the difference between Part 91 and Part 135 when answering questions in the FAA inquiry, nor did he admit to any knowledge of the billing of the accident flight, the existence of Clearwater Aviation invoices for multiple charter flights, or the depositing of the more than \$100,000 in charges that were billed to the N114TD passengers over their series of flights. (He did admit to discovering after the accident a climbto350 application for John Caswell in his father's office, which likely explained how Caswell came to be hired.) Clearwater Aviation's position as an apparent broker for Air America, and the incestuous business relationship between the two companies, was never

› continues on next page



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## Falcon 50 crash, illegal charter

examined in his deposition or in any interview with Vigil, Presley, or Tim Fox.

In an attempt to better understand the FAA's oversight of Air America's operations, it was necessary to submit a series of Freedom of Information Act (FOIA) requests to the agency. These requests sought correspondence pertaining to flight training, the Falcon 50's maintenance, any existing safety concerns, status of the Part 135 certificate, inspectors assigned to oversight, and transcripts from the FAA investigative inquiry with Tim Fox, Joe Vigil, and Travis Fox. (The transcripts for Tim and Travis Fox were subsequently obtained via court exhibits.) To date, only a single response to one request has been provided. In a letter received in mid-July 2021, the FAA stated that the South Florida FSDO had "no responsive documents" to the author's request for the Certificate Management Team history for Air America. When that response was appealed with the names of the company's principal operations and maintenance inspectors at the time of the accident provided (as found

in court documents), the FOIA coordinator professed confusion and promised to follow up with the FSDO and provide clarification. To date, no further response from the FAA, for this FOIA request or any other, has been received. Thus the extent of the FAA's oversight of Air America—and whether the agency ever raised a single concern about the company—remains a mystery.

The Safe Charter Operations program website ([www.faa.gov/about/initiatives/safe\\_charter\\_operations/](http://www.faa.gov/about/initiatives/safe_charter_operations/)) is the FAA's formal response to the ongoing problem of illegal Part 135 operations. The website includes a declaration of the problem; a list of recent enforcement actions against various companies, ranging from fines to certificate revocations; and materials for passengers to guide them in determining whether a company is operating legally. Industry trade group National Air Transportation Association has also tackled this issue and formed "an initiative to combat illegal air charter" with a resources website and an illegal charter hotline at [www.avoidillegalcharter.com](http://www.avoidillegalcharter.com). A quick review makes clear that none of this information would have helped the passengers of N114TD, however. Air America Flight Services had an operating certificate, management appeared competent and responsive,

and required federal taxes were charged.

The passengers on the accident flight had no way of knowing that the Falcon 50 was not airworthy when they boarded the aircraft. They could not have known that FAA inspectors had not visited the base in years or that Air America's longtime billing practices involving Clearwater Aviation were suspect. They placed their trust in Steve Fox, Travis Fox, Tim Fox, Joe Vigil, and Charles Presley to do their jobs, and they trusted the system of FAA oversight and enforcement to protect them from all the things that were beyond their knowledge. Less than a year after the accident, in July 2019, Rose and Wilhelm provided written statements to the court detailing just how significantly the failure of that system has impacted their lives. Rose detailed his injuries as a facial fracture, persistent blurred vision in one eye, and incessant lower back pain. Wilhelm suffered breaks in several places to her left ankle, left tibia, and left femur. Her right tibia was also broken several times. She had a fracture to her L5/6 vertebrae. Her life, she wrote, was spent in near-constant pain and she had required hospitalization and treatment for "depression, anxiety, and PTSD."

### Resuming Charter?

For their part, in April 2019, Joe Vigil and Doug Paton, the personal

representative for the estate of Steve Fox, founded Clear Skies Charters, Inc., with an intent to operate charters with the King Air 200. Tim and Travis Fox were also to be involved in the company and a Part 135 certification process was initiated with the Orlando FSDO later that year. According to Vigil, in his deposition, this became delayed due to the pandemic. In response to a recent query, the FAA press office stated that as of September 2021, Clear Skies Charters did not have a Part 135 certificate. It provided no further details as to whether the process was terminated or still ongoing.

Clearwater Aviation continues to operate its flight school at the St Petersburg-Clearwater Airport where its website offers pilot training at "the highest levels of professionalism and safety." There is no evidence that any investigation has been initiated into the school or its management for involvement in the billing of illegal charters. In their depositions, both Tim Fox and Vigil said they had experienced no enforcement action from the FAA. As for Air America's chief pilot, Presley told Wilhelm and Rose's lawyers that no one from the agency had ever even bothered to question him about the accident. ■

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» continued from page 18  
improvements, a nosewheel steering system enhancement, and new paint colors. The Elite S mtow is 200 pounds heavier, which allows carriage of an extra passenger or flying an additional 120 nm with one pilot and five passengers.

## NEW TURBOPROPS

### Epic E1000 GX

Epic Aircraft's latest version of its \$3.85-million, all-composite turboprop single, the E1000 GX, features improved performance and safety, thanks to the addition of the Garmin GFC 700 automatic flight control system and Hartzell five-blade composite propeller.

### Textron Aviation King Air 260

The King Air 260's flight deck is equipped with Innovative Solutions & Support's ThrustSense autothrottle, a digital pressurization controller, and Collins Aerospace's MultiScan RTA-4112 weather radar. The 260 also features newly designed seats to provide greater passenger comfort on longer flights.

### Textron Aviation King Air 360

The upgrade of the King Air 350/350ER, badged the 360/360ER, includes autothrottles, a digital pressurization system, and a redesigned cabin. The cabin has been completely redesigned for better aesthetics and comfort, with new seats; more refined cabinetry, partitions, and side ledges; higher work tables; LED lighting; lower-profile air and light components; new switches; and power outlets and USB charging stations.

## NEW HELICOPTERS

### NASA Mars Ingenuity

The first helicopter to fly on another planet, Ingenuity has successfully been flying on Mars since April 2021. The coaxial rotor Ingenuity is equipped with four carbon-fiber main rotor blades that spin at up to 2,800 rpm, and it is powered by solar cells and batteries.

### Airbus H125 with enhanced power

New Airbus Helicopters H125s now feature a 10 percent power upgrade from its Safran Arriel 2D engine. While the helicopter's maximum takeoff weight remains unchanged, the extra power will increase internal and external load capability by up to 309 pounds and the hover ceiling out of ground effect at mtow by more than 1,500 feet, to 12,600 feet.



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### Bluetail

Digitized business aircraft records provider Bluetail raised more than \$2.1 million in its Series A investment round. Brookstone Venture Capital (formerly Canal Partners) led the funding round for Bluetail, which provides digitized records such as maintenance

and logbooks on business aircraft, with a total value of more than \$1 billion.

### FlightSafety VR Training

FlightSafety International has begun offering virtual reality training on Pratt & Whitney engines at its Wichita learning center. The training includes "X-ray" vision, dynamic engine cutaways, and borescope practice, all of which can meet regulatory requirements. ■

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# Blackhawk adding PC-12 engine upgrade to portfolio

by Mark Huber

Blackhawk Aerospace is adding an engine upgrade program for the Pilatus PC-12 to its list of aircraft re-engining offerings. Via supplemental type certificate (STC), Blackhawk's PC-12 XP67P Engine+ upgrade replaces the turboprop single's stock Pratt & Whitney PT6A-67B engine with the higher-thermally-rated PT6A-67P model.

Flight testing of a PC-12 with the new engine is expected to start late in the first quarter of next year. The XP67P upgrade includes a new PT6A-67P engine but retains the PC-12's original Hartzell

four-blade aluminum propeller. Blackhawk plans to certify additional propeller options in the future.

With 1,700 aircraft in service, the PC-12 is the second best-selling turboprop single, behind the Cessna Caravan. For more than 600 of the PC-12s eligible for the XP67P upgrade, many of which are at or close to overhaul, it is an optimum opportunity to install an engine upgrade, according to Blackhawk.

The PT6A-67P is a 1,200-shp engine that produces 142 more thermodynamic horsepower than the stock PT6A-67B,



Blackhawk Aerospace's new XP67P Engine+ upgrade package offers improved performance for the Pilatus PC-12 and an option for owners nearing engine overhaul.

and the higher ITT and thermo produced by the -67P engine enables operators to use full torque to more efficient cruising altitudes. A stock -67B engine starts losing power at 13,000 feet, but the XP67P can maintain full power to 23,000 feet.

"Building upon the success of our existing Caravan engine upgrades,

adding the Pilatus PC-12 platform to our growing list of STCs was a natural evolution for the aftermarket engine upgrade business that Blackhawk was built on," said Blackhawk president and CEO Jim Allmon. "We look forward to welcoming PC-12 owners and operators into the Blackhawk family."



CitationPartners has taken orders for six Citation Excel Eagles this year.

## CitationPartners unveils Excel Eagle second phase

CitationPartners is implementing Phase II of its Citation Excel Eagle program that refurbishes Cessna Citation Excels and XLSs to like-new condition.

Under Phase I, the company upgraded a half dozen former NetJets Excels to Citation Eagles, selling them directly to customers. Phase II will enable existing Excel and XLS owners to have the nose-to-tail refurbishment program applied to their own airplane.

CitationPartners' Russ Meyer, Jr. told **AIN** the company is moving ahead with this second phase in part because of the lack of availability of preowned Excel/XLSs.

Demand was strong for Excel Eagles, the company learned once it announced the program in late February. CitationPartners has sold its 2021 allotment of six Excel Eagles—three have already been delivered—while inquiries for the

refurbished jets continue to pour in. "We said, 'Well there clearly should be a next phase of this program,'" Meyer added.

Under the program, the 560XL undergoes an inspection at Textron Aviation's Wichita Citation Service Center. Any squawks that turn up during the inspection requiring new parts or systems will be replaced up to \$25,000.

Once that work is complete, the airplane moves across the runway at Wichita Eisenhower National Airport to Yingling Aviation, where its exterior is stripped and repainted, the interior replaced with fabrics, colors, and seating options selected by the customer, and Garmin G5000 avionics installed. Meyer said CitationPartners is guaranteeing a turnaround time of five months for each airplane.

The cost of the second-phase refurbishment is \$1.49 million. **J.S.**

# Bizav strives for net-zero CO<sub>2</sub> emissions by 2050

by Jerry Siebenmark

Key business aviation organizations are expanding upon a global effort begun a decade ago to lessen the industry's impact on the environment, including a new goal to achieve net-zero CO<sub>2</sub> emissions by 2050.

Goals established in 2009's Business Aviation Commitment on Climate Change (BACCC)—an initiative of IBAC and GAMA—included increasing fuel efficiency by 2 percent a year between 2010 and 2020, reducing carbon emissions 50 percent by 2050, and achieving carbon-neutral growth by 2020.

"If we look back at where we were in 2005, we were 16 metric tons in emissions," said NBAA president and CEO Ed Bolen. "We had hoped to get down to eight [metric tons]. We could go all the way down to four [metric tons] and we're driving that quickly down to zero because

we are making these advances in other areas. And so, as a result of the progress... we will be carbon net-zero by 2050."

Besides achieving net-zero carbon emissions, another expanded goal is to continue to increase fuel efficiency by 2 percent a year between 2020 and 2030. Sustainable aviation fuel (SAF) will play a key part in achieving those goals. So are carbon offset advancements in technology, including winglets, aerodynamic optimization, and electric and hydrogen propulsion.

GAMA president and CEO Pete Bunce said he's confident the industry can achieve its goals knowing the analysis and science that went into a 2008 study led by Bombardier as part of the BACCC and has since been updated several times, including for the industry's newest goals.



(l to r) Elizabeth Dornak, NBAA chair; Ed Bolen, NBAA president and CEO; Pete Bunce, GAMA president and CEO; and Nicolas Chabbert, senior v-p of Daher's aircraft division.





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# Embraer vows sustainability, flies fleet to BACE on SAF

by Chad Trautvetter

Under its recently announced multifaceted sustainability plan, Embraer flew the four aircraft it showed at the NBAA-BACE static display on sustainable aviation fuel (SAF) or its equivalent using book-and-claim. In August, the Brazilian aircraft manufacturer established a series of environmental, social, and governance (ESG) targets, ranging from carbon neutrality by 2040 to inclusivity and the launch of its zero-emission Eve eVTOL by 2026.

“We have an opportunity to reshape the future,” Embraer Executive Jets president and CEO Michael Amalfitano said during the media breakfast on Tuesday at NBAA-BACE. “Our vision is to reimagine mobility,” emphasizing the use of sustainability to achieve this effort.

To help reach the aviation industry’s goal of net-zero carbon emissions by 2050, Embraer (Booth 1974, Static A101) is developing products, services, and other sustainable technologies, including the use of electrification, hybrid, hydrogen, sustainable aviation fuel (SAF), and other energy alternatives. The company further will offset residual emissions through efficiency projects, available alternative energy, or advancing technology.

Embraer has also collaborated with Avfuel to bring Neste MY Sustainable Aviation Fuel to Melbourne Orlando (Florida) International Airport (KMLB). Avfuel delivered the fuel to the Sheltair FBO at Melbourne for storage and handling, and Embraer Executive Jets is using it for demo flights.

An initial 8,000-gallon delivery of a 30 percent SAF blend occurred in mid-July, and a second similar load was delivered earlier this month.

AIN was invited to fly on a Phenom 300E from KMLB to Las Vegas Henderson Executive Airport (KHND) to demonstrate the benefits of SAF. Before the twinjet left KMLB for the show on October 9, it was fueled with 7,000 pounds of the SAF blend at KMLB. According to Embraer, the SAF used was sourced from animal meat waste. The Phenom, registered as N720EE, burned 2,800 pounds on the first leg to Easterwood Field Airport (KCLL) in College Station, Texas.

Since SAF was unavailable at this airport, Embraer arranged to use Avfuel’s new book-and-claim program—making it one of the fuel provider’s first such customers. Under book-and-claim, N720EE received 3,000 pounds of jet-A but another Avfuel-branded FBO with an available SAF supply will pump the bio-fuel blend into an aircraft ordering jet-A. However, Embraer got to claim the SAF credits, meaning the entire flight was conducted using SAF.

