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DAVID MCINTOSH

Delta and Wheels Up to unite

by Curt Epstein

Delta Air Lines announced in mid-December that it has signed an agreement with Wheels Up that will make it the private aviation provider's largest stakeholder. In exchange, the airline offered up its aircraft charter/management subsidiary Delta Private Jets (DPJ) and a long-term commercial partnership. With the transaction expected to close shortly, it will create one of the industry's largest owned and managed fleets

of private aircraft. Delta Private Jets has a fleet of more than 70 managed business aircraft, while Wheels Up has an owned fleet of more than 115 Textron Aviation turboprop twins and jets. Terms of the deal were not disclosed, and Delta said more details will be announced after the transaction closes.

Wheels Up founder and CEO Kenny Dichter will continue leading the Wheels Up management team as the partnership

grows between the two companies. "Six and a half years in, it's incredibly validating to have a company that has Delta's reputation and position in the market and in the world being shoulder-to-shoulder with us," Dichter told **AIN**, adding that he reaffirms his company's longstanding partnership with Gama Aviation. He noted Gama pilots would continue to fly the Wheels Up fleet.

Under the proposed agreement, DPJ would continue to operate under its Part 135 certificate, which Dichter said could be used to develop aircraft management services at Wheels Up. "DPJ is a dynamic platform," he explained. "Growing the aircraft management business and adding more assets to the platform is absolutely in our forward plan."

A Delta spokeswoman confirmed that DPJ's customers and fleets will continue to operate with no interruption.

"This groundbreaking partnership will democratize private aviation, making the convenience of private jet travel accessible to more consumers," said Delta CEO Ed Bastian. "Wheels Up's lifestyle experiences and innovative digital platform, combined with the scale and service of Delta Private Jets, helps further Delta's mission of connecting people and communities through travel." ■

NTSB on doors-off crash: NYC flight was a 'death trap'

by Mark Huber

In language that was uncharacteristically blunt and direct, on December 10 National Transportation Safety Board (NTSB) chairman Robert Sumwalt accused the doors-off photo tour company NYONair, parent of FlyNYON, of turning "a perfectly good helicopter into a death trap" and characterizing it as "madness."

Sumwalt's remarks came as the NTSB held a public hearing in Washington to determine the probable cause of the fatal March 11, 2018 crash of an Airbus AS350B2 into New York City's East River that killed all five passengers aboard. The passengers drowned after the helicopter rolled inverted in the water

► continues on page 44

Air transport

Boeing suspends 737 Max production ► page 50

UAV

Volocopter gets EASA DOA nod ► page 10

Airports

NBAA calls for FAA to act on SMO ► page 14

Safety

NBAA program tackles human trafficking ► page 17

Training

Red 6 developers simplify airborne training ► page 32

Regulations

Foreign mx inspections get initial nod ► page 62

Defense

First Gripen E for Sweden flies ► page 42



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SPECIAL REPORT

2020 Forecast

As we enter a new decade and face the uncertainty of an election year in the U.S., **AIN** examines the issues that will shape the industry, from sales and maintenance to the environment and the developing tech to reduce bizav's impact.

► page 20

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46



38



40



32

FEATURE

A demonstration flight highlighted Red 6's ability to place interactive, 3D augmented reality virtual assets in the skies.

AIRPLANES and ENGINES

- 6 Bombardier delivers first factory-fueled SAF jet
- 10 Gulfstream delivers 400th G650-family aircraft
- 12 Aerion adds to SSBJ supplier base
- 12 Global production moving to Pearson
- 14 First HondaJet delivered in China
- 34 Textron reveals new special-mission capabilities

AIRPORTS and FBOs

- 6 Lawmaker wants airports to set noise restrictions
- 14 NBAA wants more action on SMO grant violations

AIR TRANSPORT

- 8 FAA: MCAS could have caused 15 more crashes
- 40 Boeing's ecoDemonstrator 777-200 visits NJ
- 50 Boeing to suspend 737 Max production
- 51 Authorities charge pilot in Aeroflot SSJ crash
- 51 Boeing's Tinseth envisions 'orderly return' of Max
- 51 United order for A321XLRs strikes blow to NMA

AVIONICS and TECHNOLOGY

- 48 Elliott installs G5000s on Excel/XLS
- 48 Thales reveals PureFlyt next-gen FMS
- 49 EIT Avionics matches FDR with display device
- 49 Garmin certifies G1000 NXi for Phenom 100

CHARTER and FRACTIONAL

- 1 Delta and Wheels Up to unite

DEFENSE

- 42 First Gripen E for Sweden flies
- 42 MD/Elbit team on MD 530G
- 42 NATO E-3As to fly until 2035

FLIGHT OPS, SAFETY, SECURITY, TRAINING

- 8 Bizav groups urge support for pilot in drug case
- 17 NATA program addresses human trafficking
- 28 Expert stresses need for sleep management at Safety Standdown
- 30 ICT to train ops officers as drone pilots
- 35 GOP leaders oppose DHS-operated C-UAS
- 37 Safety team studies DEF exemption, dyes
- 49 Aviation cybersecurity poses growing challenge

ENVIRONMENT

- 36 Harbour Air flies all-electric commercial model
- 38 Bombardier takes first SAF shipment at Montreal

INDUSTRY and MANAGEMENT

- 16 CVC unit closes on Ontic acquisition
- 18 Mentoring, networking key to future workforce
- 20 AIN looks ahead to 2020
- 38 Trade-A-Plane goes online-only
- 40 AOPA warns of spike in insurance rates

PEOPLE

- 12 AIN contributor Pete Combs passes away
- 50 UAL president Kirby to replace Munoz as CEO

REGULATIONS and GOVERNMENT

- 31 FAA asks for help on diverted airport revenue
- 36 FAA releases go/no-go medications list
- 36 U.S. Customs retires last Citations
- 62 House panel OKs bill for foreign mx inspections

ROTORCRAFT and UNMANNED SYSTEMS

- 1 NTSB: doors-off flight was a 'death trap'
- 10 Pilot of errant drone faces fine
- 10 Volocopter gets EASA design organization nod
- 46 Drone hits newscopter over Los Angeles
- 46 P&W tapped to power Russian VRT500
- 46 Falcon plans urban mobility terminal
- 47 Air Methods addresses health insurance costs
- 47 Thora Capital enters helicopter lease market
- 47 Firehawks delivered to three California agencies

DEPARTMENTS

- 56 Accidents | 50 Air Transport Update
- 48 Avionics Update
- 58 Completion Update
- 59 Compliance Countdown
- 52 Hot Section
- 8, 10, 12, 14 News Briefs
- 62 Other Voices | 60 People in Aviation
- 44 Rotorcraft Update | 18 Torqued
- 54 Touching Bases | Calendar

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As We Go To Press

GULFSTREAM HITS ONE MILLION MILES ON SUSTAINABLE FUEL

Gulfstream's fleet based at its Savannah, Georgia headquarters has now flown more than one million nautical miles on a blend of 30 percent low-carbon sustainable aviation fuel (SAF) produced from agricultural waste and 70 percent jet-A. Since 2016, the OEM has used renewable fuel to fulfill its corporate, demonstration, customer support, and flight-test needs. Over the course of more than 550 flights using the fuel—produced by California-based World Energy and supplied by World Fuel Services—the airframer has cut its CO₂ emissions by 1,300 metric tons. Gulfstream also has SAF available for customer purchase at its Long Beach and Van Nuys facilities.

NETJETS LAUNCHES SECURITY SERVICES SUBSIDIARY

NetJets has launched QS Security Services to provide global security as an add-on option for its customers. The new subsidiary will also help to enhance NetJets crew security by vetting airport-hotel transportation/routes and hotels used for crew rest, according to Jack VanderStoep, v-p of global security at NetJets and the head of QS Security Services. QS Security Services will initially be offered as a premium service on select routes with tiered security packages that correspond to both the destination threat level and passenger needs. The subsidiary later plans to add security consulting and training to its portfolio.

WIJET CLOSSES FRENCH SUBSIDIARY

WiJet, which wound down its UK operations last year and switched to an all-HondaJet fleet, has closed its French subsidiary, based at Paris le Bourget, saying it will restart operations on January 11 out of Luxembourg. WiJet's French subsidiary had been operating under the French equivalent of bankruptcy protection after it made arrangements to restructure its debts earlier last year. The company's HondaJets, of which it received the first of 16 in March, are flown by Flying Group under a Luxembourg AOC, but they had been available on an arrangement with Air France-KLM called La Première. It is not clear whether this relationship will continue.

GULFSTREAM'S D'LEON TAKES NBAA ROLE AS COTTI RETIRES

Elias "Eli" Cotti, who has provided in-depth expertise and represented the business aviation industry on maintenance and other technical matters for NBAA, has retired. Cotti has provided technical assistance to business aviation operators and served as the staff liaison

to the NBAA Maintenance, Technical, and Connectivity Committees. On a global stage, he has represented the business aviation community as an International Business Aviation Council observer to the ICAO Committee on Aviation Environmental Protection. Succeeding Cotti is Stewart D'Leon, who previously spent 14 years with Gulfstream as a field service representative.

NASA CLEARS FINAL ASSEMBLY OF LOW-BOOM DEMONSTRATOR

NASA has cleared the way for final assembly of the \$248 million X-59 Quiet Supersonic Technology (QueSST) demonstration aircraft. The X-59 is being developed by Lockheed Martin's Skunk Works and is part of NASA's integrated aviation systems program's low-boom flight demonstration project. The aircraft is shaped to mitigate the loudness of sonic booms reaching the ground and will be flown over select U.S. cities to gather data from sensors and people on the ground. Data gathered from the flights will be used to help regulators establish new rules to enable commercial supersonic air travel over land. Final X-59 assembly and systems integration is slated for this year, with first flight expected in 2021.

FAA PREPS FOR CHANGES IN NOTAM SYSTEM

Key changes are ahead for notices to airmen (Notams), including the consolidation into a single gateway, as part of a larger modernization effort of the system. The changes will be phased in over the next couple of years but begin with the planned sunset of the PilotWeb Notam System on January 24. At that point, pilots will use Notam search to access all Notams, the FAA said. In June, the FAA plans to turn off additional feeds to Notam manager to create a single technology gateway for entering, processing, and retrieving all Notam data. In March, the agency will start work to clean up and simplify the database with the removal of duplicative information found in Chart Supplements. The FAA plans to align domestic Notams to match the ICAO format by 2022.

ILLEGAL CHARTERS PROMPT RAMP CHECKS IN MEXICO

Mexico's Civil Aviation Federal Agency (AFAC), the regulator that recently replaced civil aviation authority DGAC, is performing random ramp checks on most U.S. Part 91 and 135 foreign flights at all of the nation's airports, according to Universal Weather & Aviation. Cabotage and illegal charters mostly operated by N-registered Part 91 aircraft are the reasons for the crackdown, Universal said. The ramp checks require the same documentation already needed for operating into Mexico.

Lawmaker seeks to permit airports to set noise limits

by Kerry Lynch

A Colorado congressman has drafted a bill that would permit general aviation airports to impose a range of operational restrictions—such as type of aircraft that can use their facilities—in response to local noise concerns. Offered by Rep. Joe Neguse (D), the Aircraft Noise Reduction Act is the latest introduced in recent months designed to facilitate local control over operational restrictions with others focused on helicopters and air tours.

Simplified Process

The Neguse bill would provide the authority for small airports to set curfews and limit the number and types of aircraft that can operate at their facilities. It also would prohibit the FAA from withholding federal funds from airports that choose to regulate aircraft noise.

Neguse pointed to a lengthy and difficult approval process that airports must undergo to impose such restrictions and noted few airports are able to impose them successfully. Congress approved the Airport Noise and Capacity Act of 1990 that required airports to undertake a comprehensive Part 161 study to justify the need for additional operational restrictions beyond nationally established standards.

That bill was passed to ensure a cohesive national approach to aviation noise regulation. In addition, most federal airports are bound by grant assurance agreements to make the facilities available on reasonable terms without unjust discrimination.

"Ensuring our local airports can effectively regulate aircraft noise pollution based on what works for them and their community is essential to promote the health and well-being of our communities," Neguse said. "This legislation is the result of...conversations with community members and local leaders from Boulder County, Superior, Louisville, Lafayette, Nederland, and elsewhere." Local leaders in Colorado gave their strong backing to the legislation.

The ability for local regulation over aircraft noise has been a recurring theme on Capitol Hill, but a series of recently introduced bills drew such consternation from industry that a half-dozen business and general aviation and helicopter organizations wrote lawmakers expressing concerns that they would upend the current regulatory model.

Those bills seek to ban helicopters over New York City, prohibit air tours over national parks and other areas of interest, and enable local leaders to impose their own restrictions on drone operations. ■



Bombardier has delivered its first new aircraft factory-fueled with SAF. Handing the twinjet over to charter/management provider Latitude 33 Aviation, the airframer is continuing its championing of sustainable fuel.

■ Bombardier delivers factory-SAF-fueled jet

Bombardier Business Aircraft, which in November accepted the first load of sustainable aviation (SAF) fuel at its Montreal headquarters, has delivered its first new aircraft, factory-fueled with the renewable fuel, as part of the OEM's continuing efforts to encourage operators on its adoption. The super-midsize Challenger 350 was handed over to San Diego, California-based aircraft management, charter, and sales provider Latitude 33 and it will become the sixth Challenger-series twinjet in the company's fleet.

"We are very pleased that the customer and Latitude 33 Aviation joined us in demonstrating that SAF can become a mainstream, drop-in alternative to traditional jet fuel for general aviation aircraft," said Peter Likoray, the airframer's senior vice president of worldwide sales and marketing. "Latitude 33 Aviation's trust as the first customer to fly away from our delivery center on these fuels represents a turning point in the longstanding and industry-wide pledge to reduce CO₂ emissions." **C.E.**

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As of last month, the 737 Max fleet had been sitting grounded since March 2019. Boeing had hoped to return the airplane to service by the end of last year, but that was delayed into this year.

DeFazio: FAA ‘rolled the dice’ in delaying Max grounding

by Gregory Polek

House of Representatives Transportation Committee chairman Rep. Peter DeFazio on December 11 called for a commitment by FAA administrator Stephen Dickson to investigate why the agency did not ground the 737 Max when its own analysis performed after the October 2018 crash of Lion Air Flight 610 projected as many as 15 more fatal accidents over the model’s service life if its flight control problem went uncorrected. Speaking during the fifth transportation committee hearing on the twin crashes of the 737 Max that claimed 346 lives, DeFazio further noted that the FAA also reached the conclusion that 99 out of 100 flight crews could comply with the airworthiness directive and successfully react within 10 seconds to the “cacophony” of alarms and alerts recounted in the Lion Air accident report.

“Such an assumption we know now was tragically wrong,” he said. “Despite its own calculations, the FAA rolled the dice on the safety of the traveling public and let the Max continue to fly until Boeing could overhaul its MCAS software. Tragically, the FAA’s analysis, which never saw the light of day beyond the closed doors of the FAA and Boeing, was correct.”

Following the October 29 crash of the Lion Air Max, the FAA issued an emergency airworthiness directive giving pilots of Boeing 737 Max 8s and Max 9s procedures to follow in the event of runaway horizontal trim caused by faulty angle-of-attack inputs to the airplane’s flight control system. The AD came a day after Boeing issued an operations manual bulletin in response to investigators’ findings that the Lion Air 737 Max 8 that crashed into the Java Sea on October 29 experienced erroneous input from one of the sensors. According to the AD, an analysis performed by Boeing showed the defect could lead to repeated nose-down trim commands of the horizontal stabilizer, thereby compromising aircraft controllability and leading to excessive nose-down

attitude, “significant” altitude loss, and, ultimately, a crash. While the directive required a revision to the chapters in the airplane flight manual dedicated to certificate limitations and operating procedures for addressing runaway stabilizer, it did not mention the system implicated in both the Lion Air and March 2019 Ethiopian Airlines crashes by name.

“The FAA issued an emergency airworthiness directive that purported to inform pilots on how to respond to an erroneous activation of MCAS while actually never

mentioning the system by name,” said DeFazio. “In fact, during the certification of the 737 Max, Boeing actively pushed the FAA to remove references to MCAS from the flight crew operating manual, as revealed in the emails and instant messages from Boeing executive Mark Forkner.”

For his part, Dickson noted that he began his tenure at the FAA after the agency performed the analysis while expressing a desire “to advocate for [his] people.”

“The FAA is a data-driven organization... With all due respect, any indication that any level of accidents is acceptable in any analysis is not reflective of the 45,000 dedicated professionals at the FAA... The reason that we have the safest airspace in the world has been through decades of developing data systems and decision-making tools that will allow us to make the best decisions and prioritize in the interest of safety.” ■

Business aviation groups urge NTSB to back pilot in drug-test case

NBAA, AOPA, and NATA are jointly urging a National Transportation Safety Board (NTSB) administrative law judge to reject an FAA appeal for full certificate revocations of a pilot, saying the appeal fails to recognize due process.

The three associations jointly filed an amicus brief in defense of the charter pilot, James Knight, who had his certificate revoked after testing positive for drugs. Knight, who had spent an evening with his child in the emergency room, had said that at the time he had inadvertently taken a single dose of his child’s prescription for ADHD, Vyvanse, instead of his own prescription for cholesterol medication. Knight a few days later was subjected to a random drug test and failed. He subsequently faced certificate revocations.