Including the leg from KCLL to KHND, the jet burned a total of 6,115 pounds of fuel from Embraer Executive Jets’ Melbourne headquarters to the BACE static display host airport. Burning traditional jet-A on this route, that would equate to 7.03 tonnes of CO<sub>2</sub> emissions. But the 30 percent SAF blend used reduced that by nearly one quarter, to 5.34 tonnes.

Overall, Embraer has set targets of a 50 percent reduction in net carbon emissions by 2040 from the 2018 baseline, 100 percent energy from renewable sources by 2030, carbon-neutral growth from 2022 with 2021 as the baseline, and the use of SAF this year.

To reach net-zero aviation emissions by 2050, Embraer also is exploring the development of electric and other technologies,



Embraer flew four airplanes to NBAA-BACE on sustainable aviation fuel and using the book-and-claim process, including this Praetor 600 and Phenom 300E, in addition to a Phenom 100EV and Praetor 500.

including eVTOLs, but also plans to work with suppliers to make aircraft compatible with the use of 100 percent SAF. This includes working to expand the global SAF production scale.

On the technology front, the company has flown an all-electric demonstrator based on the EMB-203 Ipanema in partnership with WEG and EDP, two of the largest electric mobility solutions providers in Brazil, Embraer said. It will conduct

tests with this electric aircraft until 2023, after which it will fit the testbed with a hydrogen fuel cell to evaluate this technology starting in 2025.

For its flagship Praetor 600, the company is developing the Praeterra cabin design concept. Under this, cabin materials would be sourced sustainably and developed in a way that allows them to have a second life once they’re no longer required inside the aircraft.

## Three bizav ‘visionaries’ predict industry’s future

The heads of three major business aviation enterprises—George Antoniadis, founder and CEO of PlaneSense; Kenny Dichter, founder and CEO of Wheels Up; and Kenn Ricci, founder and principal of Directional Aviation Capital—shared the dais and views on the current and coming state of the industry at the NBAA-BACE Aviation Visionaries Forecast Luncheon.

All three executives expressed surprise at the speed and extent of business aviation’s recovery, with Dichter likening demand for lift to “Joe’s Stone Crab on a Saturday night in season,” referring to the popular Miami restaurant. Antoniadis noted his company and the industry is “now squeezed because of unprecedented demand,” and Ricci said Flexjet went from 320 revenue hours a day on its fleet pre-Covid to between 500 and 550 revenue hours daily now. “In many ways, [the jump in hours is] more challenging than no business,” he said.

Can the growth be sustained? Ricci cited three factors to watch: the economy; people’s feelings about their own wealth; and the state of the airline industry—“at its nadir,” Ricci said. “If none give, we’ve got a good road ahead.”

All three agree most new customers are onboard permanently, with Antoniadis calling the change “an inflection point.” Dichter believes growth can continue with more efficient operations and ease of access, citing Uber and Amazon as examples of transformative models, and predicted the industry would expand exponentially “if it’s as easy to call a plane as it is to order a pizza on the phone.”

Dichter’s company, Wheels Up, founded in 2013 and launched as a membership



The Aviation Visionaries Forecast Luncheon featured Kenn Ricci (left), George Antoniadis (center), and Kenny Dichter (second from right), with moderator Miles O’Brien (right).

program with a fleet of King Air 350i twin turboprops, quickly expanded its fleet and offerings, and this year listed on the New York Stock Exchange, the first private aviation operator to go public.

Ricci, in contrast, noted the industry models were based on 3 to 5 percent growth per year. “We’re not geared for 20 to 30 percent [annual] growth,” he said, predicting “we’ll run out of equipment,” which “will temper growth.”

Ricci’s Directional Aviation owns the Flexjet fractional ownership program, Sentient Jet card program, PrivateFly on-demand charter brand, and Nextant Aerospace, among others.

Antoniadis, citing the infrastructure constraints, said, “The ultimate solution is new pilots,” and believes the business aviation industry needs to take the same proactive approach to attract and train pilots as the

airlines are now doing. “It’s our responsibility to keep in front of this job creation,” he said.

PlaneSense, founded by Antoniadis in 1995, operates a fractional fleet of Pilatus PC-12 turboprops and PC-24 light jets, and has been known in part for the stability of its operations throughout that time.

Asked by moderator Miles O’Brien for their forecasts for the next 20 years, Antoniadis said, “I’ll be happy if we double” in customers, with further growth potential “limited, with existing delivery models,” while Dichter believes it could grow “10 or 20 times” from current levels. He is convinced “one or two million people [annually] will be using the space in 20 years.”

Ricci predicted rapid industry consolidation during the interval, with the industry dominated at its end by “four major brands,” though no names were offered. **J.W.**



# CAE partners on single-pilot jet training, insurance | by Curt Epstein

Canadian flight-training provider CAE announced a new partnership with Starr Insurance at NBAA-BACE last month in Las Vegas. The first-of-its-kind program aimed at

single-pilot jet owners will combine a rigorous 18-month training cycle and insurance for them. The curriculum will consist of scenario-based simulator training, flight training

data monitoring, in-aircraft mentoring, and upset prevention and recovery training. Participants will learn in classroom simulators and aboard aircraft through mentoring sessions with specially-trained and experienced instructors.

"Aircraft owner pilots of single-pilot jet aircraft are a particularly difficult class to insure," said Kyle Sparks, Starr Aviation's senior v-p and chief underwriting officer,

adding these aircraft are complicated machines to fly, even for professional career pilots. "CAE's rigorous professional flight-training regimen will help owner pilots fly safer, and the extensive flight behavior data we'll get from the program will ensure more accurate insurance underwriting."

Trainees are introduced to the tools used by professional pilots to increase safety through all aspects of the flight, including safety management system features like flight risk assessments and practical threat and error management. With an emphasis placed on mitigating loss of control in flight, students will learn how to increase recognition and prevent such situations as well as develop appropriate recovery skills.

"We are thrilled to offer this innovative program with Starr Insurance, which makes insurance more accessible to pilots by providing them with comprehensive safety training," said CAE group president Nick Leontidis.

CAE also announced along with Embraer that it will offer a new full-flight simulator for the Phenom 300E. Operated by Embraer-CAE Training Services (ECTS), the new device is required to meet the growing demand for business jet training in the U.S. With more than 600 in operation, the Phenom 300 has held the position of top-selling light jet for the past nine years.

This new simulator will be operational in the second half of 2022, and ECTS will announce where it will be situated in the next few months. Currently, there are six Phenom simulators across three training centers in Dallas, London Burgess Hill, and Guarulhos, Brazil.

Lastly, fellow Canadian company Innotech-Execaire Aviation Group (IEAG) has been named as the launch customer for CAE's new digital ecosystem, an innovative suite of business aviation services.

CAE will link IEAG's aircraft operators and pilots in a unified software ecosystem to facilitate pilot engagement, improve the efficiency of its operations, and ensure compliance with new fatigue management rules for business jet operators. IEAG will also serve as a CAE innovation lab partner, helping the training provider as it develops new digital solutions in efficiency, safety, and optimization.

"As Canada's longest-serving and prestigious corporate aircraft company, we have a long history working alongside CAE from training to operations, and are excited to get a voice in the future digital solutions as a foundation lab partner," said IEAG president Michael Fedele. ■

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## ForeFlight apps add new integrated features

by Matt Thurber

ForeFlight is releasing enhancements to its Dispatch and Mobile applications that bring new integration, as well as new features such as weight-and-balance improvements, fuel tankering, and eAPIS services. Other new features include a custom navlog builder and additional aircraft available on ForeFlight's runway analysis service.

"We're bringing it all together for business aviation," said Stephen Newman, ForeFlight executive v-p of sales and marketing. "Dispatch is at the center, and it's a new, modern collaborative flight planning system." Dispatch is ForeFlight's flight planning and dispatching application, for use by flight department dispatchers and planners. All of the information in Dispatch comes from the same underlying data that serves the ForeFlight app, allowing pilots and dispatchers to easily share and synchronize information.

"The hurdle is the sheer magnitude of the gymnastics [we have to go through] to get information moved from the planner to the pilot, from headquarters to the flight deck," he said. "We're able to deliver all that information in a seamless synchronized fashion. Any changes are replicated from one place to another."

After introducing its runway analysis service earlier this year, ForeFlight has already developed engine-out procedures for more than 60 percent of the common business aviation fleet, according to Newman. More aircraft are added with each new software release, and runway analysis is available with the Mobile app, Dispatch, and ForeFlight's web platform. Runway analysis is an add-on feature and quickly calculates the available maximum payload given the planned runway, weather conditions, and loading of the airplane.

ForeFlight has redesigned its weight-and-balance system so it is more

integrated into the flight planning workflow, and this was released just before NBAA-BACE.

The Fuel Advisor's tankering advice is a new feature, and it will be available in Dispatch later this year. Fuel Advisor looks at a string of legs for a trip and gives advice on whether or not to tanker fuel, based on fuel prices, leg lengths, and other factors. "Fuel advisor knows what legs to string together," he said. "We'll pull in jet-A contract pricing, and there is an opportunity to set price breaks or waivers for airports or FBOs. It crunches the numbers and puts out a scenario that optimizes savings in terms of fuel uplift."

Some ForeFlight Dispatch flight operations users have been testing Fuel Advisor, he added, "and a lot of customers are excited. We believe it will pay for itself in one or two trips. It gives not only the best tankering scenario but also what it costs to uplift and carry fuel. You can do a lot of analysis on this. It doesn't require a lot of effort to get results."

The new U.S. Customs and Border Protection eAPIS service will launch in Dispatch then be added to ForeFlight Mobile.

With the custom navlog builder, users will be able to create their own formats for navlogs and create templates suited to their operation. It also enables creating business rules, such as if-then scenarios. For example, if an operator lands their aircraft at an airport, then they need to make sure there is a certain amount of fuel in reserve. Or specifying a different, more suitable alternative when flying to a particular airport.

"Customers are thrilled at how easy this all works together," Newman said. "Our focus has been around embedding ourselves with customers to understand their pain points and working to address those. That's what this is all about." ■

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# IS&S expands autothrottle tech to CitationJets | by Matt Thurber

Innovative Solutions & Support is expanding its ThrustSense autothrottle system with LifeGuard Protection to the Cessna CitationJet series, with deliveries set to begin in early 2022.

The ThrustSense autothrottle is currently available on Pilatus PC-12s and with LifeGuard Protection is standard equipment on new Beechcraft King Air



IS&S's ThrustSense autothrottle system is available in new King Air 260s and 360s and retrofitable to 200 and 300 series, and soon will be available for CitationJets.



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260s and 360s and retrofitable to King Air 200 and 300 series turboprops. IS&S also developed the world's first Part 23 autothrottle system—for the Eclipse 500 very light jet. The company was the first to certify an autothrottle for a turboprop when it received the supplemental type certificate for the PC-12.

ThrustSense will be available for CJ's equipped with Collins Pro Line 21 and Fusion and Garmin avionics. A configuration adapter enables ThrustSense to work with the current flight deck, according to IS&S, and then allows ThrustSense to work seamlessly when upgrading to a new flight deck.

For the CitationJets, IS&S is targeting the M2, CJ2, CJ3/3+, and CJ4 models. This will not be IS&S's first autothrottle for a Fadec-equipped engine as the Eclipse's PW600 engines are Fadec controlled.

The CitationJet autothrottle will include LifeGuard Protection, which automatically sets engine power on the good engine following an engine failure to prevent loss of control due to slow air-speed combined with too much power on one engine. The technology and functionality are the same as the King Air installation, according to IS&S president Shahram Askarpour.

However, the CitationJet autothrottle doesn't need the King Air's overtorque and overtemp protection features. The autothrottle will control thrust, engine speed, and will feature electronic detents, in addition to providing the LifeGuard Protection, over- and underspeed protection, and go-around capability.

Askarpour said the pricing for the CitationJet autothrottle will be in line with the King Air system, which costs less than \$100,000, depending on the configuration of the airplane. The upgrade does require installation of IS&S's standby display, which controls the autothrottle.

Installations will be available at IS&S's Exton, Pennsylvania headquarters and at third-party facilities, although IS&S will train installers to ensure the work is done efficiently. ■



# Kaman to build Transcend Vy 400 fast VTOL | by Mark Huber

Transcend Air has selected Kaman to build its Vy 400 high-speed vertical takeoff and landing (HSVTOL) aircraft. A mockup was on display last month at NBAA-BACE in Kaman's exhibit. The \$3.5 million fly-by-wire, tilt-wing Vy 400 will be powered by a single 2,500-shp GE CT7-8 turboshaft and is designed to expeditiously connect city centers with a targeted top speed of 356 knots, enabling flight from Manhattan to Boston in 36 minutes.

Transcend claims the six-seat Vy 400 will deliver door-to-door prices that are lower than those of current air travel options, and door-to-door times that are 65 to 80 percent less.

"Because of the Vy's high speed, we can complete many more passenger trips per aircraft," said Gregory Bruell, Transcend Air co-founder and CEO. "The combination of that with VTOL is key to our revolutionary economics, and Kaman will be key to us scaling up production to meet the significant demand that our mass-market fares are expected to drive."

Separately, Kaman announced that its Kaman Aerospace Jacksonville (Florida) division expects to receive its FAA Part 145 repair station approval by the end of this year. "We will be the supplier of choice for aging and underserved aircraft with high metallic structure content, offering manufacturing capabilities to OEMs, as well as a service center and repair source for operators and owners," said Bruce Dailey, Kaman's executive director of business development and compliance.

The facility is expected to serve both military and civilian aircraft and will focus on nacelles, flight control surfaces, and components. It will accelerate aftermarket growth through investment in tooling and test equipment, training, exchange units, and tech data. It currently specializes in aerostructures, major and complex metallic/composite assembly, sheet metal details, extruded parts, CNC machining, design engineering, and MRO repair.

Meanwhile, Kaman Composite Structures' (KSC) FAA Part 145 repair station in Wichita recently earned EASA approval for composite structures repair. "This approval is just one step in the process of offering more composite repair capabilities to the commercial and business aviation markets," said Malissa

Nesmith, Kaman's senior director of business development.

"Kaman has historically performed most of the repair services of the Part 145 station

for military support programs. This past year, we have extended those repair services to the commercial market," she added.