In September, NTSB administrative law judge John Schumacher reduced the revocation to a 90-day suspension, citing the mitigating circumstance. The judge also found his testimony that the incident was accidental, along with that of a corroborating witness, to be credible.

But the FAA is appealing the decision, pushing for full revocation.

The FAA is arguing that its decision to sanction through certificate revocation is not reviewable by the NTSB and that the NTSB should determine that any violation of the drug-testing requirement automatically demonstrates a lack of qualifications, according to the brief filed by the three associations.

However, the associations argue that the FAA’s arguments “would stretch its authority to preclude NTSB review in cases of inadvertent ingestion, essentially eliminating inadvertent ingestion as an affirmative defense. This goes too far.”

The FAA’s own guidance permits less punitive sanctions, they added, noting guidance says revocation is “generally” not “automatically” warranted.

“Fortunately, the complete discretion argued for by the FAA is not the accepted standard under case law or Board precedent,” they said. “Similarly, the FAA’s disregard of its own guidance is arbitrary and unreasonable.” **K.L.**

News Briefs

Gulfstream Opens New MRO at Van Nuys Airport

Gulfstream Aerospace officially opened its second company-owned maintenance, repair, and overhaul facility in Southern California on December 11. The new service center at Van Nuys Airport (VNY) offers sizeable ramp space and access to sustainable aviation fuel (SAF), the Savannah, Georgia-based airframer said. “Southern California, especially Los Angeles County, is a prime location for Gulfstream business jets, and with maintenance facilities in both Van Nuys and Long Beach, we have the resources to assist customers...faster and more efficiently,” said Gulfstream customer support president Derek Zimmerman. Encompassing 66,000 sq ft (6,132 sq m), the VNY facility includes 43,000 sq ft (3,995 sq m) of hangar space. It also has easy access to Gulfstream’s West Coast parts distribution center that also serves as a local operating base for the company’s field and airborne support team.

NBAA: For ADS-B Privacy, Use Existing, New Programs

As the FAA moves to offer new privacy protections as part of the transition to ADS-B, NBAA is advising members seeking those protections to continue participating in the existing program, the Limiting Aircraft Data Displayed (LADD), as well as add the upcoming Privacy ICAO Address (PIA) program. This will provide maximum security for members seeking to shield their travels on a real-time basis. LADD does not prevent ADS-B-compliant mode-S transponders from continuously emitting a 24 bit ICAO address that can be directly linked to identifying information. Thus, the FAA developed the PIA program to address the “hole in the LADD program.” The FAA will issue operators a PIA in addition to their normal 24 bit ICAO code. “Receivers that pick up the PIA will not be able to determine aircraft ownership information,” NBAA said. However, the code will still transmit a call sign.

Avionics Sales Continue Double-digit Climb

For the 11th consecutive quarter, business and general aviation electronics sales rose year-over-year in the third quarter, according to the Aircraft Electronics Association’s latest Avionics Market Report. Total sales for the first nine months climbed 14.3 percent to \$2.2 billion, compared with \$2.0 billion in the same period in 2018. Retrofit sales in the first nine months totaled \$1.20 billion, outpacing forward-fit sales of \$1.07 billion, AEA reported. Retrofit sales were 5.4 percent higher than 2018 while forward-fit sales jumped 26.2 percent in the same period. The largest share of sales in the first nine months, 74.9 percent, were garnered by AEA members in North America (U.S. and Canada).



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Volocopter receives EASA's first DOA nod

by Charles Alcock

The European Union Aviation Safety Agency (EASA) early last month awarded eVTOL aircraft developer Volocopter Design Organisation Approval (DOA). As an approved design organization, the company now has a higher level of authority to conduct tasks associated with the development and manufacturing of aircraft under EASA rules and processes.

Volocopter claims to be the first eVTOL startup company to receive the DOA clearance from EASA. The German company said this will give it a competitive edge in being able to accelerate the pace of getting its aircraft into production.

The DOA process means that EASA exercises its oversight of approved companies



Volocopter receives Design Organisation Approval from EASA, left to right: Florian Reuter, CEO Volocopter; Jan-Hendrik Boelens, CTO Volocopter; Rachel Daeschel, certification director EASA; Patrick Ky, executive director EASA.

as a whole. This reduces the number of steps that have to be completed on the path to granting type certification and airworthiness approval for products.

"Awarding the first DOA with a scope of work for VTOL is a milestone for industry," said EASA executive director Patrick Ky. "We are happy about the successful cooperation and the fact that our safety standards are now part of the rising eVTOL market."

In July, EASA published its new Special Condition rules for certifying VTOL aircraft. Volocopter is seeking a type certification for its VoloCity aircraft by the end of 2022. ■



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

News Briefs

Textron Aviation Announces Wichita Layoffs

Textron Aviation laid off hundreds of employees at its Wichita headquarters at the end of last month. Positions primarily affected by the move were professional, the manufacturer told AIN, including engineers and business support staff. A Securities and Exchange Commission (SEC) filing by parent company Textron Inc. early last month put the number at 875. Textron's hourly workers in manufacturing and customer support aren't expected to be affected by the job cuts. Textron employs about 9,500 people in Kansas, the majority in Wichita, where it assembles Beechcraft airplanes and Cessna Citation twinjets and turboprops. The action follows a voluntary retirement program Textron offered recently to some salaried-exempt employees in Wichita.

Jet Aviation's Paddock Is Next Chair of GAMA

GAMA named its 2020 executive leadership with Jet Aviation Group president David Paddock stepping in as chairman, succeeding Gulfstream Aerospace president Mark Burns in the GAMA role. Burns remains on the Executive Committee as the immediate past chair. Meanwhile, Nicolas Chabbert, Daher's senior v-p for aircraft, is the new vice chairman, succeeding Paddock in that role.

IBAC, EBAA Plan Sustainability Initiative

One Young World, EBAA, and the International Business Aviation Council have launched a sustainability initiative dubbed Standards & Training for Aviation Responsibility and Sustainability (STARS). They have started a STAR webinar series as part of a program that involves development of a three-tiered sustainability label and guidance that will be integrated into existing IS-BAO and IS-BAH programs. STARS aims to support business aviation through increased awareness of social and environmental issues that can be addressed by business aviation through the creation of partnerships, guidance, and best practices.

Kopter Freezes SH09 Design

Kopter has frozen the design of its SH09 turbine single-engine helicopter and will begin assembly of its first production aircraft by midyear. It further said the final design will be revealed later this month at Heli-Expo in Anaheim, California, where it plans to present a full-scale mockup of the helicopter kitted with a seven-seat "Traveller" configuration designed and manufactured in cooperation with Metro Aviation. The design freeze comes one year after Kopter began accelerated flight testing of its P3 prototype aircraft in Pozzalla, Italy. Kopter also said it would reveal its SH09 training simulator developed with VRM Switzerland at Heli-Expo. Earlier last year, Kopter announced it was redesigning the SH09 to feature a larger cabin and increased mtow.

Gulfstream delivers 400th G650-family twinjet

Gulfstream Aerospace on December 5 delivered the 400th G650/650ER, some five years after the first of the ultra-long-range twinjets entered service. The milestone aircraft was handed over to an undisclosed U.S.-based customer, the Savannah, Georgia-based aircraft manufacturer said.

"Business jet travelers the world over have long recognized the G650ER as the leading combination of speed and range in the business aviation sector," said Gulfstream president Mark Burns. "Its achievements and accolades have only mounted since its introduction, including 100-plus city-pair speed records, the prestigious Robert J. Collier Trophy, and the title for the farthest, fastest business jet flight in history. We could not be more

pleased to deliver the 400th aircraft in the G650 and G650ER fleet."

Since entering service just five years ago, the G650 family "quickly gained recognition for its ability to connect far-flung cities at the fastest speeds," the company said. "The G650ER offers passengers both style and comfort with the signature Gulfstream cabin experience, featuring 100 percent fresh air, the lowest cabin altitude in business aviation, quiet sound levels and 16 of the industry's largest windows."

The G650 can fly up to 7,000 nm/12,964 km at Mach 0.85, while the G650ER has a range of 7,500 nm/13,890 km at the same long-range cruise speed. Both aircraft have an Mmo of Mach 0.925—the current top speed for in-production civil aircraft. C.T.



The G650/650ER has been a great success for Gulfstream Aerospace, with the 400th example being delivered just five years after the ultra-long-range jet entered service.

Pilot of errant drone fined \$20K

by Mark Huber

The FAA has fined the pilot of an errant recreational drone \$20,000 for landing next to an active runway in Las Vegas. Reuben Burciaga lost control of his DJI Phantom 3 shortly after launching from a parking garage in June 2018 and flying toward the 550-foot tall passenger observation wheel at the Linq Hotel's open-air entertainment complex on the Las Vegas strip. It then continued to fly on its own, uncontrolled, at an altitude up to 450 feet agl until it landed at the airport. The garage was within the normal five-mile drone exclusion area around McCarran International Airport.

After tracing the drone to Burciaga, the FAA cited him for nine separate violations, including flying in controlled airspace, flying over people, and posing a hazard to other aircraft. He was initially fined \$14,700, which was increased to \$20,000 when he failed to appeal or pay on time.

In a video, Burciaga claimed the Secret Service "intercepted" his drone. If true, this could expose Burciaga to criminal charges related to violation of a presidential TFR. Trump arrived in Las Vegas on the morning of June 23, 2018, to deliver a speech. ■

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AIN mourns passing of contributor, podcast host

by Rob Finrock

Veteran broadcast journalist and longtime **AIN** contributor Pete Combs flew west December 12, 2019 following a brief illness. He was 60.

Combs worked for more than four decades as a radio, television and print reporter, most recently for ABC News Radio and AM 750-WSB in Atlanta, Georgia. While reporting on news from across all aspects of life was truly his passion, Combs also held particularly strong ties to the general aviation community as a certificated private pilot and past owner of a Grumman Tiger.

Over the past decade, Combs was a regular freelance contributor to **AIN** and since 2017 had hosted **AIN**'s monthly "Tales from the Flight Deck" podcast, examining safety-related matters from the firsthand perspectives of professional pilots and flight crews.

"Working with Pete was a breath of fresh air," recalled **AIN** executive editor Mark Phelps. "He was the poster-child professional, but his sense of humor and modest demeanor brought a sense of calm to what can be a chaotic workday. The aviation world has lost an amazing aviator and journalist, and we will miss him deeply."

Combs also contributed print and audio-visual material for the National Business Aviation Association (NBAA), which in early December honored him with its

Silk Scarf award. In bestowing that award, NBAA president and CEO Ed Bolen called Combs "a consummate media professional, one who consistently reports on matters within the business aviation community accurately and responsibly."

That was just one of numerous honors Combs received throughout his distinguished career, including five Edward R. Murrow Regional Awards and frequent recognition by Associated Press Broadcasters Associations in Georgia, Florida and Oklahoma. In September, shortly after he was diagnosed with lung cancer, Combs received a 2019 "GABBY" award for Best News Reporter from the Georgia Association of Broadcasters.

Though equally comfortable as an in-studio anchor, Combs was happiest when he was out in the field, interacting with those affected by the stories he reported. This frequently meant he was on the road chasing storms, including on-scene reporting from Haiti in 2010 that emphasized post-hurricane relief efforts undertaken by private pilots. In 2018, his coverage of Hurricane Michael's aftermath along the Florida panhandle led to the award-winning documentary, "Blue Tarp Christmas."

"Pete's talents weren't just limited to his incredible voice; he followed the story far deeper than most journalists, and he preemptively answered all the questions



that I would hope to have asked if I were doing the story," said **AIN** editor-in-chief Matt Thurber. "His passion for the subject and the people involved radiated from his broadcasts and writing."

Combs was a U.S. Air Force veteran, serving as a Broadcast Information Specialist in the U.S. and overseas, and he received his Bachelor of Arts Degree in Journalism from Georgia State University. He is survived by his wife, Karen; son, Daniel; stepchildren, Morgan and Blake; and siblings Cathy and Stephen. ■

Aerion adds to AS2 supplier list

Aerion Supersonic's AS2 supersonic business jet is beginning to take shape as the Reno, Nevada-based aircraft designer continues to select major supply and design partners. This includes announcements made last month that GKN will provide the empennage and electrical wiring and interconnection systems (EWIS) and Aernnova will develop the mid-fuselage.

GKN already has begun design work in collaboration with Aerion both at GKN's engineering centers in the Netherlands and Romania, as well as at Aerion's Reno facility.

"Aligning with industry-leading partners is key to making sustainable supersonic travel a reality," said Aerion CEO Tom Vice.

Vice further praised Aernnova's proven track record in design and in the manufacture of complex aerostructures in its selection for the mid-fuselage section that will be capable of supporting supersonic flight. Like GKN, Aernnova is a Tier 1 supplier for numerous aircraft programs, providing wings, empennages, and fuselage sections, among other key components.

They join GE Aviation, Spirit Aerosystems, and Honeywell on the AS2 program.

Aerion Supersonic further has partnered with Boeing on the overall program and expects to begin flight testing the Mach 1.4 AS2 in 2024. **K.L.**

News Briefs

Italy Gives Green Light for Piaggio Sale

Piaggio Aerospace has received the go-ahead from the Italian government to seek a buyer, following a nearly year-long restructuring process that officials claim has resulted in orders and commitments totaling \$919 million for the beleaguered aircraft manufacturer. It has now launched an international call for tenders and accelerated the process for the sale of the company assets, according to Vincenzo Nicastro, Piaggio Aerospace's government-appointed extraordinary commissioner.

"Our goal is to identify a new owner who is interested in taking over Piaggio Aerospace in its entirety, and to complete the process by autumn." The manufacturer and its subsidiary engineering unit, Piaggio Aviation, entered the restructuring process in December 2018. Since then, it has worked to fill its order book, which includes nearly \$300 million in contracts from its engine and customer-support units as well as orders for new aircraft.

Illegal Charters Prompt Return of NATA Summit

The National Air Transportation Association (NATA) will revive its annual Air Charter Summit for Part 135 operators as concerns about illegal charter operations grow. It will be held from June 16 to 20 in Washington, D.C. According to NATA COO Tim Obitts, "2020 is a great time to bring back the Air Charter Summit, particularly now as the world focuses on the issue of combating illegal charter operations and sham dry leases, whereby the lessee does not have operational control of the aircraft." NATA has seen a "dramatic uptick" in the number of filings on its illegal charter hotline and online portal in the past few months. In its Illegal Charter Survey, about 90 percent of survey respondents said they had knowledge of illegal operations but only 50 percent reported them.

NBAA Offers Guidance To Abate Insurance Hikes

In the face of soaring insurance rates, NBAA is advising members to emphasize their safety culture and compliance efforts to underwriters to help soften increases. "The insurance market has bottomed out just as we're seeing a skyrocketing number of catastrophic loss claims," Joseph Braunstein, managing director and general aviation practice leader at insurance broker Marsh USA, told NBAA. "Underwriters are now pushing sizable increases because they must remain viable." This process is taking longer, Braunstein further said, with renewal conversations now beginning as early as six months in advance of expiration rather than the typical 120 days. Despite the sharp increases, NBAA stresses operators can take steps to find the right insurer and buffer the rate hikes, such as inviting underwriters to their facilities so they can have a first-hand look at the safety culture.

Global assembly moving to Pearson

Bombardier will move final assembly of Global family aircraft from Toronto Downsview Airport to Toronto Pearson International Airport in early 2023, the company announced early last month. It cemented the deal on December 4, signing a long-term lease with the Greater Toronto Airports Authority to build a one-million-sq-ft Global Manufacturing Centre on a 41-acre lot at Toronto Pearson, which is located some 12 miles from Downsview in Mississauga, Ontario.

The relocation "is a strategic move for Bombardier and a strong commitment to Ontario's aerospace industry," said Bombardier Inc. president and CEO Alain Bellemare. He added that the facility will be equipped with modern production methods and tooling, including an automated positioning system that uses laser-guided measuring to accurately join together major aircraft structures, such as the wing and fuselage.

According to Bombardier, preliminary site work is now under way in Mississauga, with first production activities on the Global 5500, 6500, and 7500 set to begin



Bombardier is shifting final assembly of Global 5500s, 6500s, and 7500s to a new facility at Toronto Pearson Airport.

there in 2023. Production capability at the new facility will be 100 aircraft a year, a Bombardier spokeswoman told **AIN**.

Meanwhile, Bombardier will also leverage significant recent R&D investments and a continued collaboration with Ontario's colleges and universities for training, research and development. It will also make a multimillion-dollar contribution to the Downsview Aerospace Innovation and Research Consortium to develop an aerospace hub for academic research and training activities. **C.T.**

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FAA: city of Santa Monica violated grant assurances

by Kerry Lynch

NBAA is appealing a recent FAA determination that the city of Santa Monica is in violation of its grant agreements, saying the November 8 decision does not go far enough. In the decision, the FAA found the city of Santa Monica was in violation of grant assurances surrounding economic nondiscrimination and airport revenues and further determined that the city could not establish compliance with a grant assurance covering reasonable rates and fees.

Specifically, the decision finds the city has not adequately documented interest-bearing loans made to the airport, its landing fees and rates do not reflect actual use of the airport, and that it needs to supplement a corrective plan surrounding the below-market rates assessed on Santa Monica College, which uses airport property.