KCS offers services from design, prototyping, and testing to full production of composite components and assemblies. KCS companies fabricate components for the defense, aerospace, and commercial markets, as well as for the medical industry, and also offer composite MRO services. ■



A mockup of Transcend Air's Vy 400 high-speed VTOL was on display at NBAA-BACE.



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# Bristow going electric

By Mark Huber & Charles Alcock

Helicopter operator Bristow Group announced partnerships with several eVTOL and other electric aircraft manufacturers serving the advanced air mobility (AAM) market over the last several months and indicated its willingness to acquire nearly 200 of these new-generation aircraft. Bristow's aim is to diversify its business model, which for a long time has been largely built around offshore passenger flights to and from oil and gas platforms.

Operating in multiple countries around the world, the Texas-based group considers itself well-positioned to pursue new AAM applications, including logistics flights, cargo deliveries, and search-and-rescue

missions. The company is also keen to support multiple eVTOL manufacturers and other operators with services such as aircraft maintenance and crew training.

Bristow has signed a memorandum of understanding (MOU) with Embraer-backed Eve Urban Air Mobility Solutions, to work with that company to develop an air operator certificate (AOC) for Eve's four-passenger eVTOL and has also committed to buying up 100 of the new model, with deliveries to begin in 2026. This adds to Bristow's provisional commitments announced over the summer and fall to buy 50 Electra Aero eSTOL airplanes and 50 Vertical Aerospace VA-X4 eVTOLs.

Bristow and the UK's Vertical Aerospace Group signed an MOU to cooperate on the certification and potential purchase of up to 50 eVTOLs. Under the deal, Bristow would place a pre-order for 25 of Vertical's VA-X4 four-passenger aircraft that are capable of speeds to 174 knots and a range of more than 87 nm. Bristow's commitment adds to Vertical's pre-order book of 1,000 aircraft from potential customers, including American Airlines, Virgin Atlantic, and Avolon. Under the MOU, the two companies have agreed to develop a joint working group to collaborate on regulatory and airspace issues; demand, fleet size, spare parts and infrastructure; potential customers; and public acceptance and environmental requirements. In late August, the company announced it had signed an MOU with Electra Aero for the purchase of up to 50 of that company's hybrid-electric STOL airplanes for entry into service, which is targeted beginning in 2026.

"As the global leader in vertical lift, Bristow's operational expertise and efficiency, supported by the trust and confidence of our customers, can safely bring eVTOL aircraft into the market," said Bristow CEO Chris Bradshaw. "Our expansion into these new and existing geographic markets with sustainable, innovative, and efficient vertical lift and aerial transport services will offer passengers superior regional air mobility solutions," said Bradshaw. ■

# Honda planning hybrid eVTOL for intercity travel

by Kerry Lynch

Honda is joining the ranks of aerospace and auto manufacturers targeting the advanced air mobility eVTOL market, with its Honda R&D Co. spearheading this research project. The company acknowledged the growing eVTOL field—involving a myriad of aerospace companies and tech startups, along with Toyota and Hyundai—but believes it can differentiate with the use of a gas turbine hybrid power unit that will provide a longer range and support intercity transportation—up to 249 miles, in fact.

According to Honda, its eVTOL will provide a level of safety equivalent to that of commercial passenger airplanes due to a simple structure and a decentralized propulsion system. It further anticipates a quieter aircraft



Honda said its eVTOL aircraft will provide a level of safety equivalent to that of commercial passenger airplanes, thanks to a simple structure and decentralized propulsion system.

through the use of small-diameter rotors.

While Honda did not provide details of its new aircraft, depictions show eight small propellers distributed on two booms and two ducted propellers in the rear. A companion video shows a 249-mile range using hybrid electric and 62-mile all-electric range.

Honda plans to leverage its expertise in combustion, aerodynamics, and control technologies as well as its backgrounds in electrical, hybrid power, certification, and autonomy that it has developed through its various businesses, the company said.

Along with the eVTOL and a hybrid power unit, Honda outlined a vision for a transportation ecosystem that would involve the use of strategically stationed "Honda Mobility Hubs" to serve as base locations connecting

various cities. That ecosystem could involve electric and autonomous ground transportation as well, Honda suggests.

This new "technology development direction" is part of Honda's "2030 Vision of serving people worldwide with the 'joy of expanding their life's potential,'" the company said, adding it "is thoroughly committed to contributing to the realization of a society with zero environmental impact and zero traffic collisions, and also to new initiatives that enable Honda to take on challenges in new areas."

Honda R&D's development goals further include an avatar robot that can "expand the range of human ability and a new challenge in the field of outer space," the company also announced. ■

## News Update

### Leonardo Launches "Agusta"

Leonardo unveiled the new "Agusta" branding of its AW line of VIP and corporate helicopters in October. Agusta customers will be able to take advantage of a variety of operational and bespoke design services

Concurrent with the announcement, Leonardo revealed "Casa Agusta," an upscale urban heliport terminal concept that can be replicated in multiple markets, is modular, and easily transportable. The company said the Casa Agusta concept "will support the development of a network of point-to-point connections for both urban transfers and connections between cities, while meeting the growing demands for sustainable and modern vertical lift mobility, as well as greater access to urban areas" while providing VIP and charter passengers "levels of service typically available in larger private airport facilities far from downtown and urban areas."

Launch of the Agusta brand draws on the heritage of the Agusta name, from an aviation company formed in Italy in 1923 by Giovanni Agusta. The company began producing helicopters under license from other OEMs, most notably Bell, in 1952, and began developing its own indigenous civil helicopter, the Agusta A109 light twin, in the late 1960s. It then merged with Britain's Westland Helicopters in 2000 to form AgustaWestland, later rebranded Leonardo Helicopters in 2017, a nod to Leonardo da Vinci, widely credited with devising the first concept for the helicopter.

### Airbus Testing Hybrid Power

Airbus is testing an engine backup system (EBS) that uses a 100-Kw motor to provide electric power for up to 30 seconds in the event of main turbine engine failure. According to Airbus, the motor is connected to the main gearbox and gives pilots extra time to react, maintain rotor speed, and enter a smoother autorotation

The hybrid-propulsion is being tested on the company's H130 turbine-single "Flightlab" in partnership with the French DGAC. Tests include simulated engine failure across a variety of conditions, including takeoff and landing, and will also demonstrate performance increases from the electric motor input in terms of increased maximum takeoff weight that both compensates for the mass of the EBS and provides additional payload capabilities.

### CHC Flies SAF In S-92

Helicopter operator CHC has completed the first flight of a Sikorsky S-92 using sustainable aviation fuel (SAF), following the biofuel's approval for use in this model by the OEM. CHC Helikopter Service of Norway made the flight using synthetic paraffinic kerosene (HEFA-SPK), which is produced from waste and residual feedstock such as used cooking oil. In its neat (100 percent) form, SAF can reduce lifecycle carbon emissions by up to 80 percent versus petroleum-based jet fuels.



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# Safety management system culture at the pilot level

by Woody McClendon

Much has been written in recent years about establishing a culture of safety within commercial aviation. The FAA's safety management system (SMS) program emphasizes the systems approach, highlighting risk management, safety reporting channels, and compliance with safety protocols. The SMS concept provides the structure for a consistent, high level of safety for operational environments where the flying is within organized airspace on pre-planned routes, corporate aviation and airlines being the prime examples.

But in some sectors of aviation, operations are just the opposite. Helicopters routinely fly on missions in uncontrolled airspace where the objective is not a destination. It is a purpose, a job, an assignment, an emergency. The management structure for these operations is task-focused, requiring pilots to be highly proficient in flight skills specific to the mission. To assure those skills are properly focused on the task requires that pilot managers be closer to day-to-day operations.

Two such operations offer examples of the unique, close relationship between line pilots and management, supporting the pilots with maximum flexibility along with access to resources on the fly when needed.

## SMS and PJ Helicopters

"We have an approved SMS program in place," said Justin Chaffin, v-p and chief pilot for PJ Helicopters in Red Bluff, California. "Our management team is committed to the practices and protocols that make SMS work. But, we felt that the nature of our business required closer hands-on support for our pilots.



Justin Chaffin,  
v-p and chief  
pilot, PJ  
Helicopters

**"Our mission profiles demand a lot from our pilots. Most of them are single-pilot, totally visual, and often demand on-the-spot solutions."**

"Our mission profiles demand a lot from our pilots. Most of them are single-pilot, totally visual, and often demand on-the-spot solutions," he said. PJ's diverse fleet performs powerline and electric-grid maintenance, fights fires, and supports construction operations. The fleet includes MD500s, the Bell 206, UH-1/205, and 429, and Sikorsky UH-60L Black Hawks.

"Our business is continuously expanding so we're constantly recruiting pilots," Chaffin continued. "Our new hires all have strong resumes, but many of them need external load training. So we designed a course using Bell 206s. It can take 10 to 12 hours of practice before our new pilots can stabilize an external load. Once they have the basics they ride along with seasoned utility instructor pilots, learning how to fly external loads. When they complete the process, they start flying on jobs, including powerline construction and maintenance, setting steel structural frames and pouring concrete, and flying buckets of water and fire retardant.

The company trains primarily in the light and medium helicopters at its base, in the aircraft, with initial and recurrent training to FAA Part 135, U.S. Forest Service, and other customer requirements. However, the arrival of the Black Hawk changed all that.

"When we started the Black Hawk program, we faced a serious challenge," Chaffin said. "Few of us had experience in such a sophisticated aircraft. We worked with FlightSafety, trained our initial cadre in their Black Hawk simulators, and, over the past five years, established a company knowledge base. We're now qualified to accomplish much of our training in-house."

PJ operates 10 Black Hawks, flying with two-pilot crews. Eighteen pilots fly in the Black Hawk fleet. Second-in-command pilots all have type ratings, a standard well above FAA and industry requirements.

"In the Black Hawk program, we found that we needed to work harder to maintain the high level of systems knowledge and flying skills in extreme conditions that the missions demanded of us," said Chaffin. Much of the construction work Black Hawks perform is in remote mountainous terrain with high winds and density altitudes. The firefighting environment is even harsher, with water and fire-retardant loads almost always at the maximum allowable.

Four of the line pilots are company instructors who also regularly fly working missions. Viewed as peers within the Black Hawk pilot group, instructors work



The Los Angeles Police Department's training program is designed to help pilots deal with the risks of patrol missions, often at night, in congested airspace, and in marginal weather.

with and fly with line pilots in an easy, informal relationship. If they see something about a line pilot's flying that should be corrected, they manage it on the spot with a conversation. As well, if a line pilot has a question or concern, they simply address it with an instructor.

PJ entered its fifth BlackHawk firefighting season with an accident-free record. Chaffin and his management team view their close instructor/line pilot interchange as a major constructive factor. They are working to create a similar culture within the light and medium helicopter pilot and instructor groups.

## LAPD's Safety Challenge

In the U.S. helicopter community, airborne law enforcement is another high-risk endeavor. Flying high-workload patrol missions at low levels at night, often in congested airspace and marginal weather, presents a constant challenge to airborne law enforcement crews. The Los Angeles Police Department (LAPD) is a leader in patrol tactics and in deploying aircraft on an ever-increasing spread of missions.

Kevin Gallagher, LAPD's chief pilot, has led the Air Support Unit's pursuit of high standards for its pilots, assuring they are trained and ready for whatever mission they are assigned.

LAPD's eight check pilots care for the 50 pilots who are assigned to patrol shifts 24/7. In each pilot's 10-hour shift, they are in the air for at least five hours. The Air Support Unit flies more than 18,000 hours annually.

"The majority of our pilots come to us with little or no aviation experience," Gallagher said, "but with a strong track record in field operations in patrol. Our internal flight school trains them through FAA commercial helicopter certificates, after which we encourage them to continue on to the instrument rating and CFI and instrument instructor certificates before they receive their wings. The next step is to begin

flying patrol with an experienced pilot who mentors them through the complexities of law enforcement missions. From then on, as long as they're in Air Support, they take general proficiency checkrides every quarter."



Kevin  
Gallagher,  
chief pilot,  
LAPD

**"The majority of our pilots come to us with little or no aviation experience."**

The quarterly checkrides provide frequent opportunities for check pilots to work on correcting irregularities or deficiencies while they are still minor issues. Also, according to Gallagher, the more frequent training improves pilots' performance in emergency procedures, in particular, touchdown autorotations. And their high level of proficiency equips pilots to learn more advanced techniques and procedures, preparing them for the more complex mission assignments they will eventually take on.

The greatest reward, said Gallagher: LAPD has not had a fatal accident in more than 30 years.

The high intensity of helicopter flying requires a more proactive training culture to keep pilots safe. These successes are testament to an important paradigm: proactive interaction between line aircrew and company training departments can improve operations and reduce accidents. ■





NIAR Werx's first Boeing 777-300ER passenger-to-freighter modification project will be conducted inside the organization's 111,000-sq-ft hangar in Wichita.

## NIAR Werx's 777 cargo conversion a 'beachhead'

by Jerry Siebenmark

Officials behind the NIAR Werx and Kansas Modification Center's (KMC) new Boeing 777 passenger-to-freighter conversion program say it is the first of many modification programs to come.

Werox and KMC took delivery in September of their first Boeing 777-300ER for the cargo conversion program. Werox director Dave Jones told *AIN* it is the first of three conversions of the Boeing widebody jet that the organization's MRO program—in partnership with KMC—expects to complete and deliver by the end of 2023. More 777s will follow, added KMC CEO Jim Gibbs.

Werox is a two-and-a-half-year-old organization founded by the National Institute for Aviation Research at Wichita State University to provide a host of services to OEMs, suppliers, other businesses, and military aviation companies—especially start-ups—seeking to do projects as small as one-off parts manufacturing up to retrofitting commercial airliners for special missions and other purposes. At the same time, it provides real-world learning and experience for WSU engineering students and students enrolled in the airframe and powerplant and avionics programs offered by the university's technical college, WSU Tech.

Under the 777 project, Werox will assist in the development of an STC for the conversion, which along with the license for such a conversion will be owned by KMC, a new company founded by Gibbs.

Additionally, Dynamic NC, a Rose Hill, Kansas-based aircraft supplier specializing in one-off and complex parts, will provide the parts manufacturing required for the conversions. Gibbs told *AIN* that what makes the project unique is that all the companies and organizations involved

in the 777 cargo conversion are located within a few minutes of each other. "If ever there's a problem, we are 15 minutes away from touching everything in the system," he added. "The only thing that we don't have on-site today is paint. I anticipate that we'll be able to offer that service on-site here within a year, well before [the 777] aircraft delivery."

Jones said modifications will include cutting a hole in the side of the aircraft and adding a structure around it to support a cargo door, plugging the 777's passenger windows, installing a new floor with rollers, and creating new space for extra crew and crew rest quarters.

He noted that the project will benefit engineering, A&P, and avionics students by giving them hands-on experience with a commercial aircraft, which in turn will help the school attract more students in those disciplines regionally. Jones also expects the project to boost Werox's workforce in the coming years. "We're seeing more than 1,000 [employees] working on this in years to come," Jones added.

Werox employs about 200 engineers, 100 mechanics and technicians, and dozens of WSU students who work from a handful of former Boeing Wichita buildings that include hangars measuring 111,000 and 47,500 sq ft. A new, 70,000-sq-ft hangar is expected to open in mid-November.

Gibbs notes that the 777 cargo conversion is the first of the other programs KMC is working on that could benefit from "the same business process we've developed."

"This [777] program right here is more of our beachhead program than anything else," Gibbs said. "And while it will be a great program and last for years and years and years, truly it is the start of the first of many programs of this type." ■



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An American Airlines Boeing 737-800 taxis for departure from Dallas Fort Worth International Airport in October 2019. American participated in the NASA-FAA Airspace Technology Demonstration at Dallas and Charlotte over the past four years.

# NASA transfers innovative ATM technology to FAA

by Gregory Polek

NASA has transferred findings from an air traffic management project to the FAA for nationwide implementation in the U.S., the two agencies announced at a media briefing Tuesday. Known as the Airspace Technology Demonstration (ATD-2), the project involved the development of software that calculates gate pushbacks at busy hub airports, allowing each airplane to roll directly onto the runway to take off. The FAA plans to deploy the capability as part of a larger investment in surface management technology at 27 airports in the U.S. starting next year.

Over the past six years, NASA's ATD-2 project demonstrated the benefits of a suite of airport operations tools known as Integrated Arrival, Departure, and Surface (IADS) technology. The tools, flight tested over the past four years with the help of Southwest Airlines at Dallas Love Field and American Airlines at Dallas-Fort Worth International Airport and Charlotte International Airport in North Carolina, proved the software's ability to aid taxi and departure efficiency, saving fuel and time and cutting CO<sub>2</sub> emissions.

During testing at Charlotte, the program reduced taxi times, helping to save

more than 275,000 gallons of fuel annually, or enough to fly 185 Boeing 737 aircraft between New York and Chicago. The program also reduced greenhouse gas emissions by eight tons of carbon dioxide daily and cut delays by 916 hours over four years, equivalent to an average of 15 minutes of wait time on a taxiway for more than 3,600 departing flights.

The FAA plans to implement IADS capabilities via a new program called Terminal Flight Data Manager (TFDM). It expects to deploy TFDM at 89 airports, beginning next year with Phoenix Sky Harbor International Airport. More advanced IADS capabilities demonstrated under ATD-2 will go to 27 of the nation's busiest airports under TFDM.

Speaking on September 28 during a joint NASA-FAA webcast, NASA administrator Bill Nelson noted that the program dovetails with the Biden Administration's efforts to address climate change. The project traces its roots to navigation technology developed for space travel and already has proven its effectiveness in civil aviation.

"We had already done this with the FAA years ago on descent," he explained. "You think when you're cruising along, say coming from the south into [Reagan Washington National Airport], you start descending over Richmond and it is continuous...and it's saving fuel."

FAA administrator Steve Dickson explained that the software calculates the best time for an aircraft to push back from the gate, allowing it to roll directly to the runway and reduce taxi delays and ramp congestion. And after takeoff, the system allows air traffic controllers to merge the flight directly into the stream of jet traffic, again saving time and fuel. ■

# Tata Group to acquire Air India

by Neelam Mathews

Sixty-eight years after Air India's establishment as Tata Airlines and subsequent takeover by the government in 1953, life has moved full circle for Tata Sons as it becomes the new owner of the national carrier for \$2.7 billion. SpiceJet founder Ajay Singh submitted the other bid for the flag carrier.

"I am confident the Tata Group will restore the glory of Air India," said a gracious Singh. "The [government] ran a successful divestment. [It was] a transparent and flexible process." A statement from Tata Sons chairman N. Chandrasekaran called it "a historic moment, and it will be a rare privilege for our Group to own and operate the country's flag-bearer airline." He paid tribute to J.R.D. Tata, whom he called a "pioneer of



An Air India Boeing 787 approaches London Heathrow Airport. More than two-thirds of Air India's revenues come from international operations.

Indian aviation, whose memory we cherish."

Air India becomes Tata's third airline acquisition. It also holds a majority stake in full-service Vistara with Singapore Airlines and AirAsia India with Malaysian AirAsia. Once the sale closes by the end of the year, Tata will get full ownership of Air India, its profitable subsidiary Air India Express, and 50 percent of its share of the joint venture with Singapore Airport Terminal Services (SATS), which provides ground handling services across airports in India. It will also

inherit a brand that will need to be refurbished, 2,000 engineers, 1,600 pilots, and a host of partnerships.

Jitender Bhargava, former executive director of Air India, told **AIR** that the airline needed to divest or ultimately face liquidation. "Disinvestment was the only way out for Air India," he said. "The government has taken it to a logical end. The task ahead is formidable but Tata has the vision to instill global standards and give a new life to the brand." ■

# IATA's net-zero target now 2050

International Air Transport Association (IATA) members last month voted to strengthen the airline industry's environmental ambition and set a target to achieve net-zero carbon emissions by 2050, up from a previous target to half CO<sub>2</sub> emissions on 2005 levels by 2050. IATA approved the new target in spite of requests by Chinese airlines to delay the timeframe to 2060, in line with China's carbon neutrality pledge.

IATA director general Willie Walsh described the adoption of the new target by its membership—around 290 airlines—as "a momentous decision to ensure that flying is sustainable. The post-Covid-19 re-connect will be on a clear path towards net zero."

Walsh acknowledged that achieving net zero emissions will be a "huge challenge," but called it a clear necessity if the industry wants to grow. IATA is projecting some 10 billion people will fly in 2050; this takes account of the Covid-19 related traffic loss. If airlines want to do this without emitting CO<sub>2</sub> they will need to abate at least 1.8 gigatons of carbon in that year. Moreover, the net zero commitment implies that a cumulative total of 21.2 gigatons of carbon will be abated between now and 2050.

The IATA head warned that achieving global zero emission air connectivity cannot be accomplished on "the backs of airlines alone." All parts of the aviation industry must work together, including governments, fuel suppliers, and OEMs, he stressed.

IATA mapped out a scenario on how to stabilize and reduce airline's emissions, though it pointed out that the scenario most likely will change as time progresses and some new technologies such as hydrogen mature, or fail to materialize. Airbus is working on an hydrogen-powered short-and medium-haul airliner. Speaking at the IATA AGM, company CEO Guillaume Faury, expressed confidence an Airbus hydrogen-powered commercial aircraft will enter into service in 2035. "I think this is very ambitious," Walsh said, calling the application of hydrogen propulsion in commercial aviation a "complex issue."

The current IATA scenario foresees that 65 percent of carbon emissions will be abated through sustainable aviation fuels (SAF) and 13 percent through the introduction of new propulsion technology, such as hydrogen. Efficiency improvements—specifically air traffic navigation—will account for a further 3 percent. The remainder could be dealt with through carbon capture and storage (11 percent) and offsets (8 percent).

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# Flying under a new-fangled IFR hood

by Woody McClendon

Two small companies have developed new versions of the instrument flying hood, the view-limiting device intended to block pilots' outside view while allowing them to see aircraft instruments during IFR training. These versions are designed to dramatically increase the hood's effectiveness in helicopter training, and both use new technology to create a more realistic vision-reduction scenario for training.

Icarus Devices was started by Nick Sinopoli, an Army aviator who learned to fly as a teenager. Sinopoli is also a graduate aeronautical engineer, who decided to tackle the problem after attending the funeral of a friend killed in an inadvertent flight into instrument meteorological conditions (IIMC) accident.

"I wanted to apply current technology to create a hood that could be adjusted for whatever visibility the training scenario required," Sinopoli said. His product is a simple hood and screen over the eyes that uses an iPhone app to control the amount of occlusion, gradually blocking the view of the outside until it is partially or fully obscured. According to Sinopoli, the lower skirts of the hood can be customized to various helicopter cabins to keep the pilot from seeing the outside view through chin bubbles and other windows, which is a major problem with existing hoods.

"I secured a patent on the design, then began talking to the helicopter community through the U.S. Helicopter Safety Team (USHST), of which I'm a member," he said. "Initial interest was positive and several members endorsed the Icarus hood."

A breakthrough occurred when Metro Aviation, an air medical operator based in Shreveport, Louisiana, asked to evaluate the hood. Metro operates its own training center, supporting helicopter operator customers as well as air medical pilots.

Matt Johnson, a line pilot and check airman for Metro, has become the company's subject-matter expert on the Icarus device. "Nick Sinopoli and I spoke several years ago when he envisioned this device," said Johnson. "More recently, when he had finished designing the Icarus hood, he asked if we could evaluate it for him."

Johnson's first flight convinced him it would be a game-changer in IIMC training. "The timing was perfect," he said. "Our director of operations, Brian Bihler, was looking for a solution that would complement our biannual training events." Sharing his conclusions on the Icarus device with Bihler led to a decision to buy one for each air medical program

the company operates, resulting in an order for 60 devices.

"With an Icarus device available to every program, designated safety pilots will fly with each aviator assigned there during quarterly flight reviews on IIMC procedures," Johnson explained. "Ultimately we're going to see a higher, more



The AT Systems Visibility Simulation System helps helicopter pilots adapt to weather, dust, and other visual hazards.

consistent level of proficiency in IIMC avoidance and survival."

Bihler feels strongly that the Icarus hood is a tool that will enhance his pilots' instrument flying skills. "This device allows us to train as if we were encountering IIMC within the safety of the training environment, providing our pilots with a higher skill level so they can do the right thing and survive."

AT Systems, founded by two pilots, is another new company that has developed what at first glance looks like an instrument hood but is more than that. Focused on military helicopter operators, the Visibility Simulation System (VSS) simulates flight conditions compromised

by weather, dust, and other visual hazards. VSS is also capable of recreating mission profiles that ultimately lead pilots into decreasing visibility, requiring them to transition to instrument flight and land safely.

"We are both Black Hawk pilots in the National Guard. Flying in combat conditions, we've faced brownouts and sudden low cloud ceilings," said Tyson Phillips, co-founder of AT Systems. "As instructors, we've watched experienced

pilots struggle with inadvertent IIMC and brownouts without a clear plan to react and survive. Even though we train in simulators, somehow, when we encounter those conditions in the real world, it's hard to get it right."

The AT Systems team saw a need for a specialized training device that would provide a compromised visual experience while retaining the vestibular inputs of flight. The solution is a device similar to a hood to control visibility—the visual inputs—while the pilot is experiencing the vestibular inputs of flying, physical cues that cannot be recreated in a simulator. The hood design includes roll, pitch, and yaw inputs from an integral attitude and heading reference system to dynamically create mission flight profiles.

While effective for IIMC training, the high cost of Level D simulators limits their availability to a few large helicopter operators. Icarus and AT Systems are focusing on the need for training systems that are more affordable, easily available, and beneficial for IIMC mitigation.

Icarus's backlog suggests that the helicopter community recognizes the need for affordable IIMC training. The product's retail price is \$1,500, and battery life is about six hours.

AT Systems' VSS has generated interest from several government agencies, according to the founders, and the U.S. Army is testing it in the field. Pricing varies for the VSS as it is available in a variety of configurations. Battery life is four to five hours.

## Chicago Jet earns STC for Falcon 900B InSight avionics upgrade

Chicago Jet Group (CJG) has received FAA supplemental type certificate (STC) approval for Universal Avionics's InSight flight deck upgrade on the Dassault Falcon 900B. The upgrade can be done in two phases to provide flexibility in budget and downtime coordination or both can be done in a single downtime event, according to CJG.

Phase One replaces the Honeywell NZ-2000 FMS by adding dual Universal UNS-1Fw flight management systems that provide LP/LPV approach capabilities, a CVR-120A cockpit voice recorder, and UniLink UL-801 communications management unit. This FANS over Iridium solution offers capabilities for FANS 1/A+ CPDLC, European ATN B1, and push-to-load, the latter of which is required by the FAA for domestic CPDLC, departure, and en route clearance (Data Comm).

In Phase Two, the legacy Honeywell EDZ-800 EFISs are replaced with four Universal InSight EFI-1040 displays, dual touchscreen EFIS control display units, dual alphanumeric keyboards, and Mid-Continent MD302 standby attitude module, resulting in a weight savings of more than 250 pounds.

CJG's STC options include upgraded



The Falcon 900B panel upgrade includes four Universal Avionics InSight displays, as well as touchscreen CDUs, alphanumeric keyboards, and a Mid-Continent standby module.

dual- or triple-integrated PS Engineering PAC45L audio control panels, Latitude Technologies Iridium-based SkyNode S200 Safety Voice satcom for the cockpit, and Aircraft Lighting International adjustable LED cockpit lighting.

"The InSight Display System elevates the Falcon 900B to a NextGen-class aircraft," said Chicago Jet Group president Mike Mitiera. "Owners and operators will see immediate results in safety of flight, increased aircraft value, and a lower operating cost

thanks to the increased reliability of the Universal Avionics equipment over the original OEM cockpit design. Most importantly, this sustainable technology is available today."

Early next year, Chicago Jet will add the engine instrumentation on a fifth display for the Falcon 900B. It also plans to get FAA approval in third-quarter 2022 for RNP-AR approach capability on the trijet.

CJG's next InSight Display System STC will be for the Falcon 50. The company launched the Falcon 900 STC program in 2018. C.T.