These findings come in response to a formal Part 16 complaint that AOPA, NBAA, and local tenants filed against the city in 2016. That complaint alleged that the city was diverting revenues by charging principal and interest on loans to the airport without valid documentation. In addition, the interest on those loans exceeded allowable rates, it said.

The Part 16 complaint questioned the validity and amount of \$16 million of loans from the city to SMO, along with the length of time surrounding the loans, as well as the interest rates. Further, the complaint called the documentation and interest computations “inconsistent with federal requirements.”

Santa Monica claimed “it is legally entitled...to be repaid for the millions of

dollars it has loaned to the airport.” It also claimed the loans were documented at the time they were made. The city said it would “implement a corrective action plan to recalculate the accumulated interest on its loans.”

However, the FAA said, “A review of the record concerning the alleged loans made by the city show numerous instances of insufficient documentation. This includes agreements lacking signatures, no stated or documented interest rate, no substantive terms to validate the transaction, backdating, no loan instrument for claimed transactions, and recent documentation ‘superseding’ earlier documentation.” The FAA called on the city to stop repayment of certain amounts, stop collecting on loans pre-dating 2010, and furnish documentation that the interest rates match those of other loans.

Further, the complaint cited the imposition of excessive and unreasonable landing fees on both based and transient aircraft without reasonable notice. Santa Monica contended it is permitted to charge compensatory fees and that the rates dating back to 2013 meet legal standards.

But the FAA found that the city’s justification for its landing fee methodology and rates does not reflect current and actual costs and use of the airport in light of the fact that the more recently shortened runway has changed the use and types of aircraft accessing the airport. The methodology for these charges is unclear, the FAA said, directing to the city to update its fees to reflect actual costs in the use of the airport. While the FAA largely agreed with some of the industry’s contentions, the agency did not find the city’s new leases and month-to-month structure in violation, saying that the structure is generally consistent with a 2017 “Settlement Agreement” that enabled the shortening of the runway and clears the way for the eventual closure of the airport. Further, that agreement released the city from certain obligations, the agency added.

NBAA, however, believes the FAA did not adequately address the issues involved. “This is a complex Part 16,” said NBAA director of airports and ground infrastructure Alex Gertsen. “Although the FAA did find that a significant number of loans between the city and the airport are invalid and/or charged excessive interest, further rulings by FAA are required.”

The association asserted the city engaged in revenue diversion that extended beyond the FAA’s finding, citing mathematical and other errors, and said the FAA should require reimbursement. Gertsen added the FAA should have ordered other immediate compliance measures, including a suspension of landing fees until a new fee is determined.

“Corrective action on these issues must be taken by the FAA, not just to rectify the incorrect and possibly illegal actions at SMO, but also to maintain a consistent national policy that airport finances must be properly documented and landing fees thoroughly justified,” Gertsen said. ■

News Briefs

Canada Aims To Raise Bar on Air-taxi Safety

Canada’s Transportation Safety Board (TSB) issued four new recommendations to address concerns surrounding hazard management and acceptance of unsafe practices after a new study of air-taxi accidents highlighted a stagnant fatal accident record. The study determined that air taxi mishaps fall into two broad categories: acceptance of unsafe practices (the subject of three active recommendations) and inadequate management of operational hazards, such as flying overweight, flying into known icing conditions, flying with non-operating equipment, inadequate fuel reserves, poor crew coordination, unstable approaches, and loss of visual references in marginal weather or at night.

Runway Warning System Now Installed at 20 Airports

The FAA’s Runway Status Lights (RWSL) system is now operational at all 20 major U.S. airports. The technology alerts pilots and vehicle operators to stop when runways and taxiways are not safe to enter, cross, or begin takeoff. Red lights embedded in the pavement illuminate when the presence of other traffic creates a potential conflict. RWSL uses the airport’s surface surveillance system to determine the location of aircraft and vehicles. The lights are fully automated, requiring no input from air traffic controllers. A report on the effectiveness of RWSL at the 15 airports where it was operational in 2017 found an overall 52 percent reduction in the average runway incursion rate.

Gulfstream Starts European Deliveries of G500

Gulfstream Aerospace has begun deliveries of its G500 in Europe. The aircraft was handed over to an undisclosed Western-Europe-based charter operator during a ceremony at Gulfstream’s headquarters in Savannah, Georgia. The long-range, large-cabin twinjet received validation from the European Union Aviation Safety Agency in October and is in service in North America, Brazil, the Middle East, and Europe, according to Gulfstream.

Canada Looks To Add SAF at Vancouver Intl. Airport

With an aim toward advancing the availability of sustainable aviation fuel (SAF) in Canada, fuel provider SkyNRG has partnered with several industry stakeholders to launch BioPort YVR. The new organization will consider the viability of implementing regional supply chains to distribute SAF at Vancouver International Airport (YVR), Canada’s second-busiest airport, and its surrounding British Columbia aviation gateways. A comprehensive feasibility study is due in March, after which project partners will develop a series of recommendations for the introduction of SAF at YVR.

Honda Aircraft begins HondaJet deliveries in China

The HondaJet Elite fleet has expanded to China, with the first in-country delivery to Honsan General Aviation, Honda Aircraft’s dealer in China. This follows Chinese CAAC validation of the very light jet in August.

Japanese leasing company Mitsubishi UFJ Lease & Finance financed the aircraft, which was handed over to Honsan at Honda Aircraft’s Greensboro, North Carolina headquarters. Honsan will provide sales and service support for HondaJet customers at Guangzhou Baiyun International Airport.

“Delivering the first HondaJet to China is a significant milestone for Honda Aircraft,” said Honda Aircraft president and CEO Michimasa Fujino. “We will continue to showcase the many benefits of very-light jet travel with the HondaJet Elite.”

Fujino added Honda Aircraft strives not only to highlight the benefits of the HondaJet but also to “add value to the general aviation industry in China and eventually revolutionize it.”

“We are eager to develop the very-light jet market in China with the HondaJet and its performance,” said Honsan General Aviation CEO Cheng Qian.

Honda Aircraft has methodically opened HondaJet sales to markets over several years as it felt ready to provide the necessary support. Its sales and support network now includes North America, Europe, Latin America, Southeast Asia, China, the Middle East, India, and Japan, and the HondaJet fleet numbers 140 aircraft. K.L.



Honda Aircraft continues to expand markets for the HondaJet, most recently to China. The company’s sales and support network now includes North America, Europe, Latin America, Southeast Asia, China, the Middle East, India, and Japan.



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CVC business unit closes on acquisition of Ontic

by Jerry Siebenmark

CVC Capital Partners' CVC Fund VII has completed its purchase of BBA Aviation's Ontic, a manufacturer of OEM-licensed parts for legacy aircraft, in a deal valued at more than \$1.3 billion. The deal, first announced in July, offers Ontic a new financial partner that can respond quickly to new business opportunities that Ontic identifies, CEO Gareth Hall told *AIN*.

"Clearly, [CVC is] a financial owner that comes with deep capital capacity," Hall said. Provided Ontic can make a solid investment case, that capital should be available quicker because Ontic won't have other businesses vying for capital as it did under BBA's corporate structure.

"We don't have the same constraints under CVC ownership," Hall added. CVC also will offer Ontic counsel on ways it could make its business more effective and efficient, he said.

Ontic flourished under BBA ownership, Hall added. When BBA acquired it in 2006, Ontic's annual revenue was \$60 million. This year, he expects it to reach nearly \$270 million in revenue. At the same time, BBA invested more than \$300 million in Ontic's business.

"We are thankful for all of the support we received from BBA Aviation and we are looking forward to our continued success and future growth with CVC," Hall said. "This is an exciting time for our business to move forward as an independent organization with a strong, new financial partner as the owner, and the opportunity to

do so much more with our OEM partners."

Its growth under BBA made Ontic an attractive acquisition for CVC. "Ontic has experienced significant growth over a sustained period as a result of the distinct and genuinely value-added solution the company provides to both OEMs and end-users," CVC Capital Partners senior managing director James Mahoney said.

"This is an exciting time for our business to move forward as an independent organization..."

— Gareth Hall, Ontic CEO

Cheltenham, UK-based Ontic supports more than 39,000 on-service aircraft through a portfolio of more than 165 licenses to manufacture more than 7,000 parts. It has more than 1,200 customers and manufacturing and repair facilities in Chatsworth, California; Creedmoor, North Carolina; Plainview, New York; Cheltenham; and Singapore. About 55 percent of Ontic's revenue comes from military aviation with another 40 percent from commercial aviation, Hall said. Business and general aviation make up the remainder of its revenue, according to Hall. ■



Ontic, a manufacturer of OEM-licensed parts for legacy aircraft, has grown its revenue by almost \$210 million under nearly 13 years of ownership by BBA Aviation.

NATA program addresses human trafficking

by Kerry Lynch

In recognition that FBOs can serve as a gateway for human trafficking, the National Air Transportation Association (NATA) is working with the U.S. Department of Homeland Security (DHS) on training videos for aviation businesses to remain on the alert for such activity. NATA COO and general counsel Tim Obitts discussed those efforts recently as the association kicked off its 2019 NATA Aviation Leadership Conference. The two-day conference gathered the association's leadership, who received updates from Capitol Hill, the insurance industry, regulators, industry leaders, and analysts, among others.

Keynoting the opening luncheon was Philip Langford, president, North America, for the International Justice Mission (IJM), which has waged a global battle against trafficking. Langford painted a picture of some 40 million men, women, and children trapped in slavery, whether through forced labor or prostitution, in what amounts to a \$150 billion business.

"The brutality is real...It is more vast, more brutal than at any time in history," Langford told conference attendees. But he also offered a message of hope, saying the activity is more stoppable than ever before, particularly when government scrutiny ramps up, increasing the risks for the traffickers. While the vast majority of trafficking occurs in less developed nations where police and government intervention is minimal, it is a global problem, he said.

DHS already has been working with commercial airports on awareness, and training for human trafficking is a requirement in Part 135. But Obitts worried that not all Part 135 operators are aware of those requirements or might participate unsuspectingly. He also noted that many of these cases might involve piston airplanes, which use small uncontrolled airports in rural areas to transport victims.

IJM is collaborating with the Polaris Project on a mapping initiative to track the paths and activities of trafficking. It also has been working with governments to turn the tide in locations where the police have remained hands-off, or worse, even complicit in trafficking activity, Langford said.

He underscored the importance of those efforts, noting in the Philippines city of Cebu, trafficking

dropped 79 percent within four years after government intervention stepped up. Subsequent efforts resulted in a 75 percent drop in Manila. "When the risks go up, [traffickers]

get out of the business. They are there to make money, not go to jail," Langford said.

He noted the lies, threats, and intimidation traffickers engage in to lure their victims—mostly poor and in desperate situations—into slavery. Langford's first exposure was in India, initially to save girls from brothels. "My wife and I were swept away by the mission," he said.

His first case involved a family enslaved

at a rice mill. Local authorities initially were uninterested in addressing the issue, but after convincing a local official to go visit the mill, the view changed. There, a man was crumpled on his knees behind barbed wire crying out to the official for help. The rice mill owner would repeatedly stab him with an elongated sewing needle to make him an example. "Now there is no question what the local official's number one priority is," Langford said. ■



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Full-throttle opinion from former
NTSB member John Goglia

Timely air-taxi safety investigation from our neighbor to the north

While the 737 Max story continues to be written, other intractable aviation issues remain that also deserve focused attention by government and industry. For that reason, I was glad to see Canada's recent Transportation Safety Board (TSB) special report on air-taxi safety issues. The Transportation Safety Board of Canada is Canada's equivalent of the U.S. National Transportation Safety Board. Its mission is to conduct independent accident investigations and provide safety recommendations. Like the NTSB, it does not assign fault or determine liability for an accident.

Air-taxi accidents continue to be a concern, both in the U.S. and in Canada. The NTSB's Most Wanted List for the years 2019-2020 includes the entry, "Improve the Safety of Part 135 Aircraft Flight Operations." Because air-ambulance, air-taxi, charter, and on-demand operations are not required to adopt formal safety management systems (as Part 121 operators are) the NTSB recommends "all Part 135 operators should implement safety management systems and flight data monitoring programs that address the unique risks associated with their operations, and the FAA should ensure compliance with standard operating procedures." As of the latest update, all but one of the specific NTSB recommendations remain open.

Much as the Part 135 safety record remains a concern in the U.S., the same is true in Canada where, according to this latest report, "the air-taxi sector has more accidents and more fatalities than all other sectors of commercial aviation in Canada." While, of course, there are differences between flying air taxis in Canada and the U.S., the Canadian findings and conclusions might have a bearing on U.S. accidents and are worth considering if you operate an air taxi or work for one.

Prevalent Safety Issues

According to the report, the TSB's analysis of the period between 2000 and 2014 found that the type of occurrences that resulted in the highest numbers of aircraft fatalities—fixed-wing and helicopter—were flights that "began in visual meteorological conditions but proceeded to a point where the pilot lost visual reference with the ground." While this is not a particularly surprising finding, what was of particular interest to me was that the pilots in these accidents had a combined average of 5,000 hours of experience.

As the TSB concluded, it does not appear that pilot experience is a mitigating factor in preventing these types of

accidents. I am familiar with NTSB accident investigations where experienced pilots knew the weather along their route of flight was changing, even changing rapidly, and yet made the fatal decision to take off anyway, whether under company pressure or driven by their own desire to reach the destination.

The TSB report further concluded that air-taxi accidents fell broadly into these categories: acceptance of unsafe practices (e.g., flying overweight, flying into forecasted icing, not recording defects in the aircraft log, flying with unserviceable equipment, "pushing the weather," and flying with inadequate fuel reserves); and inadequate management of operational hazards (e.g., inadequate response to aircraft emergencies, inadequate crew coordination contributing to unstable approach, visual flight rules flight at night, loss of visual reference in marginal weather conditions, and scales not available for weight and balance calculations).

While these are broad categories, I think they summarize well safety issues prevalent in so many aircraft accidents I have either worked on or accident reports I have reviewed. Not surprisingly, the report contains numerous recommendations to address these findings. I recommend reading the full report for insights that might be of help to your specific operations. Among the many important observations in the report, the role that clients and passengers have in the safety equation is significant and different from their role in other aviation sectors. And this is an area where charter associations, and charter travel agents, could play a role in educating air-taxi users not to apply undue pressure to pilots to launch a flight they're uncomfortable with.

While the complete list of recommendations from the TSB is too lengthy to repeat here, there is one I thought was worth highlighting. Not surprisingly, perhaps, the Canadian TSB also recommends that all commercial aviation operators be required to adopt a safety management system. Sound familiar? Indeed, implementing SMS in Part 135 operations is on the NTSB's Most Wanted List for 2019-2020.

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

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Safety Stand Down

Mentoring and networking key to future workforce

by Kerry Lynch

NBAA is emphasizing the need to develop mentorship programs and foster networking to develop the next generation of aviation professionals as workforce demand looks increasingly difficult to meet. During Bombardier's 23rd annual Safety Standdown, Brian Koester, NBAA's senior manager of flight operations and regulations, and Sierra Grimes, NBAA's senior manager of registration, highlighted the growing needs as the average age of aviation mechanics reaches 51 and the average age of pilots is now 53. Meanwhile, they pointed out, Boeing this year has updated—and increased—its estimates of workforce needs, including for 769,000 new mechanics and 804,000 new pilots by 2038. This projects that the demand for aviation workers is going to continue to grow, Koester said.

There are a number of reasons for workforce shortages, he said, including shortages in military pilots who have traditionally helped feed the commercial aviation system; the 1,500-hour ATP rule for Part 121 serving as a major barrier to entry; organic growth in the aviation sector; and interest in other fields that require less costly training. Training capacity is also a difficulty as flight schools have a problem with retaining CFIs, he said. This is particularly hurting regional airlines, some of which have had to park aircraft because they don't have the crews.

Next Generation

Koester underscored the diminishing interest among possible pilot recruits, recalling one smaller operator had a pilot opening in 2007 and received 1,000 applications. When it looked to hire again in 2012, the number of applicants had dropped by more than half to 450. By 2017 another search yielded just 47 applicants. "Those numbers really put that into perspective."

One key way to tackle this issue is diversity, Grimes said. "We're hearing a lot of organizations... are doing a lot of work on this front, really pushing to engage young girls, people with different backgrounds, to get them exposed to aviation because the lack of diversity that we've had in the industry has really led to the diminishing candidate pool," she said.

On the positive side, said Grimes, Congress has taken notice of the issue and passed legislation to help address the problem. Of note, H.R. 4673, Promoting Women in the Aviation Workforce Act, includes the creation of a women in aviation advisory board under the

FAA, comprising women with executive positions within the industry to explore attracting women to aviation. It also includes a jobs task force designed more for outreach to girls in high school. This is important because the focus has been on college students, who already have an interest in an aviation career. But studies show that there is a need to introduce aviation to younger students, Grimes said.

Also, they are working to line up grants to help with funding issues.

"We all know the shortage is here and we're trying to work together as an industry to draw in the next generation," Grimes said, but on the individual level, people and companies can also support the future generation through mentorship and networking, she added. Mentorship is a key way that helps recruit, retain, and develop the next generation, she added.