# The trouble with automation: humans versus machines

by Stuart "Kipp" Lau

Mastering automation is a foundational skill required to safely operate any modern state-of-the-art aircraft. Under normal circumstances, automation reduces workload, creates efficiencies, and, to a fault, is highly dependable. On rare occasions, these highly reliable systems present pilots with an unexpected, obscure, or highly complex scenario that if mismanaged may quickly deteriorate and jeopardize the safety of flight.

The challenge for professional pilots is to not only understand their own human cognitive limitations but to fully comprehend their aircraft's automated systems and how each relate. From a practical operational standpoint, those same pilots must maintain proficiency, become experts at monitoring, combat complacency, adhere to standard operating procedures (SOPs), and mentally stay out in front of these aircraft during all modes of operation.

Safety reports are littered with automation interface issues that pit the pilot against the aircraft. Often these events begin with an automation error, and when not trapped, may evolve into additional errors or an undesired aircraft state (UAS).

Automation errors have led to numerous accidents; categorized as either loss of control in-flight (LOC-I), controlled flight into terrain (CFIT), approach and landing (ALA), and runway excursion (RE) accidents. The list of common automation errors contributing to these accidents is long and varied and may include data entry errors, mode confusion, mode awareness, unexpected mode reversion, and inappropriate use of automation.

Mismanaged automation errors are often coupled with additional errors from the pilot monitoring such as cross-checking or verification steps. Poor pilot monitoring skills across the industry have been recognized as a threat to aviation safety. When these errors are not trapped, the flight path and/or energy management may be compromised. Below is an example of an early accident that combined an automation management error and poor active pilot monitoring skills. Considered a "watershed" moment, this accident put the industry "on notice," that there was a problem managing highly automated aircraft.

Nearly 26 years ago, a simple flight management system (FMS) entry error led to the loss of a Boeing 757 near Cali, Columbia. During this event, on an arrival from the North, ATC offered a "straight-in" VOR/DME Runway 19 approach, which the crew accepted. The actual clearance was to fly the ROZO 1 arrival for the VOR/DME runway 19. The captain subsequently made a request with

ATC to proceed direct to the ROZO NDB, which was coded as "R" in the FMS. ATC denied this request and reiterated the original clearance for the ROZO 1 arrival with additional instructions to report their position at 21 DME from the airport. The crew misunderstood these instructions. Still in a descent, the pilots selected and executed "R" (ROZO NDB) in the FMS and the aircraft turned to the left 90 degrees and departed the desired lateral course. Passing through 9,000 feet the GPWS "terrain" warning activated and despite the crew's efforts to recover from the event, the aircraft impacted a mountainside, killing 159 people and severely injuring another four.

Verifying the FMS selection and cross-checking the aircraft's navigation display (it would have indicated a 90-degree turn) may have helped prevent this accident. There were several threats associated with this accident such as language barriers, operating in mountainous terrain, a late-night flight, and a poorly coded ("R") waypoint and a similarly named procedure all led to a lot of confusion. From this accident, the industry has learned a lot, but we have a long way to go, considering similar automation-related accidents continue to occur.

## The Unevolved Brain

The problem with automation management is twofold; it's the human and the machine and how they interface with each other. According to IATA's study on "FMS Data Entry and Error Prevention," the human brain has changed little in hundreds if not thousands of years. Remarkably, even in an "unevolved state," the brain has been able to assimilate well into the complex world of aviation by adapting to new environments and accumulating countless new skills.

In simple terms, the brain has two channels. One channel involves conscious thought in the brain's "simple but faster processor," this is the cognitive channel where things like problem-solving and decision-making take place. The other one, the subconscious channel, is "taught" through repetition by using complex movement sequences, such as tying a shoe, ballroom dancing, or flying an airplane. According to the IATA study, "the trouble is that each of these channels are vulnerable." Channel One—the cognitive one—has limited capabilities and is prone to overload in times of stress. This cognitive channel is easily misled by confusing or contradictory inputs and does a poor job at recognizing its own errors.

Concerns about an over-reliance on automation and an erosion in manual flying skills relates to Channel Two—the

sub-conscious one. These skills are lost due to a lack of practice, confounded by unfamiliar circumstances, or initiated at an inappropriate time.

As aircraft become more sophisticated and automated, the role of the pilot has changed from flying to mostly monitoring and observing. Pilots (as humans) are poor monitors because they are vulnerable to fatigue, distractions, boredom, complacency, illness, and stress—all things that negatively impact concentration.

Failing to monitor an aircraft's flight path and energy state is problematic and has been a causal factor in several accidents. Monitoring airspeed is a fundamental skill acquired early during a pilot's training, yet these accidents occur at an alarming rate.

In 2005, a Cessna Citation 560 crashed while on approach to Pueblo, Colorado. Two pilots and six passengers were killed. Approaching from the east, the crew initially planned to overfly the airport and land on Runway 8L. Upon checking in with Pueblo Approach Control, the crew was advised that they would land on Runway 26R. The aircraft was on autopilot during the descent and arrival into Pueblo. According to the CVR transcript, the flight crew noted the change in runway assignment and immediately tuned the (navigational) radios and inbound course for Runway 26. According to the NTSB, however, there was an approximate 5-minute delay in conducting the approach briefing. Minutes later the crew began to intercept the localizer and glide-slope and to slow and configure the aircraft for landing. During this time, the pilots continued to brief the approach. Moments later the first officer recognized the need to "run the deice boots" and indicated that the aircraft had slowed to Vref. The aircraft continued to slow, which caused an aerodynamic stall, and the crew failed to recover.

Four years later, in February 2009, Colgan Air Flight 3407, a Bombardier Dash 8-Q400, crashed outside of Buffalo, New York, killing 49 people aboard and one individual on the ground. During this flight, while on approach to Runway 23 at BUF the crew failed to recognize a loss of 50 knots of airspeed over a period of 22 seconds. The result was an aerodynamic stall that led to a fatal LOC-I accident.

These two accidents demonstrate how distractions, fatigue, stress, and potentially complacency—all human vulnerabilities—can affect concentration and the ability to monitor the energy state of an aircraft.

## Human-machine Interface

Outside of the pilot, there is probably some culpability with the design of the aircraft or machine and how it interfaces with the pilot or human. The concept of machine is broadly defined as a device that people interface with, such as a mobile phone, laptop, or in this case an aircraft.

A productive discussion on human-machine interface must begin with two questions. How do we communicate with

the machine and how does the machine communicate with us? This two-way communication in an aircraft is accomplished using controls, displays, audio cues, etc. The design of these items must consider ergonomics (physical aspects) and must align with the user's mental model (usage architecture, logic, and intuitiveness) to be effective. The basis for this interface between machine and human is no different than any other form of communication, it's a two-way conversation.

Third-generation air transport aircraft (the first automated aircraft with FMS and glass cockpits) introduced into service during the 1980s incorporated crude FMS and flight mode annunciator (FMA) displays. Early FMSs incorporated monochromatic displays with an alpha-numeric interface, while FMA displays used symbology and (often truncated) nomenclature that included multiple non-intuitive sub-modes. This understandably created several challenges for pilots.

Fortunately, each new generation of aircraft has shown an improvement. Although, as demonstrated with the Boeing 737 Max saga, there are still significant areas of improvement when it comes to automation and the many subsystems associated with complex aircraft.

Mismanaged automation errors and poor flight-path and energy-state monitoring are at the crossroads of many accident types (CFIT, LOC-I, ALA, and RE). Operators must reinforce their automation philosophies and protocols into training and SOPs.

According to the Flight Safety Foundation "Approach-and-Landing Accident Reduction Toolkit" (Briefing Note 1.2 – Automation), the safe and efficient use of the autoflight system (AFS) and FMS is based on the following three step method.

**Anticipate:** understand system operation and the results of any action, be aware of modes being armed or selected, and seek concurrence with the other flight crewmembers.

**Execute:** perform the action on the AFS control panel or on the FMS control display unit (CDU).

**Confirm:** cross-check armed modes, selected modes, and target entries on the FMA, primary flight display and navigation display, and FMS CDU.

Likewise, pilots must engage in an active monitoring role to identify and correct flight-path or energy-state deviations. In addition to the FSF ALAR Toolkit, the FSF has published "A Practical Guide for Improving Flight Path Monitoring."

For pilots, the guide outlines accepted practices that promote effective monitoring and clearly defines the role of each pilot during various flight phases. Likewise, there are discussions on workload/task management and how best to manage distractions and interruptions. For the operator, the guide provides an outline to create effective SOPs and enhance training profiles to promote better pilot monitoring skills. ■





Overland Aviation's new FBO is open at Williston Basin International Airport in North Dakota.

### Million Air Moves in at Fort Lauderdale Executive

Million Air has expanded its footprint in Florida with the acquisition of W Aviation, one of four FBOs at Fort Lauderdale Executive Airport. The 4,000-sq-ft terminal will be rebranded at the end of the year, with upgrades to the concierge desk, refreshment area, snooze rooms, flight-planning area, and conference room, along with new Mercedes crew cars.

Million Air will continue to operate from that facility while blueprints are being drawn up for a new two-story terminal, with adjoining office space to replace it. The 8.5-acre leasehold also includes a fuel farm and 70,000 sq ft of hangar space. Million Air plans to add to additional hangar space and enlarge the ramp.

"Our team is excited to put up a flagship location in this community," said company CEO Roger Woolsey. "The vision is to create a new front door to South Florida visitors, business leaders, government officials, entertainers, and other distinguished guests arriving by private aircraft."

### Third FBO to Land at Milwaukee Airport

Wisconsin-based aircraft operator and charter provider Jet Out has broken ground on a new headquarters and FBO at Milwaukee General Mitchell International Airport (KMKE), where it will become the third service provider on the field.

The \$11 million facility, to be branded as Jet In, will occupy a 6.2-acre leasehold, the last greenfield parcel on the airport. It will include a 10,000-sq-ft, two-story terminal with pilot lounge and snooze room, conference room, fitness center with shower facilities, an upstairs SKYLounge passenger area, and offices.

The company will also build a new fuel farm and a 50,000-sq-ft heated hangar that can accommodate the latest ultra-long-range business jets, including the Bombardier Global 7500. According to company CEO Joseph Crivello, the facility, which is expected to be completed in the second quarter of 2022, has had its design heavily influenced by sustainability and it will be fully compliant with Milwaukee's Green Infrastructure Plan. He plans for an all-electric fleet of ground service equipment, crew cars, and courtesy cars.

### North Dakota FBO Moves into New Digs

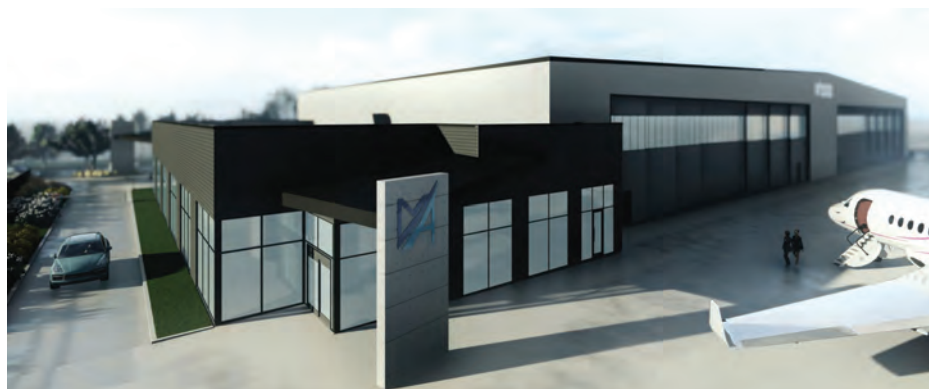
Overland Aviation, the lone service provider at North Dakota's Williston Basin International Airport (KXWA), has opened its new permanent terminal and U.S. Customs facility. The 51,000-sq-ft complex includes a 17,200-sq-ft, two-story terminal with a pilot lounge, refreshment bar, concierge service, a separate private terminal for large charter flights, and tenant office space. KXWA replaced nearby outmoded Sloulin Field International Airport in 2019, and Overland held a ribbon-cutting ceremony to coincide with the airport's first airshow.

The airport is on the Great Circle Route between Europe and the Western U.S., and the complex includes an attached 3,800-sq-ft customs facility with a separate entrance and exit. It was designed and built to U.S. CBP specifications, and the company offers quick turns for its international customers. The adjoining 30,000-sq-ft heated hangar can accommodate aircraft up to the size of a Gulfstream G650.

The FBO is positioning itself as not only convenient but economical for customers because they can avoid landing, handling, security, and infrastructure fees. Ramp and international trash disposal fees are waived with any fuel purchase.

### Denver FBO Launches Massive Expansion Project

FBO operator Modern Aviation has embarked on a major expansion of its facility at Denver's Centennial Airport (KAPA), where it is one of five service providers. Modern purchased the former XJet location in 2018, and this \$20 million upgrade will more than double its footprint.



Modern Aviation is building a new FBO at Centennial Airport at the former XJet facility.

Included in the plan is a new 7,000-sq-ft FBO terminal that will replace the current 14-year-old structure, which will be renovated for use as rentable executive office space. The project will also add two heated hangars totaling 52,000 sq ft and capable of sheltering aircraft up to the size of a Bombardier Global 7500. That will bring the FBO's aircraft storage space to 102,000 sq ft and its attached office space to 4,000 sq ft. The complex, which will have three acres of new ramp area, is expected to be completed in the third quarter of 2022.

Now home to more than 800 aircraft, including approximately 100 jets, KAPA ranks among the top 10 general aviation airports in the U.S.

### Chicago Executive Airport Debuts U.S. Customs Facility

Officials in Illinois celebrated the opening of a new, dedicated U.S. Customs and Border Protection (CBP) facility at Chicago Executive Airport (KPWK). The new building is located at the south end of the airfield, at the site of the former Hangar 4, which was demolished in 2020 to make room for the project.

While clearance for international passengers previously took place in the airport's Hangar 41, the newly-constructed building, which will be staffed 24/7, offers travelers a modern, private venue and provides CBP officers the most advanced working environment in which to clear arriving aircraft and passengers.

The \$3 million, 3,400-sq-ft facility includes secure processing and detention areas, a new apron on the airside and a vehicle parking lot landside. The project was self-funded by the Chicago Executive Airport through airport fees with a significant portion coming from a surcharge on aviation fuel sold.