"It's about building those relationships and being able to pass on that skill set."

Looking at the many people approaching retirement, mentoring will enable that knowledge to continue through the next generation. Further, studies have shown students who have mentors are more likely to finish their studies and more likely to continue into that career, Koester said.

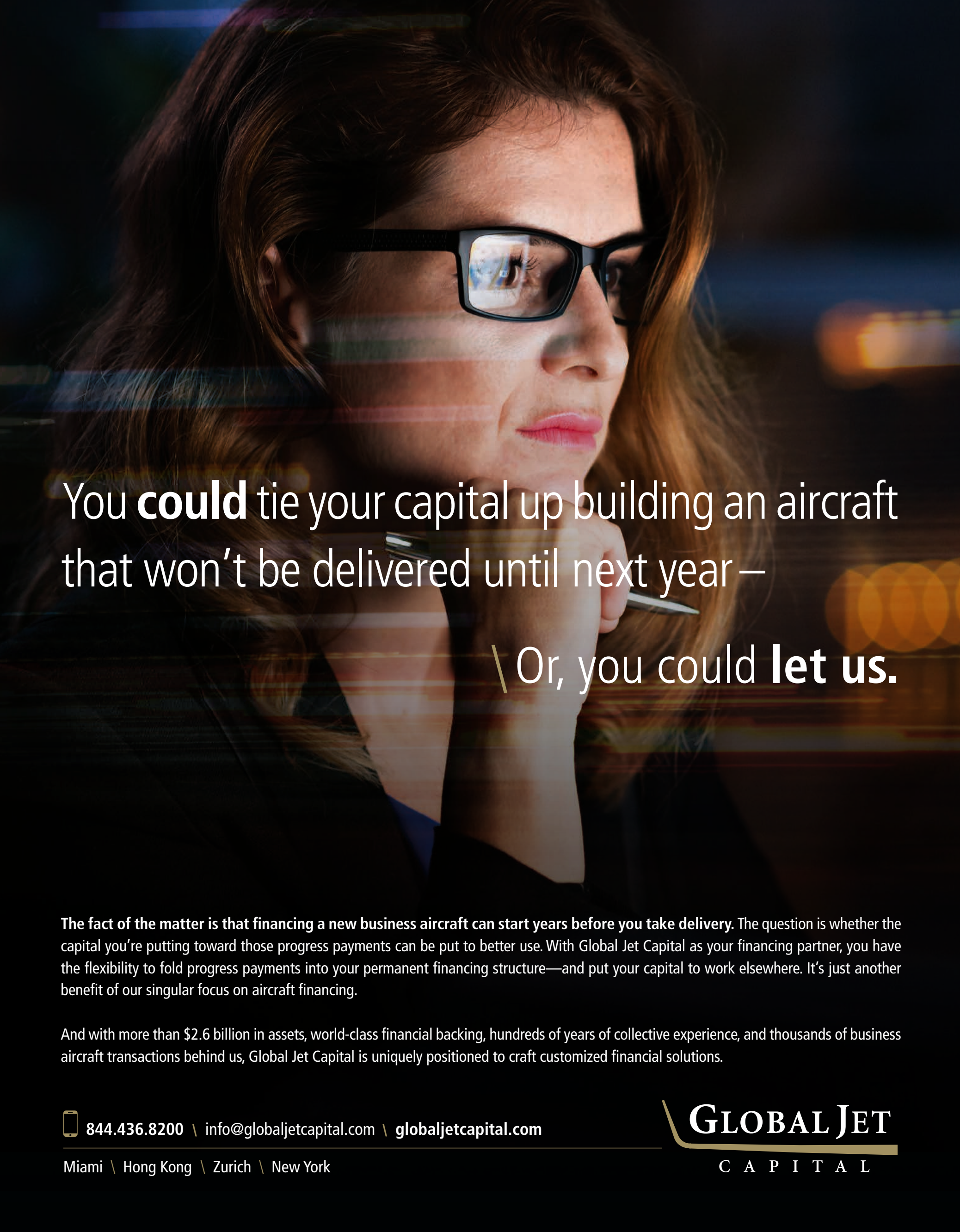
Studies further indicate that younger workers tend to switch jobs every three years. Part of what they are looking for is career growth and advancement, and mentorship can help guide that, he said. Another benefit is mentorship improves professionalism, which is critical to aviation safety, he added.

A Harvard study showed that far more people older than 40 have experienced and benefited from mentorship than those younger than 40, Grimes said. "They didn't see it as beneficial. They hadn't been exposed to it."

The fear is the industry will lose a skill set without mentorship programs as the older generation retires, she said.

There are several approaches to mentorship, from an informal relationship to formal established programs that involve a set timeline, goals, a mentor/mentee agreement, and follow up.

Also, Grimes and Koester, who are both involved in NBAA's Young Professionals in Business Aviation (YoPro) initiatives, also stressed the importance of facilitating network opportunities to foster the next generation. Networking, they added, helps build knowledge by enabling the sharing of experience, and could lead to new opportunities.



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Our 2020 Vision

Forgive the obvious pun, but here's AIN's look ahead at 2020.

As a news organization, it's AIN's job to stick to reporting on what has already happened. One exception is this time, every year. In the following segments, you'll read what we believe to be the outlook for the next 12 months—views inevitably shaped by the past, but with an eye toward what we believe is just beyond the immediate horizon.

You'll get our take on the bubbling cauldron of election-year politics as it impacts our industry; the immediate future of eVTOL, not the lofty aspirations of the over-optimistic, but the cold reality; 2020's outlook for what's in line for the FBO industry; what's on tap for OEMs in an ever-volatile market; avionics in the wake of the ADS-B (soft?) deadline; and what you can expect to see on the shop floors—and in the order books—of MROs.

So, how did we do last year? Here are some samples of what we were projecting for 2019:

eVTOL: "Even if eVTOLs win public acceptance and clear regulatory and technological hurdles, can OEMs and service providers deliver the technology at a price the general public can afford?" That remains the biggest open question in aviation.

Touchscreens: "It won't be a surprise to see more manufacturers adopting this technology, especially as younger tech-savvy pilots move up the flying food chain to more sophisticated aircraft." Twelve months later, that seems on track.

Supersonics: "Through 2019, Aerion and its partners will be initiating the process of selecting Tier 1 suppliers for the next phase of development." This predated the February 2019 announcement of Boeing's investment and involvement in the AS2 project. Since then, the program had gone largely silent, until now (see page 12).

Come January 2021, we'll take another look back at this year's look forward.



How will Washington treat bizav this year?

by Kerry Lynch

The FAA ended a difficult year under intense scrutiny in the aftermath of the Boeing 737 Max crashes; and Congress gave notice that pressure was not going to let up headed into the New Year. This is among a number of key issues in Washington expected to capture the attention of the industry in 2020.

That scrutiny extends to the FAA's delegation activities, approach to pilot training, and international leadership. "It is increasingly clear the process by which the FAA evaluates and certifies aircraft is itself in need of repair," said Rep. Rick Larsen (D-WA) chair of the House Aviation Subcommittee. "Congress must reevaluate and improve the current certification process."

While the investigation has focused on the activities surrounding Boeing, its overall processes are under pressure. Business and general aviation groups have spent considerable time on Capitol Hill explaining the processes and need for programs such as Organization Delegation Authorization (ODA). In fact, former acting FAA administrator and now deputy administrator Dan Elwell warned lawmakers that without the delegation programs, the FAA would require roughly 10,000 more employees and an additional \$1.8 billion to cover the cost of keeping up with emerging technologies and certification demands.

General Aviation Manufacturers Association (GAMA) president and CEO Pete Bunce said his board met with the new FAA administrator, Steve Dickson, this past fall and had a "wonderful dialog." The board saw his commitment to stay on course to continue collaboration with industry.

Bunce said the FAA is taking a little more time in its review of activities, and international regulators are being more thorough in their own validation reviews. But he added there are things the industry can coalesce around, such as safety

management systems (SMS).

Dickson, who stepped into the role this past summer with considerable commercial and military aviation experience, appeared before the T&I Committee in December, laying out an overview of what lies ahead for the agency, saying it is focused on moving toward a more holistic versus transactional, item-by-item approach to aircraft certification. This approach must take into account the interaction between all aircraft systems and the crew, he said. Dickson also called for a coordinated and flexible information flow and emphasized a need for SMS at manufacturers, use of analytics or "big data," and maintaining a "just culture."

Even so, industry leaders agree that they must remain vigilant. "It certainly is a big risk with ODA," said Aircraft Owners and Pilots Association president and CEO Mark Baker, adding that the approach to sharing has fostered an important safety culture. Should Congress alter that approach, he said, they "need to be careful about what they ask for."

As it continues to address the concerns of Congress, the agency was busy putting the final pieces in place for ADS-B Out at the end of the year—including programs to permit waivers and to secure the privacy of operators.

Industry has made a lot of progress on equipage now, said NBAA president and CEO Ed Bolen, pointing to what he called "hyper-focus" on the issue. He praised the FAA's efforts on addressing concerns such as privacy and expressed optimism that the post-transition mandate will go smoothly. "Big projects sometimes present unique and unanticipated challenges. But as of today, we feel like we're working closely with the FAA and the community is responding pretty well."

Jens Hennig, GAMA v-p of operations and co-chair of the ADS-B Equip 2020

working group's general aviation subcommittee, said he views January 2020 as a beginning for the program, and much more lies ahead.

The industry and the FAA are looking to expand ADS-B-related services surrounding weather and situational awareness. Also, the FAA has begun to explore how it is going to move forward with radar divestiture. "The FAA didn't want to finalize a plan until it had a better understanding of fleet equipage," Hennig said but added now it can move forward on finalizing such a plan.

Further, he said conversations are ongoing for expanding three-nautical-mile separations, opening up new routes, and improving operational efficiency. And the FAA and industry are exploring how to complement ground-based ADS-B receivers with space-based, in areas where it makes sense, such as oceanic operations and operations in the Caribbean.

On the international front, the T&I Committee is giving notice that it expects the FAA to take a strong leadership role. That was a driver behind a bill the committee passed in November calling for unannounced FAA inspections at foreign repair stations, upgraded standards, and a ban on new FAA-certified foreign repair stations until the bill is implemented.

That bill was one of several introduced this past fall that have drawn strong industry opposition. Other poorly received proposals include legislation surrounding a ban on helicopter operations over New York; restrictions on air tours over national parks and other places of interest; and the ability of local governments to impose their own drone restrictions. Industry groups said the bills usurp the FAA's domain over the national airspace system in favor of local interests.

The fate of the bills is unclear, however. They will carry over into 2020. But whether Congress will take action

on them is uncertain. Most Washington insiders and staff members on Capitol Hill believe the number of bills that become adopted will slow as focus shifts to the 2020 elections.

In particular, controversial proposals have a more difficult road, Bolen said. However, not all bills introduced in late 2019 are negative. Bolen strongly supported a bill from Larsen to permit the government to promote aviation jobs. Bills that have strong bipartisan support are more likely to see progress, he said. The good news for business and general aviation, Baker said, is the industry is largely bipartisan—"we have a nonpartisan sky."

Bolen agreed: "We have found that business aviation, in fact, all of aviation, has not historically been a partisan issue. We have found lots of positives—and some negatives—regardless of which party is in control of the Executive branch or the Legislative branch."

The approach is to educate officeholders and candidates, and "get them excited about the fact that business aviation is profoundly positive to the U.S., from a jobs standpoint, economic development, competitiveness, humanitarian efforts, and increasingly from a sustainability standpoint," he added. "The truth and the facts are our friends and [we need to] make sure people know what business aviation means to the very existence of so many of our communities across the U.S."

Another key reason for the education effort, said Paul Feldman, v-p of government affairs for GAMA, is the increase in turnover in Congress. The acceleration began about a decade ago and has continued, Feldman said. "That makes it more challenging and means we need to get out and talk to [members] that much more."

Bolen agreed, saying given these uncertainties, it is not only beholden on Washington lawmakers, but on everyone in the community, to reach out and get engaged with their lawmakers, the candidates, and other members of government at all levels.

NBAA has added tools on its website to facilitate this process, he added. "We believe it is important that our members get engaged, that they feel empowered to contact their elected official." This is whether by tweet, email, or phone, Bolen said. "There are always lots of ways to help make sure [members] are able to express whether they think [a proposal] will be helpful to our industry or harmful, and why."

Baker cited the strength of the General Aviation Caucuses on Capitol Hill: "Every election we gain some and we lose some [caucus members]. But the groups have become among the largest on Capitol Hill."

It is still early days on predicting elections and turnover. Heading into the end of 2019, nearly three-dozen lawmakers had announced plans to retire, and more are likely. Of note from an industry standpoint is the planned retirement of Nita Lowey (D-New York), who chairs the Appropriations Committee.

Urban air mobility will be challenged to demonstrate more tangible progress

by Charles Alcock

If you believe the most bullish assessments from the gold rush of companies looking to bring electric vertical takeoff and landing (eVTOL) aircraft to market, the 2020s will be their breakthrough decade. Ride-share giant Uber would have us believe that as early as 2023 it will be ready to start trial air-taxi operations in the early-adopter city of Dallas and that by the end of the decade what is being categorized as urban air mobility (UAM) will be mainstream in multiple major cities around the world.

If even half of what is projected for this decade is going to come to pass, then 2020 had better be a year in which we see significant progress from the self-declared front-runners among the 200 or so new aircraft programs in contention. In 2019, numerous programs missed timeline dates for achieving key program stage gates, such as first test flights.

In some cases, this seems to have been due to start-up companies (with limited past experience of type-certification campaigns) finding the technical challenges to be steeper than they had imagined. In other cases, it is clear that insufficient funding has slowed the pace at which work can be completed.

Key pointers for those watching this sector in 2020 will be whether eVTOL developers start recruiting to boost the capacity of their largely under-resourced engineering teams. Associated with this could be a flurry of new funding rounds as companies scramble for the financial support needed to get their aircraft to market. From interviews conducted by the new FutureFlight.aero website being developed by AIN, it seems many companies have convinced themselves that new eVTOL aircraft can get through the certification process for a fraction of what it has generally cost "traditional" aircraft manufacturers. A key question now is whether enough investors will share this boundless optimism.

In the 2019 Gartner Hype Cycle for Emerging Technologies published on August 29, 2019, "autonomous flying vehicles" were deemed to be less than two years away from the so-called "peak hype." What comes next for companies and their investors, according to this business theory, is the "trough of disillusionment," followed eventually by the "slope of enlightenment" and the "plateau of productivity."

Robin Lineberger, principal with Deloitte Consulting, believes 2020 is more likely to be another year of gradual progress, rather than some sort of tipping point for the urban air mobility sector. "There is an opportunity to make incremental change in technology and test new concepts in propulsion, power density, and automation, but I don't expect to see a step change [in 2020]," he told AIN.

Commenting on Deloitte's just-published 2020 Global Aerospace and Defense Industry Outlook, Lineberger emphasized that the industry needs to pay more attention to what he characterized as the psychological challenges impeding public acceptance of flying in autonomous aircraft. He also stressed the need for manufacturers to step up their work with regulators in the coming 12 months to establish a more solid regulatory foundation for the new wave of aircraft to enter service. Plus, in his view, there is more work to be done to establish who will be operating the aircraft and how these operations will be sustained in the longer term.



DAVID MCINTOSH



MARIANO ROSALES

Urban air mobility was one of the hot topics at NBAA-BACE 2019, and aerospace giant Safran is collaborating with ridesharing company Uber to explore how an eVTOL cabin might look and accommodate passengers. This mockup includes 30G helicopter seats, leather upholstery, and more.



For those seeking more tangible and immediate evidence that urban air mobility can fulfill the bold promises its advocates have been making, watch for anticipated landmark events, some of which are already overdue, involving new eVTOL designs. The new **FutureFlight.aero** resource from AIN will help to make sense of this exciting and complex landscape. The news and information service will deliver the following exclusive package to subscribers: daily news and commentary; highly researched, in-depth reports on major trends driving changes in aviation; a comprehensive, searchable database tracking and objectively assessing new aircraft programs with links to company information; news coverage and videos; a weekly newsletter roundup and a subscriber-only community including prospective customers, investors, and partners.

Focus on SAF to continue in 2020

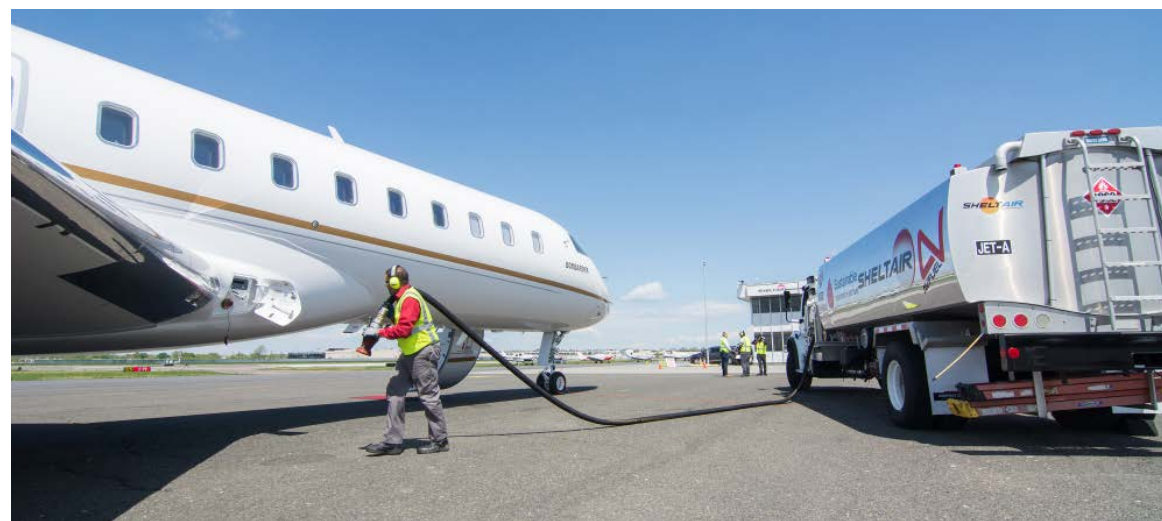
by Curt Epstein

One of the major topics of discussion in business aviation in 2019 focused on the acceptance and use of sustainable aviation fuel (SAF), an effort that is expected to continue in 2020. At an event at Los Angeles business aviation hub Van Nuys a year ago, industry stakeholders gathered for “Business Jets Fuel Green: A Step Towards Sustainability,” marking the first time SAF was made available for retail sale to aircraft operators. Avfuel and World Fuel Services provided a combined more than 14,000 gallons of blended fuel produced by World Energy and Gevo to the FBOs on the field.

For ABACE 2020 in Shanghai, the Asian Business Aviation Association (AsBAA) is looking to have the business aircraft fly to the show on SAF, just as they did for last year’s EBACE.

Keith Sawyer, Michigan-based Avfuel’s manager of alternative fuels, expects such events to continue. “No doubt industry-wide, both in Europe and North America there will be more demonstrations, more companies getting familiar with the logistics and trying to do their best to meet the awareness and demand potentially arising from business aviation customers,” he told **AIN**.

With several new SAF biorefineries slated to come online toward the end of the year, Sawyer sees a possible increase in availability, particularly on the West



Accessibility of sustainable aviation fuel (SAF) is key to its acceptance, according to analysts, and the industry is stepping up to embrace it.

Coast of the U.S. where several states have enacted low carbon fuel standard credits to help offset the current price delta between SAF and conventional Jet A in an attempt to spur demand. “I’m cautiously optimistic that potentially some FBOs may have it on a more ratable basis on the availability of the product,” he explained, adding that logistical hurdles still need to be worked through before the renewable fuel becomes more commonly widespread. “The airlines like to get as much of their product by pipeline as they can, whereas business aviation, corporate aviation is probably 95 percent, at least in the U.S. and Canada, supplied by truck.”

While the SAF market is still in its infancy, Sawyer sees it following the same path as other recent fuels such as ethanol or biodiesel. “Demand is there, supply becomes available, supply grows, access to the supply increases and the logistics become progressively more economical.”

Consolidation Continues

The FBO industry will continue to undergo change as service providers fueled by private equity funding, keep the

consolidation pot simmering. More and more FBO chains such as Atlantic Aviation, Ross Aviation, Lynx FBO, Modern Aviation, and Hawthorne Global Aviation Services are controlled by investment firms that will continue to look to grow them. Industry consultant Stephen Dennis expects to see some churn over the next several years as some of those players exit the market, while other, larger financial-capacity companies enter with the goal of expanding their FBO portfolios.

Dennis noted that smaller chains such as privately held Tac Air and Sheltair are still controlled by their operationally strong and financially solid founders, and predicted they are not likely to succumb to the approaches of private equity.

IS-BAH To Expand

The International Standard for Business Aviation Handling (IS-BAH), a program of industry best practices sponsored by the International Business Aviation Council (IBAC), will continue to expand its industry acceptance, increasing from the 209 locations that have joined since its inception in 2014.

“What remains heartening for us all,” said IS-BAH program director Terry Yeomans, “is that, for what is still a purely voluntary program, we continue to see organizations that choose to take a step up above and beyond their peers, and show they want to place safety as a core value in their support of our sector. We hope to continue to grow the number of locations at Stage 1 slowly and steadily over the next 12 months.”

Data Driven

Another area where FBOs will change is in how they view their customers, according to Douglas Wilson, president of industry consultancy FBO Partners.

“I think we’ll start to see some savvy FBOs shift their focus toward passenger engagement in the coming year,” he told **AIN**, adding that collecting data about passenger preferences will become essential for FBOs to build relationships with them, and ultimately, influence purchasing decisions. “One FBO’s based customers are another FBO’s transient customers and vice versa; the data is there. One only needs a process to collect it and a database to store it.” ■

Bizav OEM outlook anything but 20/20 in the new year

by Chad Trautvetter

Business aviation OEMs ended 2019 on a high note, with projected deliveries up 10 percent year-over-year, to 700 units. That’s thanks in large part to the influx of newly certified models such as the Bombardier Global 7500, Cessna Citation Longitude, Embraer Praetor 600, Gulfstream G500/600, and Pilatus PC-24. While that wasn’t a record, it marked only the fourth time over the now-past decade that deliveries have surpassed the 700 aircraft mark.

And the relatively good times are expected to continue into 2020 as business aircraft manufacturers ramp up production of these fresher models. But

weaker demand for much of OEMs’ legacy products, recession fears, and further trade tariffs are likely to offset these gains into the new decade, meaning a lower single-digit percentage increase in deliveries is likely this year. In fact, JetNet iQ predicts just a 3 percent rise in shipments, while Honeywell is only marginally more bullish in its near-term outlook.

But trouble looms, according to the business aviation data provider. “Business confidence has plummeted in the U.S. and overseas, with key indicators such as falling international trade in reaction to the ongoing tariff wars,” it said. In fact, JetNet iQ’s market sentiment indicator, which



New aircraft like Embraer’s Praetor 600 provided welcome news for OEMs in 2019.

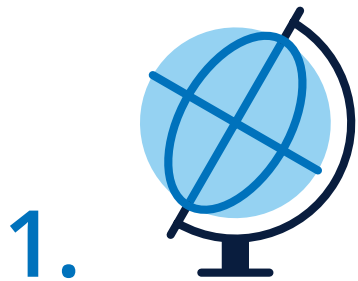
measures aircraft owner/operator optimism, has dropped sharply over the past five quarters and is hovering at its lowest level since the company began measurements about eight years ago.

With more than half of all business aircraft deliveries going to U.S. customers, political uncertainty due to

this year’s presidential election is likely to temper demand. Historically, some potential business aircraft buyers have sat on the sidelines until after the election is over, waiting to get a clearer picture of where the country is headed politically.

» continues on page 26

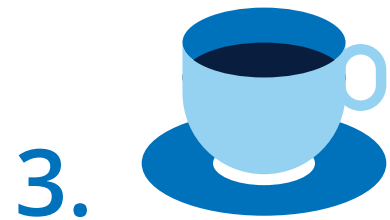
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The future of avionics is now

by Matt Thurber

There is no question where general aviation avionics development is heading: more intuitive interfaces, more touchscreens, capable new sensors, and improved automation. The result is going to cause pain for pilots who don't like change but also deliver vast improvements in safety.

The idea is to keep pilots well in the loop so they not only have excellent situational awareness but also more time to spend on strategic planning and operating with high margins of safety. Gulfstream has taken a major step in this direction with the G500 and G600 Symmetry flight deck (and soon in the upcoming G700). Working with Honeywell, Gulfstream helped design touchscreen controllers and, with Esterline Korry, touchscreen systems control panels that will make a young smartphone-loving pilot feel right at home. At the same time, the new Symmetry flight management system (FMS) interface is far easier to understand compared to even the latest-generation keyboard-based FMSs. Of course this has been normal for years in Garmin, Avidyne, and other light-GA avionics, and finally it has trickled up to jets. Touchscreen controls are even coming for airliners.

This is just a first step, however. For years, critics panned touchscreen displays for business jets and airliners, but that didn't stop Collins Aerospace from designing touchscreens for its Pro Line Fusion system. The first one certified is a retrofit package for the Challenger 604, in partnership with Nextant, called the 604XT, and it obliterates the argument that touchscreen displays in a jet are too difficult to reach or too hard to manipulate in turbulence. Expect to see more fully touchscreen displays, not just controllers, in upcoming jets.

In fact, Collins is taking this concept even further, with the recent unveiling of its wide-area MFD-4820 display, which measures 8 by 20 inches and fills the space in front of a pilot. This display has built-in redundancy, with various areas able to continue running if one section goes dim. And it adds more screen real estate without taking up more external space. These will appear in military aircraft first, as these have already been early adopters of wide-screen technology.

If you look at a modern Airbus flight deck today, you might wonder why it is so far behind the technology curve, not even offering synthetic vision, a common and tremendously useful situational awareness tool that has been available for



The Universal Avionics SkyLens HUD allows pilots to make FMS selections by using the HUD to look at a waypoint, airport, or navaid and then choose that using a selector button or manipulating the system via voice commands.

more than a decade. Now, however, avionics manufacturer Thales has unveiled the new PureFlyt next-generation FMS, which could help Airbus and other OEMs leap ahead in flight deck technology.

With abundant connectivity to the network-centric world, PureFlyt will help airlines reduce emissions by flying more efficiently, constantly updating flight plans based on real-time weather and airport constraints. PureFlyt includes 4D trajectory management and will add aircraft weight management to its skills, with first implementation expected in 2024.

Flight displays aren't the only area where

avionics technology is advancing. Garmin has introduced a new emergency Autoland system that finally solves the puzzle of what to do if the pilot collapses and there are no other pilots on board. Autoland will either engage automatically if there is no response from the pilot, or a passenger can switch Autoland on by pushing a button. Once engaged, Autoland finds the nearest suitable airport, flies there, slows the airplane down, lowers flaps and landing gear, lands on the runway, stops, then shuts off the engine. Piper and Cirrus will be the first to certify Autoland, in the M600 and Vision Jet, respectively.



Stedman Stevens, CEO of Vu Systems. Saab has developed a new long-range sensor using passive millimeter wave technology developed by Vu Systems.

There are rapid advances in another avionics area; wearable head-up displays (HUDs) that make installing a HUD much simpler and less costly than traditional HUDs. Wearable HUDs also enjoy a nearly unlimited field of view, because the pilot is not constrained to looking through a fixed combiner glass mounted in the forward field of view. The Universal Avionics SkyLens HUD allows pilots to make FMS selections just by looking with the HUD at a waypoint, airport, or navaid and then choosing that using a selector button or manipulating the system via voice commands. Thales's TopMax wearable HUD has already been certified in the ATR 72 and will enter service soon. HUDs are also coming to light aircraft, with MyGoFlight's SkyDisplay HUD priced at an affordable \$25,000.

To make HUDs even more useful, Saab has developed a new long-range sensor using passive millimeter wave technology developed by Vu Systems. By displaying the output from this sensor, a HUD can show the pilot the runway more than two miles away through fog, rain, and dust. This is far more distance than traditional infrared-based sensors, which are unable to penetrate through such obscurations.

Avionics capabilities are advancing rapidly, and although pundits speculate that this is all an effort to eliminate pilots from flight decks, there is no doubt that pilots are enjoying this technological renaissance, and the result is a significant improvement in safety. ■



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C&L AEROSPACE

An aging business aircraft fleet could benefit MROs in the long run, industry officials say.

Challenges and new prospects await MRO providers as they look to 2020

by Jerry Siebenmark

Maintenance, repair, and overhaul (MRO) providers are divided by what lies ahead for their business in 2020. While they benefitted to some degree from the FAA's ADS-B Out mandate over the past couple of years—in some cases leading to entirely new avionics installations or as part of other larger projects such as cabin refurbishments and connectivity installations or upgrades—their business in 2019 continued to be driven largely by scheduled maintenance, equipment obsolescence, and improvements in avionics suites and connectivity.

But among some MRO executives like Constant Aviation CEO Stephen Maiden, 2020 looks to be an uncertain year because of the upcoming presidential election, as well as talk of an economic downturn in some business aviation circles.

"I think we all go to; 'what is 2020 going to look like?'—and it's going to tie to an election year," Maiden told AIN. "And is there a downturn in the market coming and how is that going to affect not normal scheduled maintenance? But on what I talked about, discretionary spending: interiors, avionics upgrades, cabin management upgrades. What's going to happen to those discretionary dollars? And I think that's where the concern is, or where the focus is."

Duncan Aviation CEO Aaron Hilke-mann told AIN he expects 2020 to continue to be a growth year for the Lincoln, Nebraska-based MRO, with work coming from scheduled maintenance and inspections, some ADS-B installations from "people who just waited to see if it really

was going to happen," as well as replacement activity for cabin management systems and connectivity upgrades. "I think Wi-Fi and cabin management will be important over the next few years," Hilke-mann said.

“Discretionary spending: interiors, avionics upgrades, cabin management upgrades. What's going to happen to those discretionary dollars? That's where the concern is.”

— Constant Aviation CEO Stephen Maiden

"There are some emerging technologies that may already exist, but we could see a trend toward, [technology such as] CPDLC [controller pilot data link communication], even in the U.S. at some point in time," Hilke-mann continued. "It's just an efficient way for communication and allows for fewer errors. So it may not be a mandate, but it may be something that operators will want."

C&L Aerospace regional sales manager of corporate MRO Ron Jennings told AIN he's seeing more activity in assisting

owners and operators of aging business aircraft with determining whether to part out or upgrade their aircraft. For instance, C&L is currently working with the owner of an older Challenger that needs new engines. The dilemma is that the cost of new or overhauled engines exceeds the twinjet's value. "So we've tried to locate engines that are [around] half-life to put on the airplane to keep it going for several years. But everybody else is doing the same thing," Jennings explained.

That aging market may explain the thousands of airplanes that haven't upgraded to ADS-B. It may be that those owners are just looking to get out from under their airplanes, Constant's Maiden suggested. "There's a significant number of airplanes that will be grounded," he said. "And then there's going to be this second tier or third tier market that's going to go buy an airplane relatively inexpensively, upgrade it and either charter it, fly it, or sell it. I think that's an opportunity in 2020."

Despite concerns about the election cycle or an economic downturn, MRO is still in a good position, Maiden added.

"I do think it's going to be a flat year, and I think everybody is a little concerned and on edge about the election and what's going to happen there," he said. "And if there's going to be some budget cuts. But here's the one thing that everybody needs to be aware of; there are more airplanes flying in the United States than ever. They're flying more hours, longer distances than ever. And their average age is older than ever. And that is good for maintenance." ■

» continued from page 22

Manufacturer 2020 outlook hazy

And business aircraft demand in Europe and Asia, especially China, is waning as their GDP growth slows. Additionally, Europe is grappling with Brexit and rising environmental activism, the latter of which includes the "flight shame" movement that is pushing people to use trains instead of aircraft for intra-European travel in a bid to help reduce carbon emissions.

On the aircraft manufacturing side, legacy business aircraft models in the more mature phase of their production life cycle with delivery rates of one to 1.5 aircraft per month "are at risk of being taken out of production," JetNet iQ said. Based on the latest-available GAMA general aviation delivery data, at-risk models include the Bombardier Learjet 70/75, Cessna Citation Sovereign+, and Dassault Falcon 2000S/XLS.

Despite economic and political headwinds, backlog value at the big-five OEMs increased last year for the first time in a decade, but JetNet iQ managing director Rolland Vincent said the "vast majority" of this rise is due to newly certified models. Much of this backlog is also for long-range, large-cabin business jets—a dynamic that heavily favors Gulfstream Aerospace and Bombardier Aviation over the other OEMs.

This dynamic is leading OEMs to develop even more new globe-girdling models. At NBAA-BACE in October, Gulfstream announced the 7,500-nm G700, first flight of which was pending at press time. Meanwhile, Bombardier and Dassault are widely expected to reveal more about their latest long-legged jets this year.

Bombardier has been coy about its Global 8000 as the follow-on, nearly 8,000-nm variant of the Global 7500, saying it wanted to stay focused on certification of the latter model before shifting to any variants. Now that the Global 7500 is certified and production is ramping up with delivery of nearly 15 of the twinjets in the fourth quarter alone, Bombardier can turn its attention to developing new models.

And as Dassault's Falcon 6X program transitions to a flight-test phase this year, the French aircraft manufacturer's engineering resources can be directed toward its "next Falcon," which Jetcraft and JetNet iQ forecasts both identify as the 9X. Dassault declined to provide any information about this new jet last year, but industry watchers remain optimistic that the new model will be launched by year-end.

While investment continues unabated into new models and deliveries are anticipated to be fairly healthy this year, 2020 could mark the beginning of the next industry slowdown, JetNet iQ warned. "Indicators of such a slowdown are beginning to be visible," it said, noting recent layoffs at Gulfstream Aerospace and Textron Aviation. ■

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Safety Stand Down

Safety Standdown draws visitors from 25 countries

by Kerry Lynch

Bombardier wrapped up its three-day Safety Standdown in early November in Fort Worth, Texas, emphasizing elevating standards, managing risk, achieving measurable goals, and improving culture to more than 500 attendees and many more online. By the opening of the third day, the webcast of the event had already attracted more than 1,500 visits online and surpassed the goal for views from more than 20 counties, reaching 25, Bombardier demo pilot and Safety Standdown host Franco Pietracupa announced. Webcast visits over the past several years have totalled 8,600, he added.