"Business and general aviation are emerging very strong from the pandemic," said George Sakas, the airport's interim executive director. "We are experiencing record numbers of flights, with our airport partners building new hangars and hiring additional staff. Investments like this CBP facility make Chicago Executive the airport destination of choice for international travelers to and from downtown Chicago and the suburbs."

› continued from page 1

## NBAA-BACE and bizav roar back

The company made a strong appearance at BACE, with the 3500 cabin mockup present along with a Global 7500 and 6500 at the Henderson Executive Airport static display. The new jet's mockup was so crowded during BACE that AIN's photographer and videographer were unable to spend much time on board. Luckily, travel across the Canadian border wasn't problematic for Bombardier executives making their way to Las Vegas.

This wasn't the case for Dassault Aviation executives, who had to secure a difficult-to-obtain national interest exception (NIE) to travel from France. However, Dassault CEO Eric Trappier, Carlos Brana, executive v-p civil aircraft, and others were able to obtain the NIE and were on hand to highlight the virtues of the in-flight-test 6X and in-development 10X, both of which had fully outfitted cabin mockups, along with a new 8X, all viewable at the static display. The 10X mockup offered the first public viewing of the wide-body, ultra-long-range jet's cabin since the airframer officially launched the program on May 6.

### Second Generation

Textron Aviation unveiled two Gen2 Citations at BACE, the M2 and XLS, both of which are getting significant cabin upgrades. The M2 Gen2 also features a welcome three-inch addition to legroom for the right-seat pilot position.

Embraer Executive Jets didn't offer any new-model announcements or upgrades but did secure a huge \$1.2 billion order from NetJets for up to 100 of a customized version of the Phenom 300E.

While Gulfstream canceled all of its live events this year and didn't have a presence at BACE, it did announce two models before BACE, the G400 and G800. The latter will eventually replace the G650 and will have a range of 8,000 nm, while the G400 will fly 4,200 nm and fills the gap between the G280 and G500. Both new jets feature the touchscreen Symmetry flight deck with active-control sidesticks.

Piaggio Aerospace, which had planned to exhibit at BACE but couldn't due to travel restrictions, unveiled a series of upgrades to the Avanti Evo twin-turbo-prop. These include high-power steel brakes, True Blue Power lithium-ion main-ship and emergency batteries, a Becker digital audio system, a max zero fuel weight increase to 10,200 pounds, and new cabin interior options.

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# FAA clears path for supersonic tests

Another step toward facilitating the development of civil supersonic aircraft.



## Elit'Avia to sell HondaJets in France, parts of Africa



Elit'Avia, a Russian aircraft leasing company, has announced it will sell HondaJet aircraft in France and parts of Africa. The company, which is based in Moscow, has been operating a fleet of HondaJets for several years. The sale is part of a larger effort to expand the company's market reach and increase its revenue. The aircraft are expected to be sold at a discount to their original price, making them more attractive to potential buyers. The sale is expected to be completed within the next few months.

## Engine makers are mostly agnostic on hydrogen



Engine makers are mostly agnostic on hydrogen. While some manufacturers are exploring the use of hydrogen as a fuel source for aircraft engines, others are more cautious. The main reason for this is the lack of infrastructure for hydrogen production and distribution. Additionally, the cost of hydrogen is currently much higher than that of traditional fossil fuels. However, as technology advances and the cost of hydrogen decreases, it may become a viable option for aircraft engines. Engine makers are currently conducting research and development to determine the feasibility of using hydrogen in their engines.

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Aviation Clean Air's ionization system is growing more popular, and Duncan Aviation is expanding the business jet types certified for installation of the upgrade.

### Duncan Expanding ACA Installs to Multiple Bizjet Types

Duncan Aviation is increasing the number of business jet types in which it can install the Aviation Clean Air (ACA) ionization system through STCs it has developed itself or partnered on. Beginning late last year and continuing through this year, Duncan developed STCs for ACA installation packages on Bombardier Globals and Challenger 300/350s and Dassault Falcon 7Xs and 2000/2000EXs.

Additionally, the Lincoln, Nebraska-based MRO recently partnered with Peregrine Avionics to develop ACA STCs for Gulfstream GIVs and Challenger 604s. Installation packages include the ionizer and parts manufacturer approval (PMA) parts kits developed by Duncan.

It continues to develop ACA ionization packages for additional business jet makes and models. Installation is performed at Duncan's three main facilities in Lincoln; Battle Creek, Michigan; and Provo, Utah, as well as at several of its satellite stations across the U.S.

### Jet East Opens New Jersey MRO facility

Jet East has opened an MRO at Millville Executive Airport in New Jersey that comprises two of the airport's "most modern" hangars totaling 70,000 sq ft and that will employ 250 workers when fully operational. The Gama Aviation company is leasing the property from the Delaware River and Bay Authority for 10 years, with options to extend the lease for two five-year periods.

### C&L Aviation Completes Parts Warehouse Construction

MRO C&L Aviation Group has completed construction of a 27,000-sq-ft parts warehouse adjacent to its component shop at its Bangor, Maine headquarters campus. Parts from C&L's teardown of 15 aircraft—including a Bombardier Challenger 604 and nine ERJ-145 regional jets that it acquired from a European

operator—and a multimillion-dollar purchase of ATR spare parts will be housed in the warehouse.

This is one of three warehouses C&L operates in Bangor, which together offer more than 50,000 sq ft of space for parts inventory. The company also has warehouses in Australia and Europe.

### Traxxall Unveils MRO Module

Traxxall has launched an MRO module aimed at improving business for MROs through generating and leveraging data for maximum operational efficiency and financial success. It is complementary to the company's maintenance tracking and inventory management modules.

The module tracks time, tasks, and labor costs, and it integrates with existing automated systems such as those for accounting and flight scheduling. It also provides daily updates on airworthiness directives and service bulletins and features dashboards that provide access to real-time data. Because MRO is subscription- and web-based, it also offers a lower cost of entry, according to Traxxall.

### Jet Aviation Expands Gulfstream Mx Support in Europe

Jet Aviation has expanded its support of Gulfstream aircraft in Europe at its Vienna, Austria, and Geneva, Switzerland operations, the Geneva-based sister company to Savannah, Georgia-based Gulfstream Aerospace announced. At Vienna, Jet Aviation has received approval from EASA to perform line maintenance on the Gulfstream G500

and G600. At Geneva, Jet Aviation has expanded its support of Gulfstream models to include Turkey-registered G450, G550, and G650/650ER twinjets.

### Safran Landing Systems Adds Dallas-area Repair Shop

Safran Landing Systems has expanded its wheel and brake support with the opening of a repair facility in Grand Prairie, Texas, near Dallas. The shop received FAA approval in August and Safran inaugurated the facility in September. Joining the French company's U.S. repair stations in Milwaukee, Las Vegas, Miami, and Bethlehem, Pennsylvania, the Grand Prairie facility can provide both commercial and military wheel and carbon brake maintenance and logistics services.

### Bombardier Expanding Interior Services in Dallas

Bombardier announced new interior and refurbishment capabilities at its Dallas service center by teaming up with Wichita-based aircraft furnishings specialist Global Engineering & Technology (GETI). The agreement builds on a long-standing relationship between Bombardier and GETI, which already is a supplier for its Wichita service center. As a result, customers of various Bombardier twinjet platforms will have expanded options in Dallas for interior repair and refurbishment of the aircraft flooring, cabinetry, seats, and upholstery.

### Embraer Launches Upgraded TechPubs Platform

Embraer Services & Support has released a TechPubs platform for the company's executive jets division that replaces its eTechPubs platform with one that is more user-friendly and distributes aircraft technical publications "in a smart, flexible, and mobile way," the Brazilian airframer has announced. The new, "more intuitive and modern" platform features "workspaces" that allow users to create their own interfaces and share them internally with other users, which Embraer said will accelerate the maintenance process. Additionally, those workspaces can be shared between multiple devices such as laptops and

desktops with Windows, Mac, and Linux operating systems, iPads and tablets, and smartphones. Further, TechPubs is set up to allow users from outside parties to share information in the same workspace, although Embraer told AIN that "we are assessing the further impact of this feature." TechPubs will be integrated with EmbraerX's Beacon digital maintenance platform, one capability of which will allow customers to upload technical manuals from other OEMs.

### Russian Firms Collaborate on Pilatus Service Center

The UTG PA Business Aviation Center at Moscow Domodedovo Airport will serve as an authorized center for line and regular maintenance on the Pilatus PC-12 turboprop single and PC-24 twinjet under a letter of intent between it and Skypro Technics, a joint venture of Skypro Helicopters and Nesterov Aviation, an authorized Pilatus Aircraft service center in Russia.

### Textron Aviation Begins Pro Line Fusion Installs in CJ2+

Textron Aviation has recently completed the first two installations of Collins Aerospace's Pro Line Fusion touch-screen avionics in Cessna Citation CJ2+ twinjets at its North American service centers. The installation follows FAA approval in March of Collins's STC for installation in the type. As a follow-on modification to a 2017 STC approval for Fusion in the CJ3, the new system for the CJ2+ also includes integrated V-speeds, fuel sensing, predictive performance, and controller-pilot datalink communications (CPDLC).

### AeroParts Now Forms Partnership with PartsBase

Aircraft parts management and sales software provider AeroParts Now (APN) has reached an integration agreement with aircraft parts marketplace PartsBase. The agreement enables APN customers to have their published parts appear higher in the PartsBase ranking in the parts locator system, providing for greater visibility and expanded detail of their listings.

### GA Telesis MRO Services Adds Radome Testing Facility

GA Telesis MRO Services Group has developed a transmissivity test cell for repairing and overhauling aircraft radomes at its FAA- and EASA-approved composite and aerostructures repair facility near Fort Lauderdale/Hollywood International Airport in Florida. The test cell is capable of testing radomes on a variety of aircraft, including models from Bombardier, Cessna, Embraer, and Gulfstream, as well as Airbus and Boeing. ■



Jet Aviation's new EASA approvals cover line maintenance for the Gulfstream G500/G600 in Vienna and Geneva and new approvals in Turkey for the G450/G550 and G650/G650ER.





On behalf of the Corporate Angel Network (CAN) team and the Fund an Angel Planning Committee, thank you to the generous sponsors, auction donors and attendees who made this year's cocktail reception an evening to remember. The event raised significant funds, which will go directly to supporting CAN's mission of transporting cancer patients to specialized treatment. Because of the generosity of the business aviation community, CAN has completed over 66,000 cancer patient flights in 40 years. Thank you for your unwavering support!

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by David Jack Kenny

## PRELIMINARY REPORTS

### Challenger Crew Confronts Runaway Trim

**BOMBARDIER BD-100-1A10  
(CHALLENGER 300), AUG. 24, 2021,  
EDMONTON, ALBERTA, CANADA**

During a flight from Edmonton to Calgary with a single passenger, the two-pilot crew experienced increasing uncommanded nose-down trim. They shut off power to the horizontal trim and executed the STAB TRIM FAIL checklist from the quick-reference handbook but were unable to neutralize pitch forces. After declaring a PAN-PAN and advising air traffic control, they shifted weight aft in the cabin and decided to continue to Calgary, where they requested a long downwind and shallow approach.

An uneventful landing was made at VREF plus 30 knots with 10 degrees of flaps. Maintenance staff subsequently found that the copilot's trim switch was internally stuck in the nose-down position. At the time the TSB released its report, the cause had not been determined.

### Seven Killed in Brazilian King Air Crash

**BEECHCRAFT B200GT KA 250, SEPT. 14, 2021,  
PIRACICABA, SÃO PAULO, BRAZIL**

All seven on board, including both pilots and five members of a prominent Brazilian family, perished when the 2019 model turboprop crashed into a eucalyptus grove and exploded just 15 seconds after takeoff. Photographs of the accident site show that the airframe was almost totally consumed by the post-crash fire.

The airplane took off from Piracicaba's Pedro Morganti Municipal Airport on a flight to Pará just before 9 a.m., only to go down almost immediately in woods adjacent to the São Paulo State Faculty of Technology. Footage from a home security camera shows it descending in a steep, nose-low, right-wing-down attitude. Investigators from the Brazilian Air Force's Center for Investigation and Prevention of Aeronautical Accidents (CENIPA) reached the scene about noon.

### Brakes Implicated in Citation Departure Accident

**CESSNA 560 CITATION XLS+, SEPT. 2, 2021,  
FARMINGTON, CONNECTICUT**

Skid marks on the runway and a witness report of "blue colored smoke from the back side of the airplane" suggest that the airplane's parking brake may have been engaged during the takeoff roll, impeding its acceleration until it departed the end of the 3,665-foot runway. All four on

board—two pilots and two passengers—were killed when the jet continued past the threshold over a steep downslope but failed to climb, striking a utility pole 361 feet past the end of the runway. Four people on the ground were also injured, one seriously. The IFR flight was departing Robertson Field Airport in Plainville, Connecticut, for the Dare County Regional Airport in Manteo, North Carolina.

Witness accounts of unusually slow acceleration were corroborated by the flight data recorder (FDR), which showed that it took more than 40 percent longer to go from 20 to 100 knots than on its two previous flights (17 vs. 11.5 and 12 seconds, respectively). The longitudinal force was measured at .245 g compared with .365 g and .35 g, respectively, a 30 percent reduction. One witness recalled seeing a puff of blue smoke when the airplane was about two-thirds of the way down the runway. A second noted that the nose wheel was still on the ground when it passed the halfway point. A third, watching from beyond the departure end, reported that the Citation left the runway in a level attitude, then pitched up as the ground dropped below it but failed to climb. It struck the pole, causing "a small explosion near the right engine followed by a shower of softball-sized sparks" before disappearing from sight. A ground scar in a grassy area 850 feet north of the damaged pole continued to the point where the airplane hit a building, igniting a fire that almost completely consumed the aircraft except for the aft portion of the tail.

Investigators found a skid mark from the right tire 2,360 feet from the runway's approach end; a skid mark from the left tire began about 120 feet later. Both were continuous past the end of the runway and into the short stretch of grass before the hill. Examination of the wreckage found that the parking brake handle and the valve it controlled were both in the "set" position. The NTSB's preliminary report notes that "parking brake valve position and normal brake application were not recorded by the FDR, and the airplane's takeoff configuration warning system did not incorporate parking brake valve position as part of its activation logic."

### R66 Down in Georgia Forest

**ROBINSON R66, SEPT. 16, 2021,  
MONTICELLO, GEORGIA**

Searchers located the helicopter's wreckage in a densely wooded section of the Oconee National Forest 16 hours after it descended into the trees, leaving a 125-foot debris path. All three occupants, initially described as two pilots and a passenger, were found dead at the scene. An NTSB spokesman described weather during the flight—which originated some 180 miles south at Thomasville, Georgia—as rainy with low clouds and reduced

visibility. The flight's destination was not initially reported.

A witness living close to the accident site recalled that it was "pouring rain" when she heard an aircraft pass "very low" over the family home at roughly 8:30 p.m. The passenger was identified as a well-known Atlanta architect, whose widow has since filed wrongful-death lawsuits against two companies associated with operating the flight.

## FINAL REPORTS

### ATSB Advocates Emergency Breathing Systems

**GARLICK HELICOPTERS UH-1H, JAN. 9, 2020,  
EDEN, NEW SOUTH WALES, AUSTRALIA**

The circumstances of the pilot's underwater escape led the Australian Transportation Safety Bureau (ATSB) to recommend equipping all crew members on overwater flights, including water drops, with emergency breathing systems (EBS). The ATSB is already on record as a strong advocate of helicopter underwater escape training (HUET), which the accident pilot had most recently completed about eight months earlier, but noted that the time required to wait for the helicopter to stop moving, release restraints, free any snagged clothing, and find an escape route can easily exceed an individual's breath-hold capacity. Despite the increasing prevalence of HUET training, drowning remains the most common cause of death in helicopter ditchings.

While conducting water drops on a bush fire using a 1,400-liter (370-gallon) bucket on a 100-foot-long line, the pilot established a 100-foot hover over the Ben Boyd Reservoir. Hearing a grinding noise, he immediately jettisoned the bucket and applied forward cyclic, but the helicopter lost all power and descended straight into the water. Though the pilot used "all the main rotor energy available" to slow the descent, the impact burst both chin bubbles. The helicopter filled with water, rolled inverted, and sank.

Relying on his HUET course, the pilot waited for all motion to stop before unstrapping but was unable to open either front door. Moving into the cabin, he found an air pocket and "took a couple of breaths." The cabin sliding door also would not open, so he punched out the right sliding door's rear window to escape, inflated his life jacket, and swam to shore. Despite his difficulty egressing, he told investigators that he "would have been dead without HUET," describing the course as "great" and very realistic.

Following the accident, the pilot acquired a compressed-air EBS, and the New South Wales Rural Fire Service began investigating the possibility of providing all crew members with EBS and adding

the EBS component to the mandatory recurrent HUET course.

The cause of the power loss was found to be the failure of the number 1 and 21 bearings in the engine's front section due to loss of lubrication. The cause of the oil-flow restriction could not be determined.

### Covid Downtime Cited in Floatplane Upset

**DE HAVILLAND DHC-6 TWIN OTTER,  
OCT. 5, 2020, MALE-VELENA  
INTERNATIONAL AIRPORT, MALDIVES**

The Maldives Accident Investigation Coordinating Committee (AICC) identified the captain's relatively sparse flight time following his transition back to the Twin Otter from the DHC-8 as a likely factor in his loss of control of the floatplane during a crosswind water landing. Almost immediately after touching down on the "North Right" water runway, the Twin Otter rolled hard to the right until the wingtip hit the water. The airplane slewed right 180 degrees, the left wing dropped abruptly, and the left engine and propeller impacted the water before the airplane settled back onto both floats, facing southwards. The first officer and flight attendant sustained unspecified minor injuries; the four passengers were unhurt.

The Trans Maldivian Airways flight from the Vommuli seaplane base was described as uneventful aside from en route deviations to maintain VFR. Although 20-knot winds from 280 degrees were reported at Velana, neither pilot considered the conditions too challenging for a northbound landing. They described the approach as stable and the touchdown as smooth. Following the upset, the airport's fire-and-rescue boat assisted the Twin Otter in taxiing to the dock on a single engine.

The 42-year-old captain, who was the pilot flying, reported 12,329 hours of career experience. However, only 112 of his 3,417 hours in type had been logged since 2011. From 2011 through 2019, he had operated the DHC-8 regional airliner, then began transitioning back to the Twin Otter in January 2020. He had flown some 60 hours as PIC under supervision before being cleared for regular line flying, more than double the minimum 25 hours required by the airline. The AICC's report notes that pilots transitioning to floatplanes "have often had difficulty in mastering the motor skills necessary to maintain the proper attitude for water landing within the time period specified in the Operations Manual."

Shortly after his release to line flying, a Covid-19 lockdown brought all air transportation activities to a near-total halt, limiting his opportunities to maintain currency. At the time of the accident, he had flown only 37.5 hours in the preceding 90 days and just 51.4 since completing his transition training. ■





# JetNet Summit documents business aviation rebound

by James Wynbrandt

“We are back, in person,” JetNet iQ creator Rolland Vincent proclaimed, opening the 10th JetNet iQ Summit in New York City in September after a Covid-induced year-long absence.

Vincent’s words apply equally to business aviation, as data and other evidence presented at the two-day conference underscored. JetNet’s annual iQ Market Forecast predicts “an enduring business aircraft recovery” (*see sidebar*); the CEOs of four business jet manufacturers, sharing the dais, reported new business jet sales are “robust” and “on acceleration,” as Bombardier’s Eric Martel put it; and demand and rising valuations for preowned aircraft are “just absolutely off the scale,” with no signs of abating, said Bob Zuskin, CEO of appraisal firm Jet Perspectives.

Yet these favorable prognoses face major challenges, with supply-chain issues, workforce shortages, and demands for sustainability among the industry’s most critical issues. The open dialog between the 180-plus C-suite attendees and panelists at the summit gave a clear view from the top of industry leaders’ views and their responses to the challenges of the past year and those coming.

Four of the dozen sessions focused on leadership perspectives, with panelists addressing aircraft and engine manufacturing, business jet operations, and aircraft financing, while other sessions spotlighted sustainability, industry advocacy, pre-owned aircraft values, workforce diversity, customer experience, and more.

The iconic Eero Saarinen-designed TWA Hotel and Terminal 5 at JFK International Airport, showcasing aviation’s enduring legacy of innovation and resiliency, proved the perfect backdrop for the gathering. And an evening reception on the tarmac around and inside the Lockheed Constellation Starliner on permanent display seemed to serve as both a coming out and welcome home party for the crowd.

Taking the stage for one leadership perspective discussion, the CEOs of Bombardier, Dassault Falcon Jet, Embraer

Executive Jets, and Textron Aviation agreed that demand has risen to levels unseen in more than a decade, driven by new-to-business-aviation customers, who are often buying midsize, super-mid, and large-cabin, rather than entry-level, jets.

Manufacturers must “provide a collaborative environment” to educate them on ownership, said Embraer’s Michael Amalfitano, outlining the process his company has instituted, and his peers explained their analogous sales adaptations. It was roundly noted at the event that the demand is occurring without the participation of corporate customers, who remain unable to resume normal operations due to pandemic concerns and travel restrictions.

The CEOs also agreed—as did many others at the event—that, notwithstanding electric and hydrogen powerplant developments, sustainable aviation fuel (SAF) is “the only way that makes sense” for business jets to meet CO<sub>2</sub> reduction targets for the next decade at least, as Dassault’s Thierry Betbeze said.

But a critical part of the industry hasn’t regained positive lift. “The one thing that has been adversely impacted by Covid is the supply chain,” said Textron Aviation’s Ron Draper. He cited a 150 percent increase in shipping costs from Asia and “20,000 fewer shipping containers” among myriad indicators of supply-chain problems, a list many panelists and audience members added to during the summit.

Asked in one of the perspective sessions how Gulfstream Aerospace managed its supply chain through lockdown, senior v-p and CMO Jeannine Hass said via Zoom, “It really comes down to investing in those [supplier] relationships, setting expectations, having a lot of clarity about who’s responsible for what, and then having contingency plans in place.”

The pandemic’s impact and lessons learned were referenced throughout the summit and were the subject of the perspectives session on “Climbing Out of Covid.”

» continues on next page



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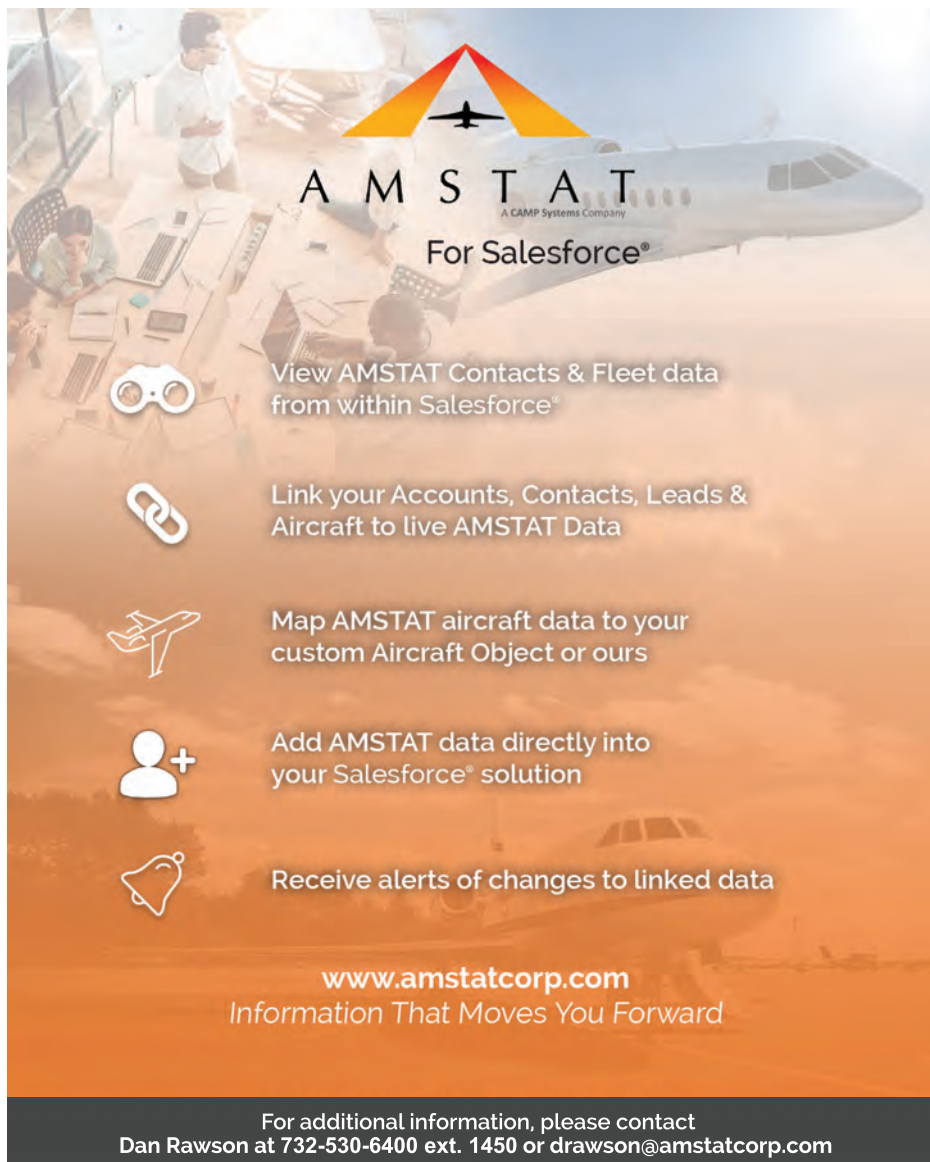
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» continued from previous page  
Clay Lacy Aviation president and CEO Brian Kirkdoffer said his 53-year-old company was on track for its best year after the first quarter of 2020 when Covid cut flight operations in April by 95 percent. But his customers—and those of other operators—“used that downtime to modify aircraft, so our maintenance business went way up.”

Since the rebound, the number of new charter clients has doubled and the number of management clients—including “younger and younger owners”—has tripled, he said. “Covid showcased the inherent health and time benefits of private jet travel, as people reevaluated what’s important to them,” another sentiment expressed repeatedly throughout the gathering.

In that same panel, Ron Epstein, a Bank of America Merrill Lynch Global Research managing director, called the pandemic “a great amplifier...if you went in weak, you got weaker; if you went in strong, you got stronger.”

Against a backdrop of the lowest inventory levels in history—according to JetNet, only 6.2 percent of the jet fleet and 5.4 percent of the turboprop fleet were available for sale at the end of the second quarter—preowned market activity was a topic of interest. Prices are rising, but the “dynamic” activity has challenged appraisers in determining and keeping up with preowned aircraft values, said Joe Zulueta, managing partner at Aeronautical Systems in a session about aircraft values.

Meanwhile, as manufacturers and buyers fret about meeting the rise in demand amid supply-chain problems, Wall Street is leery about OEMs expanding too quickly. “We want lower production numbers,” Jeffries research analyst Sheila Kahyaglu said during a Wall Street perspective session, as investors “don’t want to go through [another] decade of oversupply.”

Yet a growing shortage of skilled business aviation professionals was cited by some as the industry’s greatest threat to long-term prosperity, with diversity in the workforce seen as the most promising panacea, and a key to better organizational performance. But that goal seems more intractable for business aviation than creating sustainable fuel or righting a parts supply chain, judging by the information presented during the summit.

In a session on the importance of diversity, Sheryl Barden, president and CEO of Aviation Personnel International, noted that women comprise 9 percent of air carrier pilots, while their share of the jobs in business aviation is lower, adding that “pressure [for diversity] is coming from the greater corporation, not necessarily from the aviation department.”

Acknowledging that stringent flight-time requirements and a lack of necessary technical skills hamper diversity efforts, Barden recommended hiring some not-yet-qualified candidates and putting them to work as they develop, an investment that will pay large dividends.

Sharon DeVivo, president of Vaughn College, seconded that advice. “If you’re going

to grow a diverse workforce in the pilot’s seat and in the technician’s seat, you’ve got to put your money where your mouth is.”