The location marked a departure from the decades Bombardier has hosted the event in Wichita, but Pietracupa opened the three-day event informing attendees that “you are in the record books” by filling

all available slots within eight days of the opening of registration this past August. While Safety Standdown made its first appearance in Fort Worth this year, it is anticipated to return to its home of Wichita, Kansas, where it is traditionally held.

Andy Nureddin, v-p of customer support for Bombardier Business Aircraft, helped kick off the 2019 event, saying, “Safety Standdown continues to improve year after year. We all have a shared passion to enhance safety in this industry.”

He noted that the event was established by a small group of pilots, comprising the Learjet demonstration team, who asked themselves “a simple but critical question of how can we make operations safer.” This grew into a movement, he said, and Safety Standdown has “grown to become one of the most comprehensive



Andy Nureddin, v-p of customer support for Bombardier Business Aircraft, helped kick off the 23rd annual Bombardier Safety Standdown.

human factors safety conferences in the industry,” promoting the culture of safety, continuing education, and professionalism in aviation.

Attendees represent a range of geography and organizations from nearly every sector of the aviation industry: the military, commercial airlines, government, industry associations, law enforcement, private operators, OEMs, and flight departments. “One of the things that makes Safety Standdown special is it is both inclusive and agnostic,” Nureddin said. “Here, we have a common goal to make our skies safe as can be. We’re here

to live and breathe the Safety Standdown creed, to learn, apply, and share.”

The theme Elevate Your Standards was emphasized throughout the general session by speakers, many of whom were familiar faces to the event, including retired U.S. Navy Capt. Al Worthy, who spoke on a theme that asked the audience to address what defines them. The FBI’s Amy Grubb also returned to the main stage to discuss coaching, a topic she carried into the workshops. They were among the 16 speakers who appeared on the main stage, along with the event’s host Pietracupa.

Perennial favorites returning included retired USAF Lt. Col. Tony Kern of Convergent Performance and Dan Boedigheimer of Advanced Aircrew Academy. Kern, who said he was speaking at his 22nd Safety Standdown, once again turned to a persona to emphasize safety, this year becoming “TK Thrilla” with a rap to celebrate Safety Standdown. He drove home the point of pushing personal standards beyond the organizational or regulatory standard through professionalism and making a commitment, rather than intent, to execute the improvement.

Also opening Safety Standdown was Tim Miller, director of Office of Air Carrier Safety Assurance for the FAA, who highlighted how the increase in transparency between the agency and industry was elevating standards. NBAA COO Steve Brown called Safety Standdown a “must-attend event,” and discussed key safety focus areas for the industry, saying it needs to redouble efforts because one accident is too many.

Benoit Rocheleau, CAE’s head of operations for business aviation, helicopter, and maintenance training, underscored the importance of sharing knowledge through events such as Safety Standdown, especially given the anticipated expansion of the pilot population. Boedigheimer, meanwhile, was on the slate with a theme that matched Bombardier Safety Standdown’s mantra: “Learn, Apply, Share.”

This year’s event featured nearly 50 workshops spread out in the afternoons over three days, enabling attendees to take a deeper dive into a range of topics; from controlled flight into terrain, hypoxia awareness, and international operations, to runway surface risks, elevating standards through coaching, and predictability of maintenance errors, to name a few. ■

■ Sleep expert stresses need for proactive fatigue management

Organizations can implement targeted fatigue-risk-management programs and still operate within their economic goals, says a leading fatigue expert. But if they don’t pay attention to fatigue risks, the results could have safety consequences, added Daniel Mollicone, CEO of sleep research specialist Pulsar Informatics, during Bombardier’s annual Safety Standdown in November.



Daniel Mollicone, CEO of Pulsar Informatics

Pulsar analyzes helicopter accidents and reports to the FAA on the potential of fatigue involvement, and found that as many as one in five has a fatigue factor, Mollicone said. He pointed to an accident involving a fatigued American Airlines pilot who failed to deploy spoilers and lost directional control on the runway. “These are mistakes that don’t need to happen.”

A company can provide adequate rest time, but then it is up to pilots to ensure they get adequate rest. This is part of their professionalism, Mollicone said.

Most people are not aware of how much

sleep they actually need. Nearly 30 percent believe that they only need between six and seven hours, when science shows that only 5 percent of the population is actually in that category. That means 25 percent of people are not in the category they believe. “They are deluding themselves,” he said.

Sleep deprivation adds up and can result in serious degradation of performance. Tests have shown that the number of lapses—times when a brain stops processing and a person is unaware that it is happening—increases as the sleep “debt” increases. Studies revealed that a person who remains in the six-hour-a-night group for a week has reached the cognitive level of a person who has lost an entire night’s sleep. But the “six-hour group systematically underestimates how badly they are doing,” Mollicone said.

Time of day matters since it can upset the natural function of a body, he added. “When we fly at night, there are risks there, because we are actually working against what our body is trying to do at that moment,” he said. This doesn’t mean that they can’t fly at night, but they need to ensure that they use technology and follow procedures carefully.

Further, managers must be aware of long days. Cognitive impairment starts to set in after 17 hours. At 22 hours of wakefulness, the mind is the equivalent of those with a blood alcohol content of .08. “It is startling to me how quickly we can get to

incapacitation,” he said. “Things get precipitously bad when we push ourselves past our limits.” Studies on the trucking industry showed that fatigued drivers are 500 percent more likely to text.

Studies also have shown that despite the belief that people just get used to lack of sleep, they actually don’t. A number of other factors exacerbate fatigue, including the use of medications, alcohol, or medical issues. A review Pulsar made of fatigue issues in one company revealed 3 percent of workers with significant fatigue issues. Some of those workers discovered that they had undiagnosed serious medical conditions that needed to be treated.

The goal is to identify those scenarios in flight operations where the risk of incapacitation becomes real and to mitigate that, he said. That doesn’t mean pilots won’t ever be fatigued. But what they don’t want is for pilots to be pushed to the point of incapacitation.

By carefully monitoring risk areas, an organization can manage fatigue, Mollicone said, adding organizations do not have to choose between being successful and managing fatigue risk.

This includes understanding biology and correlating it to risk. Results of studies show that a relatively small number of missions actually involve risks of incapacitation. But knowing the ones that do, an organization can focus time and resources on mitigation factors and planning of missions, he said. **K.L.**

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Wichita airport to train ops officers as drone pilots

by Jerry Siebenmark

Following successful proof-of-concept drone flights at Kansas's largest commercial airport this summer, the operations staff of Wichita Eisenhower National Airport (ICT) will begin training to fly drones and earn their Part 107 remote pilot licenses over the next few months, Wichita Airport Authority operations manager Brian Cowles told *AIN*. It will allow the airport's six operations officers—including Cowles—to fly drones for airfield inspections and other tasks, making ICT one of the first airports in the country to integrate unmanned aerial systems (UAS) into its daily operations.

"The significance of being able to do what we're doing at the airport is to be able to maintain the safety and integrity of the airport system," Kansas director of aviation Bob Brock added in an interview with *AIN*. "It is drastically improved by being able to use a drone." Earlier this year, officials at ICT contacted Brock's office at the Kansas Department of Transportation Division of Aviation to see if or

how they might be able to use drones since Kansas is one of nine lead participants in the FAA's small UAS Integration Pilot Program.

From the flights, Cowles learned that the airport could use drones for a number of activities beyond airfield inspection. That includes inspecting the airport's perimeter fencing, passenger terminal, and other buildings; assisting airport firefighters in locating victims in airplane crashes; and shooting aerial marketing videos of airport buildings available for lease.

But Cowles said it's airfield inspections where a drone has proved its greatest value during the proof-of-concept flights. Using video that is taken by a drone over a period of time, Cowles said officials were able to see subtle changes to the condition of airfield pavement that they wouldn't have otherwise. "You don't notice those gradual changes," he said. "I think it's a lot more thorough." Using drones also cut down on the time and manpower spent



Wichita Eisenhower National Airport operations officers will integrate the use of drones into their daily routine following successful proof-of-concept flights this summer.

conducting airfield inspections. Normally, two operations officers would drive side-by-side down ICT's three, 150-foot-wide runways to conduct visual inspections. A drone equipped with a video camera eliminates that requirement. "That runway can be 10,000 feet long, so that's almost two miles of inspection that has to be done visually, basically from a car," Brock added. "Today, if we use the drone, we can have far better detection, far better field of view, and it can occur much faster; and [we can] document

that image to be able to analyze it later."

After operations officers complete and pass their Part 107 training, they will travel north to Kansas State University Polytechnic in Salina, where they will receive flight instruction. "We don't want to become a problem for the aircraft we're around," Cowles said.

He hopes that by March the operations staff will be ready to operate the drone. At that point, they will work to establish formal procedures for drone operations at the airport, Cowles explained. ■



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FAA asks for industry help on diverted airport revenue

by Kerry Lynch

A key FAA official is encouraging the aviation community to help the agency in its battle to combat airport sponsors that inappropriately divert airport revenues, declaring “time is up” for jurisdictions not complying with statutes involving aviation tax law. Kirk Shaffer, associate administrator for airports at the FAA, appealed to attendees last month at the 2019 NATA Aviation Leadership Conference: “You can do a lot” to help the agency on the issue, he said.

Airport managers, he continued, will often turn to the agency for assistance, whispering, “I’ve got a problem here,” but saying there is little they can do. Airport officials often answer to a mayor or county commission with other priorities, he said. Shaffer added that he is happy to step in, because in the long run, it is in the best interest of the community.

“The more of that revenue that stays on the airport, the less the cost of the airport on the community. The more goods and services the airport can offer,” he said, adding that the airport’s ability to repay expansion costs also increases in tandem with the revenue it generates.

“The fact remains that no matter what size the airport is, whether it’s a major hub or a small general aviation airport, or something in between, that airport is an economic driver in the community.” He pointed to the important roles airports play in air medical, law enforcement, cargo delivery, shuttle, and community services and emphasized that they are job creators and play a role in community development. “That’s an undeniable fact.”

Community leaders who divert revenue from the airport to other municipal budget areas are only harming themselves, he said.

“You folks can serve in the same role that I try to serve,” Shaffer told attendees. “When you are talking to your mayor or city council, you as the aviation professionals, can educate them on the adverse impacts that flow from violating that federal statute.”

The FAA does not necessarily want to play the role of enforcer, he said. “Our job is to build stuff. That means construction projects will come to a grinding halt. But if we find a sponsor that is not working with us in good faith, then it could come to [enforcement action].”

Instead, the agency has been working with jurisdictions on compliance. Many are unaware of the laws or confused by revenue flows, particularly with state and local fuel taxes. Of the jurisdictions the agency has worked with over the past five years, 70 have come into compliance, but another 107 still haven’t satisfied federal requirements.

The agency recently sent out another round of compliance letters. Of the 47 sent, they received 32 responses, eight of which sought more time. The agency granted a little more time, but Shaffer stressed, “The rules have not changed. Everyone has had time to obey the law.”

He also noted how this could harm a community. One airport sponsor that handles a network of airports, he said, is out of compliance by at least \$100 million. “This is a real problem in the system.” Not only does the sponsor face losing grants, but fines and charges associated with non-compliance could amount to as much as \$300 million.

‘We need to do better’

During his discussion at NATA, Shaffer also underscored the importance of adequate funding for airports. When it comes to appropriating funding for airport grants, “We need to do better,” Shaffer said.

He noted that Congress has set airports’ funding at \$3.35 billion for several years. With that, “You are still going to come out with about \$100 billion worth of pent-up capital demand in the system for very important safety, security, and capacity projects.” At current levels, “It’s going to take us a long time to tackle that...it would be great if Congress were to appropriate even more than the regular [Airport Improvement Program levels].”

Having said that, Shaffer added Congress did provide an additional \$1.5 billion in additional discretionary funds over the past two fiscal years. The first \$1 billion of that funding came with the stipulation that at least half would be spent on small hubs, non-hubs, and non-primary airports. Importantly—“something the FAA is very proud of”—is having spent 88 percent of that fund on the smaller and non-primary airports.

This is an emphasis at the Department of Transportation, he added, saying the first question he receives every time he is with Transportation Secretary Elaine Chao is, “What has the agency done that day to help small and rural airports?”

Shaffer also stressed that some airport formulas, at first blush, do not look like they would impact that general aviation community. But they all have an impact, he said. For instance, when larger airports’ passenger facility charges reach certain levels of revenue, those airports then forfeit some of their other funding. That money rolls back into the funding pot for smaller airports to use. He stressed that the FAA ensures it spends the allocation. In Fiscal Year 2019, he said, out of the \$3.35 billion allocation, “We left 76 cents...on the table.” ■

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Flying the augmented skies with Red 6

by Matt Thurber

Imagine you're a new military pilot about to refuel in the air, the first time on your own without the instructor. You're flying in formation with a KC-46 tanker and in preparation for refueling, you slow down slightly and drop back behind the tanker, which still looms large in your view. The refueling drogue hangs from the tail of the tanker, beckoning you to move forward and capture it in the receptacle on the nose of your jet. You're 100 percent focused on the task, making tiny movements with the controls, pushing and pulling on the throttle to try to mate the drogue with your airplane so you can take on some much-needed fuel. Suddenly, you realize that you got behind your airplane; something, maybe a bit of turbulence, caused you to shift slightly. Perhaps you over-controlled, and there's no instructor on board to take over, and then bam, you've had a midair collision with the drogue, uh-oh...

Or not.

It turns out that the KC-46 is a "virtual asset," and your very real airplane is just fine. You're flying formation with a 3D airplane that isn't real but is dynamically interactive, in other words, it flies and acts like a real airplane. And while flying your airplane, you can interact in real-time with this virtual asset, allowing you to practice air-to-air refueling, dogfighting against an adversary, formation flying, bombing runs on fake targets, and other important training.

A Santa Monica, California-based technology company called Red 6 has

developed this capability, which essentially means creating augmented reality (AR) 3D virtual assets that pilots can "see" while wearing a specially equipped helmet. What is significant about what Red 6 has accomplished is that the virtual assets are not just fixed in place but act as though they are physically moving in the real world. A virtual asset, in other words, that flies like a real aircraft, and that pilots flying real aircraft can interact with.

Red 6 was formed after a chance meeting in 2015 between Dan Robinson, Nick Bicanic, and Glenn Snyder. Robinson, a UK Royal Air Force Tornado pilot, is a graduate of the UK Fighter Weapons School (Top Gun equivalent), and the first non-American to fly the F-22 Raptor. He was building a Berkut composite, canard-configured experimental amateur-built airplane at Santa Monica airport. Bicanic (also a helicopter pilot) and Glenn Snyder were introduced to Robinson and a serendipitous conversation ensued. Snyder had been working on augmented and virtual reality projects and he showed Robinson one of his more interesting developments: a unique virtual reality (VR) race-car gaming environment.

This turned out to be a setup where two separate drivers in two real cars raced against each other, but one was in the U.S. and the other in the UK. In each car was a driver wearing VR glasses, which obscures the outside view, along with a safety rider. Inside the VR glasses, the drivers could see they were on a virtual racecourse, but

they could also see each other's car, virtually, so they could race against each other. In reality, they were each driving around spacious parking lots, separated by thousands of miles and connected via the internet. It was a wild idea that worked perfectly, and it planted a seed that led to the launch of Red 6.

When he saw the VR race car setup, Robinson asked Bicanic and Snyder whether this would be possible to replicate with airplanes. The answer was, "It's technically difficult and a very significant [technology application], but we think it's possible." But Robinson realized that "no one is going to allow fighter pilots to fly around in an entirely virtual world" while wearing vision-obscuring VR glasses, so then he asked if it would be possible to use AR to place virtual elements in the real world.

AR and VR

AR differs from VR in that the user can still see the outside world while wearing some sort of glasses or visor that projects the AR images onto the wearer's eyes. With VR, the user can see only what is projected onto the screens in the glasses, which don't allow any view outside.

The quick answer to Robinson's question was "no," because AR doesn't work outdoors in dynamic environments. But this didn't stop the line of thought that was quickly developing, and the three of them figured that if this outdoors AR problem could be solved, they could be at the forefront of developing a system that

would open up new vistas in the training market, potentially saving military forces and other entities billions of dollars in training costs. Red 6 was born.

The essential problem for a military air arm is that it has to train pilots to fight against adversaries. And the adversaries have grown increasingly sophisticated, leveling the playing field among the largest and most well-funded countries, meaning that even more training is necessary. The typical solution is to hold exercises in which the blue air good guys dogfight against red air bad guys. The cost of running these training exercises is enormous, especially if it involves flying fighters from the UK, for example, for sessions to be held in Nevada. And, while the training itself is useful, the red air pilots are not learning how to be the good guys, so some of their time is spent inefficiently. Another problem is that it is difficult to simulate accurately an adversary's fighter by trying to replicate its performance with a completely different airplane. Finally, the military is facing a pilot shortage, and this has a huge effect on training capability.

It turns out that the U.S. Air Force Research Laboratory's 711th Human Performance Wing has been working on this problem and came up with the Secure Live Virtual Constructive (LVC) Advanced Training Environment (SLATE). This allows pilots in real airplanes to shoot at computer-generated targets that are beyond visual range, along with simulators on the ground with computer-generated targets for adversary training. The problem with LVC, according to Robinson, is that it doesn't allow the pilots flying real fighters to see and interact with virtual and constructive assets that are within visual range.

So Robinson contacted the Air Force, starting with its AFWERX research and development unit, which referred him to the Research Laboratory. In February, Red 6 hosted 12 visitors from the lab, the Air Force's Test Pilot School, and Air Education and Training Command to test-fly an AR training sortie created by Red 6 using ground-based equipment, showing how it might work in the air. The test was conducted with the subject sitting inside Robinson's Berkut, and the test involved a simulated AR sortie with aerial refueling and two-against-two fights against Russian adversaries.

The Air Force awarded Red 6 a \$75,000 Small Business Innovation Research grant, and the Red 6 team then went to venture capital companies and raised a seed round of more than \$2.5 million, led by Moonshots Capital. "That gave us our runway," Robinson said, and this allowed the company to begin developing its Airborne Tactical Augmented Reality System (A-TARS).

The Air Force researchers really wanted to see the Red 6 A-TARS work in live flight and challenged Red 6 to, as Robinson said, "prove you can fix an object in space and lock it there and we can maneuver in relation to it."

The Red 6 team started with a virtual framed cube, without sides, fixed in space. While wearing Red 6's modified Gentex HGU-55 helmet, the pilot can see the virtual cube and fly around, over, and under it or through the sides. The Coupled Fusion Tracking-equipped helmet is fitted with a quick-release AR module and an external gold polycoated visor. A vital function is tracking the pilot's head, and a hybrid-optical tracking system does this, separating eye tracking and head tracking functions to ensure sufficient fidelity. An avionics integration system (AIS) manages the system and ensures that what the pilot is seeing matches the desired VR asset. Then every 15 to 20 milliseconds, the CFT draws images to be projected onto the left and right eye, slightly different to account for stereo perception, thus giving the pilot an image that he can see superimposed on his view of the real world.

Demo Flight

Robinson decided to put his Berkut to work as the flight-test platform for A-TARS, because it is suited to the requirements for demonstrating fighter-like maneuverability. The single-engine, piston-powered Berkut is aerobatic and can withstand high g loads, so it is ideal for chasing virtual fighters through the sky, although obviously not at jet fighter-like speeds.

The Berkut is set up so both the front- and rear-seat occupants can wear the A-TARS helmet. Robinson does most of the demo flights, flying from the front seat. The rear seat's flight controls are removed.

For A-TARS to work, the pilot must be able to see both the real world brightly enough when looking through the AR goggles and visor and also the virtual assets

projected on his or her eyes. Another challenge for the Red 6 developers is making sure both are sufficiently bright to make flying safe and allow a good view of the assets.

The pilot's peripheral view is also important. While the pilot's field of view through the A-TARS helmet is essentially unlimited, that is, the pilot can look in any direction by turning his head, the peripheral view is limited. Presently, A-TARS allows more than 105 degrees of peripheral view.

The peripheral view is critical in fighter warfare because a pilot's eyes normally can spot a moving object at the more-than-180-degree limits of ordinary eyesight. Robinson said, "We will achieve 150 degrees in the next 18 to 24 months. It's not 180 degrees, but it's close. And crucially, brightness would be off the charts and would not be restricted because we're not using a traditional reflective surface [for the visor]."

AIN flew the demo on December 6, taking off from Camarillo Airport in southern California. The weather was gray and there were rain showers nearby, so it wasn't optimal lighting for A-TARS. The helmet was comfortable and didn't feel too heavy, but the view through the visor was somewhat dark, like wearing sunglasses.

After takeoff, Robinson climbed to between 5,000 and 6,000 feet north of the airport. He first showed me the virtual 3D cube, then climbed and zoomed around the asset so I could see how that looked. Next, he pulled up alongside the KC-46 tanker, which was flying in formation with an F-22 Raptor. The images are monochrome, depicted in sort of a filled-in wireframe style and light-colored so they contrast well with the outside world. As we flew near the KC-46 and



Red 6 uses a specially equipped helmet to let pilots see an augmented reality 3D virtual asset for training. It is working toward a 150-degree field of view.

F-22, they acted as I would expect real airplanes to fly, growing larger as we flew closer, sliding away as Robinson banked, and so forth. After sliding over to fly next to the F-22, Robinson slowed the Berkut and slid us behind the tanker's boom, as if preparing to mate with the drogue. The physics of what we were doing seemed completely natural.

Finally—and I was the first-ever to experience this—Robinson pulled up a Russian PAK FA future tactical fighter and pulled us into a 3-g bank as he chased it around the sky. We had to cut this air-combat portion short as rain was moving toward the airport. But it demonstrated how A-TARS can work for adversary combat training.

The behavior of the adversary can be modeled using pre-programmed scripted artificial intelligence, which is what I saw during the demo. Red 6 is working with a company that has developed artificial

intelligence dogfighting algorithms as part of the Defense Advanced Research Projects Agency's (DARPA's) Strategic Technology Office Air Combat Evolution program. But Red 6 could also incorporate simulators to provide the "virtual" element of the Air Force's LVC, according to Bicanic, which would allow a pilot on the ground to "fly" as the virtual adversary asset.

A huge advantage of A-TARS is that because the virtual assets are computer-generated, it is possible to create any kind of flying machine. "If we have some intelligence [about the asset] and can code, you can train against anything you want," said Robinson. "We could do a [Star Wars] X-wing or Millennium Falcon. It's just code."

What's Next for Red 6?

Much of the work to make A-TARS commercially useful and capable of fulfilling the military and other missions remains to be done. The Red 6 team believes that A-TARS holds huge promise for improving pilot training at far lower cost.

To continue developing A-TARS, Red 6 plans to raise more money, including a Series A fund in the first quarter of 2020. "What is the problem we are solving?" Robinson asked. "We're putting virtual airplanes in the real world, not just for pilots, but to connect everyone together in an augmented battlespace. A-TARS offers an incredible opportunity to synthetically train across multiple domains."

Ultimately, what Red 6 is really going after, according to Robinson, is eliminating the portable computers that we all carry, our smartphones. "The trillion-dollar market is spatial computing for consumers," he said, "killing phones and manipulating things in the space around us. We have a pathway, a technology roadmap for display technology for the consumer market. How do we get there? The problem we're solving [first] is allowing AR for the first time to be mobile and work outdoors. We have an incredibly compelling use case."



Dan Robinson built a Berkut composite, canard-configured experimental amateur-built airplane that now serves as the flight-test platform for the Airborne Tactical Augmented Reality System (A-TARS).



DUBAI AIRSHOW 2019

Textron unveils new roles for special-mission models

by Jerry Siebenmark

Textron Aviation arrived at the 2019 Dubai Airshow last month with an emphasis on special-missions aircraft, announcing a new option for the Beechcraft King Air 350 and a new role for the recently certified super-midsize Cessna Citation Longitude. The Wichita airframer will introduce an FAA-certified option for extending the nose of the 350 that provides 12 cubic feet of extra space and is capable of holding 250 pounds of extra equipment.

"We've actually delivered the first couple of them already and there are a lot of different missions possible with those," Textron v-p of defense and special missions sales Bob Gibbs told **AIN**. "We've got different equipment we can put up there for different customers." He declined to disclose the first customer for the extended-nose option.

The new equipment bay has a range of possibilities, he said. "We currently

don't have it certified as a baggage compartment, so it's not for golf clubs, yet." But Textron does have a proposal out on a potential medevac order in which the customer requires 3,000 cubic meters of oxygen. Textron is proposing to use that extra space for additional oxygen bottles. On medevac-equipped King Airs, Gibbs added, having the extended nose actually improves the 350's center of gravity because of all the equipment carried in the passenger compartment, such as the stretcher and medical monitoring equipment. He noted the additional space could also be used for special missions 350s used for maritime patrol and other intelligence, surveillance and reconnaissance missions.

Textron also used the show to announce that Japan's Civil Aviation Bureau has ordered a Longitude for flight inspections, its first special-missions application. "They needed the speed and



TEXTRON AVIATION

Textron Aviation's first special mission application for its new Cessna Citation Longitude will be a flight inspection aircraft for Japan's Civil Aviation Bureau.

the range of the [Longitude] and it was the best value for them," Gibbs said, noting that the Japanese CAB already owns and operates Citation CJ4s.

He also added that the OEM's first special-missions Latitude in an air ambulance configuration has already proved successful with its new owner, Babcock Scandinavian Air Ambulance in Norway. "It scared everybody, how quickly it ramped up from when the operator took over that contract in Norway," Gibbs said. "They and all of us expected a slow ramp up, and they flew something like 60 missions in the first week." In its first 90 days of operation, Babcock's Latitude has flown missions totaling 300 hours, Gibbs added.

With the new SkyCourier coming on line, followed by the Denali, Gibbs said there are more opportunities ahead for Textron's special-missions business. The high-wing, twin-turboprop SkyCourier is "an airplane that we're already looking at how to missionize so, very early on in the delivery process, we hope to have some specializations [and] customers that we can announce," Gibbs said. Its first flight is expected in early 2020. Likewise, Textron is looking at potential applications for the single-engine turboprop Denali. "We have customers that are very interested in that platform for a lot of different missions," he explained. "The engine that's in it with the Faded and low pilot workload are interesting to customers." ■



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GOP leaders oppose DHS-operated C-UAS

by Mark Huber

The ranking members of the House Transportation and Homeland Security committees are urging the Department of Homeland Security (DHS) not to employ counter-UAS (C-UAS) equipment around U.S. airports.

In a letter to acting DHS secretary Chad Wolf, U.S. Reps. Sam Graves and Mike Rogers argued that DHS deployment of C-UAS around airports was outside the scope of existing federal law and beyond the boundaries of DHS's competency. "Beyond the clear lack of Congressional intent to authorize the TSA [Transportation Security Administration] and FAMS [Federal Air Marshal Service] to carry out this kind of C-UAS activity, DHS's experience in operating C-UAS equipment, particularly within complicated airspace with civilian air traffic over populated areas, is sorely lacking," the congressmen wrote.

The pair also noted that the enabling legislation for federal deployment of C-UAS, Section 1602 of the FAA Reauthorization Act of 2012 (PL 115-254), limited that deployment to a "covered facility or asset" as defined as facilities and assets of Customs and Border Protection, the Secret Service, buildings guarded by the Federal Protective Service, national security special events, special event assessment rating events, mass gatherings, active federal law enforcement, emergency response, or security functions.

"The mitigation of a persistent UAS in the vicinity of an airport or in the airspace around such an airport does not fall into any of the categories listed above or in the law," Graves and Rogers said. The pair stressed that they are not opposed to the deployment of C-UAS around airports, but want to ensure that it is executed by an agency with the proper background and congressional authorization. "If the [Trump] Administration believes that another federal agency needs additional authority to mitigate credible UAS threat near airports, we welcome discussion along those lines," they said.

At an international drone symposium held in May, Serge Potapov, federal air marshal in-charge, openly discussed DHS's C-UAS efforts including 3D modeling and simulations using Department of Defense (DoD) technology. Potapov said that the TSA is looking

at C-UAS technology but acknowledged that it is dangerous to use at airports and that the first priority in the event of a drone incursion is to locate the aircraft's operator. Potapov's remarks came less than a week

after the FAA's director of airport safety and standards issued a written warning to airport administrators regarding C-UAS. John Dermody reminded local and state airport administrators that the FAA "currently

does not support the usage of C-UAS, which include active interdiction capabilities, by any entities other than the federal departments with explicit statutory authority to use this technology."

DHS is currently funding a Rand Corporation study at the Homeland Security Operational Analysis Center to assess UAS threats at airports. Data for the study will be used in a final report to Congress. ■

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U.S. Customs retires the last of its drug-busting Citations

by Gordon Gilbert

The remaining five Cessna Citation 550s, and the only law enforcement jets operated by the U.S. Customs and Border Patrol (CBP), were scheduled to be auctioned off by the end of last year. A total of 28 of these Citation models were built and modified for the agency and patrolled the nation's borders for more than 40 years.

Cessna modified the C-550 to exacting CBP standards, including equipping the aircraft with military "fire-control" radar, sophisticated infrared cameras, custom instrument panels, and law enforcement communication packages.

According to the agency, "The C-550 Interceptor, along with the tethered Aero-stat radar systems, all but eliminated the illegal use of private aircraft smuggling into the United States." The agency said

that since 2012, the C-550 contributed to the seizure of 741 pounds of cocaine, 11,687 pounds of marijuana, 608 pounds of methamphetamine, 83 weapons, five aircraft, and 58 vehicles. The C-550 also conducted 260 hours of surveillance during Super Bowl football games.

Although the retirement of the Citations means the CBP will no longer operate jets, the agency will still have an impressive fleet of interdiction air support ranging from single-engine pistons, single- and multi-engine turbo props, turbine helicopters, and Predator drones. Also, a CBP spokesperson told AIN that the agency is "currently funded for five additional multi-role enforcement Beech Super King Air 350ERs, five Sikorsky HH-60s, and 16 light enforcement helicopters." ■



With the retirement of the last of its Cessna Citation C-550s, U.S. Customs and Border Protection has ended its more than four decades of jet operations. Twenty-four of the factory-modified Citation IIs were delivered to the agency's Air and Marine Operations unit, while an additional four airframes were later modified. The four remaining C-550 Interceptors were scheduled to be sold off by the end of last year.

Harbour Air flies all-electric commercial model

Harbour Air made what it said was the world's first flight by an all-electric commercial aircraft on December 10 when one of its re-engined DHC-2 de Havilland Beavers took off from Richmond, British Columbia. The six-passenger aircraft made a short test flight powered by a single 750-hp Magnix magni500 electric motor.

The Canadian operator's goal is to be ready to operate scheduled passenger flights in all-electric aircraft within two years. In addition to the DHC-2 Beaver, it operates a 40-strong fleet of larger DHC-3 Turbine Single Otters and DHC-6 Twin Otters. Magnix expects that it will take until the end of 2021 to get the required supplemental type certificates for the three aircraft.

Harbour Air's network connects Vancouver and Seattle with Pacific Northwest destinations—including Victoria, Nanaimo, Tofino, Whistler, Sechart, Salt Spring Island, Pitt Meadows, Maple Bay and Comox. It carries around 500,000 passengers each year, with around 300 daily flights between scheduled and charter services.

U.S.-based Magnix is developing electric propulsion systems for a variety of aircraft applications. These include the all-electric Alice fixed-wing design being developed by its sister company, Eviation Aircraft, as well as electric vertical takeoff and landing (eVTOL) aircraft. **C.A.**

FAA releases go/no-go medications list

by Kerry Lynch

As part of the ongoing industry/FAA campaign to stem loss-of-control in-flight (LOC-I) accidents, the FAA recently released a go/no-go list and safety briefing to help pilots determine the safe use of over-the-counter medications while flying. In releasing this long-awaited information, the FAA noted that a 2011 study from the FAA's CAMI Toxicology Lab found that 42 percent of 1,353 pilots tested after fatal accidents were found with at least one of the drugs from the list in their system. Of those, 90 percent were flying under Part 91.

"We all know that some drugs may compromise a pilot's ability to control the aircraft and/or adversely affect judgment and decision making. The difficulty comes for investigators in trying to quantify the known detriment that comes with various medications and the physical conditions that require their use," the FAA said.

Also, the agency worries about pilots not disclosing medications to their aviation medical examiner. "Undisclosed treatments could hide potentially impairing drug interactions," the agency said. "In many cases, there are other treatment options that may allow you to continue flying, but your AME [aviation medical examiner] needs to know what medications you are using."

In addition to listing go and no-go medications, the FAA list—What Over-the-Counter (OTC) medications can I take and still be safe to fly?—provides a checklist for pilots to determine whether they are fit for flight. Pilots are advised to wait five times the dosing interval of

a "no-go" medication before flying. In other words, if the medicine has a recommended four-hour interval between doses, pilots should wait 20 hours from the last dosage before flying.

These efforts stemmed from "safety enhancements"—or calls to action—that the government/industry General Aviation Joint Steering Committee (GA-JSC) issued earlier this decade to address LOC-I. In all, the GA-JSC released close to three dozen such safety enhancements aimed at LOC-I, which remains the leading cause of fatal aircraft accidents.

Among those were a couple aimed at the use of medication, including a recommendation for a "public education/outreach campaign to promote the understanding of the effects of medication" and one specifically calling on the FAA to provide an updated list of medications that should and should not be taken when flying.

Richard McSpadden, executive director of the Aircraft Owners and Pilots Association (AOPA) Air Safety Institute and co-chair of the GA-JSC, welcomed the release of the list, saying the industry has pushed for it for years. "It's not as extensive as we'd like it to be, but at least it's a start where pilots can go," McSpadden added.

AMEs have this information, but "we felt this should be information that all pilots can access," said GA-JSC members Lauren Lacey Haertlein, general counsel for the General Aviation Manufacturers Association.

The NTSB has found that antihistamines were the most commonly found

substances. Other top substances the NTSB found included marijuana, with an increasing incidence of positive tests, as well as hydrocodone, a legal prescription drug, according to Haertlein and GA-JSC member Peter Korns, manager of tax, operations, and workforce engagement for the NBAA, both of whom spoke at the November Bombardier Safety Standdown in Fort Worth, Texas.