Located next to La Guardia Airport, Vaughn’s 1,500 students are 80 percent minorities. The school ranked first in a New York Times study of educational institutions best at moving attendees from the lower 40 percent of household incomes to the upper 40 percent. A handful of students and recent grads accompanied DeVivo to the summit.

Lack of exposure to the industry and its employment opportunities is another impediment, according to GE Aviation general manager of business aviation engines Melvyn Heard indicated in a leadership perspectives session. Heard recounted being inspired by hearing NASA astronaut Ron McNair speak at his junior high school, and said he vowed after the Challenger space shuttle disaster to join the aviation industry “to make sure that didn’t happen again.”

A high school teacher advised him to attend college at Tuskegee Institute, where he got an internship with GE and learned about the company and industry. Today, he manages all the turbine engine development and production programs in the company’s business aviation portfolio.

“I know there’s a lot of discussion about workforce development and education,” Heard said in closing. “I’m going to challenge people to figure out how to reach back to some of the smaller institutions to provide recruitment support—not only with internships but financial aid. For me, personally, I’ll be giving Vaughn College a \$500 contribution today.” ■

## JetNet 2021 Forecast

The JetNet iQ Market Report 2021 forecasts 718 new business jet deliveries this year, up 15 percent from 2020, growing 7 percent next year, and then flatlining in 2023 due to supply-chain issues before rebounding. In total, it predicts deliveries of some 8,529 jets worth \$245 billion over the next decade.

In this year’s preowned market, as of the end of July, 3,205 retail business jet and turboprop transactions were registered globally and 1,289 aircraft were available, while the global fleet count at the end of the second quarter was 7,765 business jets and 15,738 turboprops. “We’ve never seen inventory so low,” JetNet iQ creator Rolland Vincent said, with the shortage driving some shoppers to buy new, even as delivery slots for some airframes stretch into 2023.

Data from ongoing, statistically valid quarterly surveys of owners and operators registered the highest level of optimism since the polling began over a decade ago, with more than 80 percent of respondents reporting themselves “likely” to buy a new business jet in the next five years. Another bullish indicator for the industry: 19 of the world’s 20 largest economies are expected to grow 3 percent or more this year. ■



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**Within 6 Months**

Nov. 4, 2021

**ICAO: Runway Surface Format**

In response to the on-going Covid-19 pandemic, ICAO delayed the applicability date of the new global reporting format (GRF) for assessing runway conditions to Nov. 4, 2021. ICAO, 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.

Nov. 25, 2021

**Canada: ELTs**

Starting on Nov. 25, 2021, Canadian-registered commercial and private aircraft are required to have an emergency locator transmitter that broadcasts simultaneously on the 406 MHz and 121.5 MHz frequencies. Foreign-registered aircraft operating in Canada must have at least one 406 MHz ELT by November 25.

Dec. 2, 2021

**Australia: Flight Operations**

Ten new flight operations regulations will consolidate the operating and flight rules, as well as certification and management requirements, for a variety of aircraft and operations, which will apply to all pilots and operators in Australia. The new rules will all commence on Dec. 2, 2021.

Dec. 7, 2021

**U.S.: Pilot Records Database Review**

Under the recently established FAR Part 111, Pilots Records Database (PRD), no entity may permit an individual to begin service as a pilot until the entity (including Part 135 air taxi and Part 91 air tour operators) has evaluated all required information, including that from FAA records, by Dec. 7, 2021. However, reviewing entities will be allowed to let an individual begin service as a pilot without first evaluating records if it has made a documented, "good faith" attempt to access all the necessary information maintained in the PRD and received notice from the FAA that information is missing pertaining to the individual's previous employment history as a pilot.

April 30, 2022

**Colombia: ADS-B Out Mandate**

Starting on April 30, 2022, unless specifically authorized by ATC, no person may operate an aircraft within Colombian territory in any controlled airspace or other airspace in which a transponder is required without ADS-B Out operational capability.

**Within 12 Months**

June 10, 2022

**U.S.: Pilot Records Database Reporting**

Reporting information to the Pilot Records Database about individuals employed as pilots in commercial operations (including Part 135 air taxi and Part 91 air tour operators) is required starting June 10, 2022. Required information encompasses drug and alcohol testing results, training, qualification, and proficiency records, final disciplinary action records; records concerning separation of employment; and verification of a motor vehicle driving record search.

Sept. 16, 2022 and Sept. 16, 2023

**U.S.: UAS Remote ID**

New FAR Part 89 requires that after Sept. 16, 2022, no unmanned aircraft system can be produced without FAA-approved remote ID capability. After Sept. 16, 2023, no unmanned aircraft can be operated unless it is equipped with remote ID capability as described in new Part 89 or is transmitting ADS-B Out under Part 91.

**Beyond 12 Months**

Nov. 13, 2022

**Australia: Airport Certification**

Revised Australian airport certification regulations (CASR Part 139) and an accompanying revised manual of standards (MOS) went into effect on Aug. 13, 2021. Under a transition period, operators of certified airports have until Nov. 13, 2022 to fully comply with the requirements and MOS publications.

Dec. 31, 2022

**New Zealand: ADS-B Out**

Covid-19 pandemic implications prompted New Zealand to extend its ADS-B out compliance date for one year from the previous deadline of Dec. 31, 2021. The ADS-B provisions, already mandatory for aircraft flying above 24,500 feet, will apply in the rest of New Zealand's controlled airspace by Dec. 31, 2022.

Dec. 31, 2022

**Mexico: CVRs and FDRs**

Cockpit voice and flight data equipment requirements for turbine aircraft operations (including air taxis) 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. The rules generally apply to turbine airplanes with 10 or more passenger seats and large turbine helicopters.

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

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CARA KING

PCX Aerostructures has promoted **Thomas Holzthum** to CEO. He succeeds **Jeff Frisby**, who has taken the title of executive chairman. Frisby has served on the PCX board of directors since February 2016 and as president and CEO since April 2017. Holzthum, who joined the PCX board in 2019 and was named COO in January, previously served as executive v-p of integrated systems for Triumph Group.

NBAA has named **Sean Lee**, global v-p at the Coca-Cola Company, to its board of directors. Lee, who leads Coca-Cola's Global Operations and Workplace Services team, is the accountable executive for the aviation department and flew for the U.S. Air Force. He has also held positions with MassMutual Financial Group and Hewlett Packard.

Mente Group has promoted **Jim Lewis** to senior managing director. A 46-year aviation veteran, Lewis has served as an airline, freight, charter, demonstration, and chief pilot and has held senior sales roles with Galaxy/Gulfstream and Embraer. Mente has also named **Steve Main** v-p of transactions. Main, who has more than 6,000 hours of flight time, has served as a chief pilot for a Gulfstream operator, captain and line pilot for Atlantic Southeast Airlines, and a flight instructor for FlightSafety International. Finally, Mente Group has named **Chris Prokoepas** v-p of marketing. Most recently CMO for Gesa Credit Union, Prokoepas has more than 25 years of experience with DFW International Airport, Dickies, Capital One, Dean Foods, and Kraft Foods.

Airshare has hired **Josh Johnson** to serve as CFO. Johnson joins Airshare from NIC, where he was v-p and corporate controller. He previously held financial leadership positions with YRC Freight, Collective Brands, and Deloitte & Touche.

FlyExclusive has named **Chuck Williams** CFO and **Rich Ropp** senior v-p of enterprise sales. Williams joins flyExclusive after serving as chief transformation officer with McKinsey & Company and also has held roles with J.P. Morgan and Bank of America. Ropp previously was president of Jet Linx St. Louis.

**Brian Sinkule** has been named CFO of *King Aerospace Companies*. Most recently CFO of L3Harris Technologies' Greenville division, he has a 30-year financial background, primarily in areas focused on ISR integration and missionization programs along with VVIP interior and aircraft services programs.

Bombardier is realigning its leadership team, naming **Anthony Cox** v-p of customer support. He succeeds **Andy Nureddin**, who moved into the role of fleet leader for the Global 7500 and is supporting a transition leading to his planned retirement next year.

Cox has served with Bombardier since 2006, beginning as a field service representative. Nureddin, who joined Bombardier in 1998 as director of technical publications for regional aircraft, had led customer support for 14 years. In addition to the promotion of Cox, Bombardier promoted **Jason Schick**, a nearly 28-year company veteran, to serve as senior director of technical services with the responsibility for training services along with technical services and publications. Meanwhile, **Chris Milligan**, v-p of preowned aircraft services, is now steering flight operations. He has spent the last 20 years with Bombardier and Flexjet.

Embraer has named **Mark Van Zwohl** v-p of fleet and special missions. Van Zwohl has 15 years of business aviation experience at Gulfstream Aerospace, where he most recently was the G450/G550 program director.

Jet Linx has appointed **Cara King** as regional v-p of aircraft management sales. King, who has 22 years of industry experience, joined the company a little more than a year ago after serving as a senior aviation sales advisor for XOJet and holding pilot roles for NetJets, Executive Jet Management, and Jet Access Aviation.

JetAviva has added three executives to its team: **Michael Simmen** as v-p of operations, **Mickea Smith** as sales director, and **Egan Rzonca** sales operations specialist. Simmen joins JetAviva with a background in aviation operations, having previously held a management role in CRM and customer experience at Embraer. Smith has more than a decade of experience, including a six-year tenure at Van Bortel Aircraft. Rzonca previously held an aircraft sales role with Embraer and also has served with Elliott Jets.

**Amber Langhart** has been appointed director of marketing for *SolJets*. Langhart previously spent 10 years as marketing manager of advertising and promotions for Pilatus Aircraft.

**Ralph Henschen** has joined *Traxxall* as regional sales director for the European region covering an area from Germany to Russia and Scandinavia to Turkey. Henschen, who previously was senior sales manager for EMEA at RocketRoute and continues to serve as a flight instructor for Airbus, also has held leadership roles with King Airlines and Arik Air.

*West Star Aviation* has named **Michael Smith** as Embraer team lead at its Chattanooga, Tennessee facility. Smith previously served with Boeing and Embraer.

*Duncan Aviation* has named **Steve Ward** as manager of its satellite avionics shop in Dallas and of the avionics repair station in Fort Worth. Ward joined the Dallas satellite shop 22 years ago and has more than 35 years of aviation industry experience.

**Penny Pitts** has been named marketing manager for *Epic Fuels*. Pitts has a 15-year background working on regional, nationwide, and international marketing projects with global brands such as Verizon, FedEx, and the American Heart Association, as well as a range of start-up and midsize businesses.

*Elliott Aviation* has hired **Gerrod Andresen** as director of aviation products and programs at its headquarters in Moline, Illinois. Andresen brings 25 years of aviation experience in engineering and product development at Boeing, most recently as a systems engineer in the innovation and portfolio management office. Elliott has also hired **Sorel Groesbeck** to serve as a talent acquisition specialist. Sorel has a background in recruiting in a number of industries, including higher education, manufacturing, and insurance and most recently worked with a large healthcare company.

**Pat Searle** has joined *Elliott Jets* as executive sales director. Searle, who brings 30 years of aircraft experience to his new role, most recently served as president and co-owner of Wetzel Aviation and before that as co-owner of Front Range Aviation.

*Elite Jets* has added four pilots—**Kevin Johnson**, **Allen Mounts**, **Tom Taylor**, and **Michael Grebb**, as well as executive charter consultant

**Josh Simpson**. A Legacy 500 captain, Johnson previously worked for TWA Express and U.S. Air Express, as well as serving as a contract pilot with the U.S. DoD. A Phenom 300 captain, Mounts was a personal pilot for a family owning a Phenom 300. A pilot since 1988 and also a Phenom 300 captain, Taylor has flown professionally since 2000 for charters, commercial airlines, corporations, and freight haulers. Grebb, who captains the Phenom 300 and Hawker 850XP, has served as a corporate and charter pilot, as well as a flight instructor, and has flown internationally. Simpson has served as an operations manager for a law firm, line technician at Naples Airport, and manager of a municipal airport.

*Duncan Aviation* has appointed **Brian Foersch** as Bombardier service sales representative at its facility in Lincoln, Nebraska. A U.S. Marine Corps veteran, Foersch has served with Duncan for seven years, holding engine lead tech and engine line team leader roles with responsibility for Rolls-Royce, Pratt & Whitney, and Williams engines.

*Cutter Aviation* has named **Nels Peterson** customer relations manager at its Phoenix facility. Peterson, who previously worked at a flight school and as an airline technician, initially joined Cutter as a technician and later moved into team lead and inspector roles. ■



## AWARDS and HONORS

*The National Aeronautic Association* (NAA) has selected seven aviation leaders for 2021 Wesley L. McDonald Distinguished Statesmen and Stateswomen of Aviation awards, including NBAA COO **Steve Brown**, Tailwinds Communications proprietor and long-time business aviation advocate **Cassandra Bosco**, and aviation safety expert and former National Transportation Safety Board member **John Goglia**.

Also being recognized are **Angela Gittens**, who retired last year as director-general of the Airports Council International; famed "Berlin Candy Bomber" Col. **Gail Seymour**; "Hal" Halvorsen, USAF (ret.); long-time GE Aviation executive **Jean Lydon-Rodgers**; and **Gen. John Raymond**, the chief of space operations for the U.S. Space Force.

Brown, who in addition to serving at NBAA has held leadership roles at NAA, AOPA, and the FAA, is recognized for his "four-decade-long career in aviation defined by passion, service, inspiration, innovation, and selfless

leadership." Bosco, meanwhile, was selected in recognition of 35 years of service in the aviation industry in communications and education that have been marked by "her passionate industry advocacy and commitment to the advancement of women in all aviation-related fields."

Goglia is being honored for "his lifetime of passion and dedication to aviation safety." NAA further is recognizing Angela Gittens for exemplary vision and leadership while at ACI. Halvorsen, a pilot who joined the U.S. Army Air Corp in 1942 and participated in the post-war Berlin Airlift, distinguished himself "through acts of goodwill, bravery, and determination as the 'Berlin Candy Bomber'."

Jean Lydon-Rodgers, who most recently was president and CEO of GE Aviation Services, is being honored for her leadership over nearly four decades at GE Aviation. Raymond served in the U.S. Air Force for 35 years and played an integral role in standing up the Space Force. ■





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