While these were just samples found in pilots and not representative of how much or whether the drugs were a factor in the accident, Haertlein said it is important to have a picture of what is happening with medication use. This has implications for the information that needs to be relayed to pilots, she said.

It is particularly important given how much medication there is in the U.S., Haertlein said. The Centers for Disease Control and Prevention has found that 48.9 percent of the population uses at least one prescription drug in a 30-day period, she said, but added, "The most common thing we are seeing is over-the-counter medication."

AOPA plans to continue to work with the FAA on expanding the list over time, the association said. Meanwhile, the association also offers its own medication database based on FAA decisions, along with a medical self-assessment course. ■

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Safety team studies DEF exemption, dyes

by Kerry Lynch

Concerned about the “major” safety risk associated with potential diesel exhaust fluid (DEF) contamination in turbine aircraft, a government-industry safety evaluation team is recommending that the Environmental Protection Agency (EPA) exempt airport vehicles from mandatory use of the additive. The recommendation was among 15 that the FAA Safety Risk Management Team (SRM) developed after evaluating risks associated with on-airport DEF use.

Recommendations also surrounded training for DEF handling, communicating the associated risks, exploring the potential of dyes for identification of the additive, reaching out to manufacturers and suppliers on the potential damage, conducting further research of the reactions involved with DEF, and updating guidance and other safety information, among other suggestions.

The SRM, which comprised a cross-section of FAA and industry representatives, was established following three events of jet fuel contamination with DEF. Since 2010, the EPA has required on-road diesel trucks to use DEF to reduce NOx emissions. That requirement expanded to other diesel trucks, including airport vehicles, in 2014. But when mixed with jet fuel, DEF clogs jet engines’ fuel filters and nozzles, causing engine damage and in-flight shutdowns.

Human Error

In each of the three events, FBO personnel inadvertently added DEF to fuel truck anti-icing injection (FSII) system reservoirs. Collectively 18 aircraft—including three military airplanes—were fueled with the contaminated fuel. As a result, six civilian and three military aircraft were forced to perform emergency landings.

The SRM concluded that contamination poses a high risk to commercial and general aviation aircraft and identified several causes.

While noting that a root cause is the EPA mandate itself, which has led to the increased use of DEF on airports, the SRM pointed to “confusion in the identification and differences between DEF and FSII by fueling personnel.” It added, “There are varying applications of training and inadequate awareness regarding the dangers of jet fuel contamination with DEF.” The team further cited inconsistent adoption of industry-wide

standards and guidance, as well as gaps in regulatory oversight.

“The presence of DEF on airports creates the hazard of jet fuel being contaminated by DEF,” the report states. “The hazard primarily

applies to Part 91 and 135 operations. Any refueling trucks with FSII containers have the potential to be contaminated with DEF, and any aircraft that requires FSII also has the potential to be contaminated with DEF.

Such a request for an exemption would come from industry. But many of the other initiatives are more collaborative and already underway. The FAA and industry have sounded the alarm in the general public about the risk, and NATA has issued decals to clearly identify DEF containers. Research on the possibilities of dyes is ongoing, as are discussions of using different-size containers or premixed fuels with FSII. ■

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Trade-A-Plane resource adopts online-only format

by Jerry Siebenmark

Trade-A-Plane magazine, a staple for aviators and would-be aviators for more than eight decades, will cease publication after its third December issue, the family-owned publisher Cosby Harrison Co. announced December 4. The publisher is opting instead to move to a strictly online and digital format with Trade-A-Plane and two other magazines targeted at the heavy construction and oil-and-gas industries.

“The biggest decision behind it as with everything is cost,” Cosby Harrison CEO Adam Strachn told **AIN**. “While it’s a sad thing, because it’s been such a mainstay—you see them lying around FBOs everywhere—this is not a bad thing as far as we are concerned. We are very excited about what we can do, how we can continue to help our customers...and do it in a new way and continue to innovate within the aviation marketplace, itself.”

While the economics of printing Trade-A-Plane were difficult, it’s hard to argue its intangible value to readers over the years who found the magazine more than just a way to find their next new airplane or hard-to-find part or service. For many, the magazine was a stepping stone for those who dreamed of flying or finding a way to make a living in an industry they loved.

First published in 1937 by the company’s namesake, and Strachn’s great-grandfather, after he couldn’t find parts to repair his crashed airplane, Trade-A-Plane magazine served as a shopper of sorts for the general aviation community, featuring classified sales ads of aircraft, parts, and aviation services. Until late 2017, the magazine was published in-house at Cosby Harrison’s offices in Crossville, Tennessee, with printing equipment that was well beyond its useful life, Strachn said.

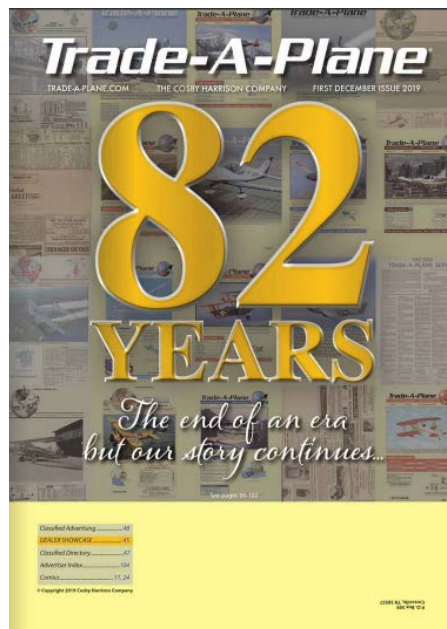
But even with the move to outsource printing, other influences were driving leaders toward ending the print publication in favor of the online and digital format, where Trade-A-Plane’s audience is increasingly going. In at least two examples, the company was losing classified print ads to its website. In one instance, Strachn said, a seller listed his Diamond DA-40NG for sale on Trade-A-Plane’s website at noon on Friday, and by 6 p.m. that day he sold it, later canceling his print ad. In another example, a seller called in an online and print sales listing on Friday afternoon, made a sale on Saturday, and canceled the print ad the following Monday. “So really the driving factor in the cessation of print was that our website was just so darn successful,” Strachn explained, adding that it attracts millions of page views and visitors.

That phenomenon, combined with the cost of printing, led to the ending of

Trade-A-Plane as a print magazine. “The print was such a massive expense that we have the ability to be a lot more profitable on the other side of it,” Strachn said. And with it will come an investment in beefing up its digital offerings, including adding what he called a “true shopping cart” function on its marketplace that will allow users to buy multiple products from a variety of vendors at the same time, as well as a revamped website that will be more user-friendly and have improved functionality. “If the whole goal of what we do is to connect buyers and sellers of anything in the aviation community, we can do it a lot better, faster and more efficiently for everyone from a digital platform than we could in print,” he said.

But the big question is whether an all-digital Trade-A-Plane will have the same effect it enjoyed as a print magazine. That is, for some, Trade-A-Plane magazine was a sort of Sears Christmas Wish Book. Through paper and ink, it provided an outlet for users to dream about owning an airplane and for non-aviators to entertain the idea of learning to fly or starting a career in aviation.

For Lou Churchville, then-manager of audio-visual services for the Peace Corps, Trade-A-Plane was the inducement to a long aviation career as a commercial pilot and corporate marketer. The day Churchville, by then a private pilot with joint ownership in a Taylorcraft BC-12



Prospective aircraft buyers will do their dreaming online, as Trade-A-Plane moved to an online/digital-only format last month.

taildragger, received his second-class medical, “I immediately started thinking this is what I want to do,” he told **AIN**. “I can fly commercially. I’ll figure out a way to do it.”

One day while reading a copy of Trade-A-Plane on his lunch hour at the Peace Corps, he spotted an ad for Fred Ayres’s crop dusting school in Georgia. But Churchville couldn’t afford the cost to attend Ayres’s school. He could, however, put together a promotional film for the school at cost in return for getting his commercial license. “And [Ayres] said, ‘Yeah, that sounds like a pretty good deal,’” Churchville said. “So we did that deal on a handshake.”

That arrangement was the springboard for an aviation career that included flying

charters and sales demos, as well as working as a test pilot for several companies where he also served as a marketing and sales executive, including Page Beechcraft, Page Avjet, Signature Flight Support, and Max-Viz.

“The portal of all this dream fulfillment was Trade-A-Plane and that display ad,” he said. “Absolutely that was the moment that had a major impact on my life.”

Over the years, Strachn, too, has heard stories of how his family’s magazine changed the lives of readers. The one that sticks out to him most is a story recounted to him while attending EAA AirVenture in Oshkosh, Wisconsin. A reader of the magazine told Strachn that years earlier he was an airframe and powerplant mechanic in the Air Force who was preparing to leave the service. Strachn said the mechanic wasn’t sure what he was going to do after his service. But his crew chief tossed him a copy of Trade-A-Plane, where the man found a listing for a biplane air tour service in Hawaii for sale.

“He went down there, bought the company, and has been giving tours ever since,” Strachn said. “Whenever somebody comes up like the gentleman I spoke to at Oshkosh, ‘Hey I was rolling out of the Air force, flipping through your magazine and it fundamentally altered my life,’ stuff like that makes us feel good. Even down to, ‘Hey I found my first airplane in your-all’s magazine,’ you get excited when you hear people say, ‘Your magazine had an impact on my life.’”

As a long-time Trade-A-Plane employee, senior marketing consultant Michelle Graham put it in an e-mail to **AIN**: “Trade-A-Plane is the spark that fuels the fire of an aviation dream to reality for so many individuals. And to play a small part in that is rewarding.” ■

Bombardier takes its first SAF shipment in Montreal

Bombardier has taken delivery of its first shipment of sustainable aviation fuel at its Montreal headquarters facilities. The 7,300 gallons of fuel, blended with traditional jet-A and delivered by Avfuel, represents another step in the airframer’s commitment to secure a long-term SAF supply, which has been recognized by the industry as one of the key pillars toward a sustainable future for business aviation.

“Working with leading OEMs like Bombardier is an opportunity for Avfuel and business aviation as a whole to meet sustainability goals,” said Avfuel executive v-p C.R. Sincok. “We are appreciative of the Bombardier team for its willingness to participate in this initiative, for its professionalism in working with Avfuel on the logistics, and for the work it’s doing on green initiatives.”

Since 2017, Bombardier has maintained a supply of renewable jet fuel at



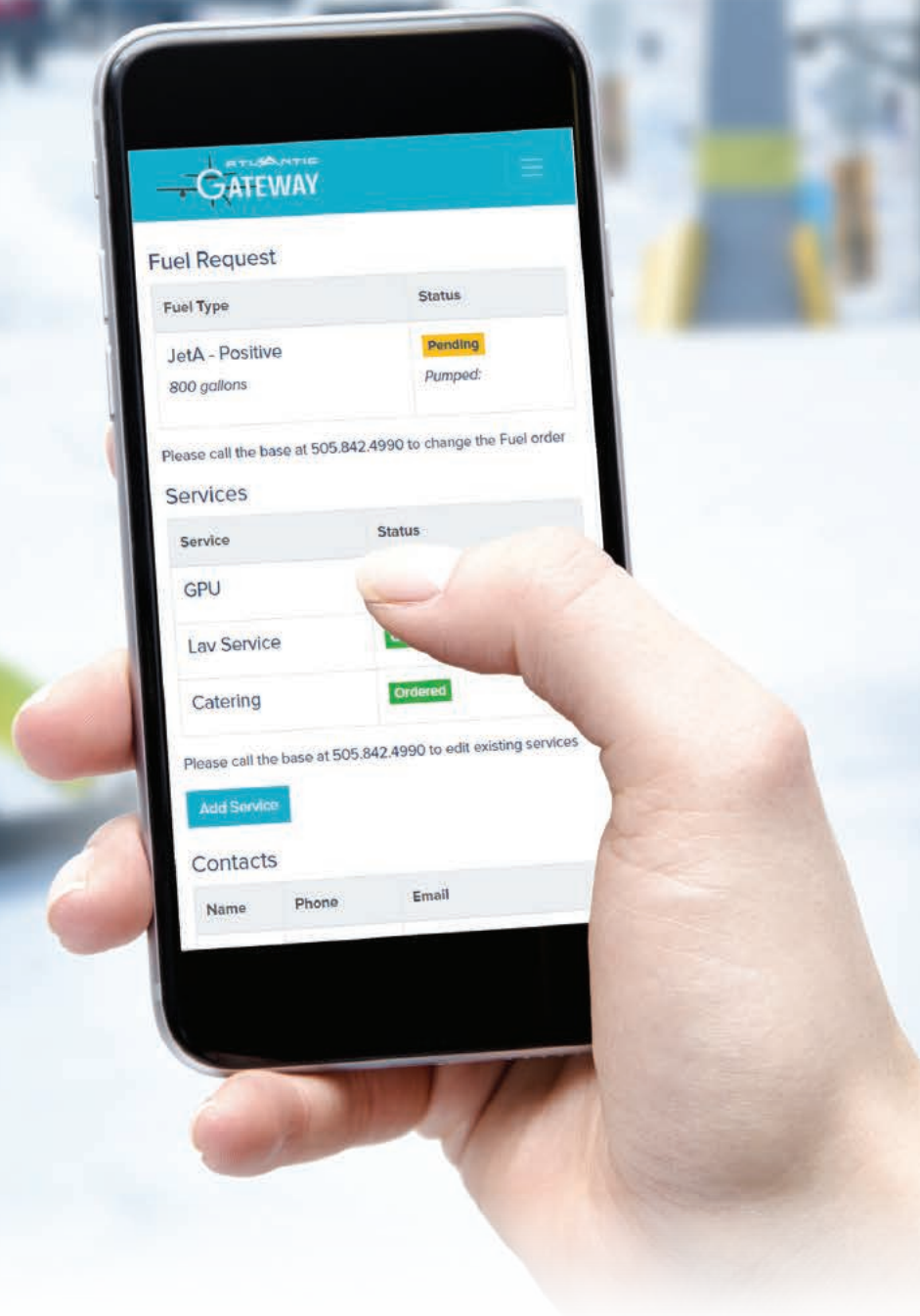
While Bombardier has used SAF in its demonstration aircraft fleet for the past two years, this shipment represents the first it has received at its Canadian headquarters.

its Hartford, Connecticut facility, home to its customer demonstration fleet, which it flies to major airshows and events to raise industry awareness and demonstrate that SAF can become a mainstream drop-in alternative to traditional jet fuel for turbine aircraft.

“We stand behind our commitment to help the increased use of SAF throughout the industry, said Bombardier Aviation president David Coleal. “Today we are proud to offer it for the first time at one of our Canadian facilities, and it’s only the beginning.” **C.E.**

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Boeing's ecoDemonstrator 777-200 visits Atlantic City

by Mark Phelps

When Boeing's brightly liveried, experimental-category 777-200 landed at Atlantic City International Airport in New Jersey during a recent demonstration tour, it wasn't an ordinary flight. Not only did Boeing's ecoDemonstrator fly in from Frankfurt, Germany, the first time an aircraft from the program had ever visited outside the U.S., but the approach to KACY itself was experimental. Flown using controller pilot datalink communications (CPDLC), it also included a steep 3.77-degree glideslope on the approach.

Along with government officials, industry representatives, business and community leaders, and local STEM students, representatives from the Continuous Lower Energy, Emissions, and Noise (CLEEN) program visited the ecoDemonstrator. Part of the goal of the day's program was to "welcome CLEEN II members to our home and discuss the advantages of bringing their business to the Atlantic City area," according to the Atlantic City Chamber of Commerce. The FAA's national research center sits on the grounds of the Atlantic City International Airport.

The ecoDemonstrator program dates to 2012, when Boeing launched the first flying testbed, a 737. The 777-200, an 18-year-old former passenger liner, is the sixth aircraft to participate. Along the way, ecoDemonstrators have evaluated more than 100 different technologies. More than a third of those have developed into working products for Boeing or one of its research partners. Nearly half remain in development.

The 2019 complement of tests includes a number of flight deck-oriented technologies—including a laser-radar (lidar) system from Ophir that analyzes atmospheric conditions, reading velocity, temperature, pressure, aerosol concentrations, moisture content, and more. Boeing described another flight deck enhancement on board the ecoDemonstrator—an algorithm-driven autoflap system—as “a baby step in the direction of full automation.”

In addition, Boeing showed some of its own developing tech, including “smart”

vortex generators that use temperature-sensitive “shape-memory” alloys to passively retract the surfaces in colder air aloft. The VGs show their value only during takeoff and landing, so using the alloys to retract them at altitude eliminates their drag when they are not needed at cruise speeds.

But the day's presentation concentrated on new cabin technology, starting from the floor up. The ecoDemonstrator uses a new form of flooring in the cabin entryway designed for lighter weight and better durability. Addressing the crowd of visitors filing in and out through the main cabin door, one of the hosts said, “We need to generate foot traffic as part of this trial. So you are all part of the test team!”

Another flooring innovation on test is the moisture-absorbing “Dry Floor” in the lavatory. “Even on a long flight, you can feel comfortable using the lav in your stocking feet,” said the host. Other lavatory-centric technology on the ecoDemonstrator included UV-based counter-sanitizers and a centralized system for illustrating to passengers which facilities are available.

In fact, much of the technology on show mirrored “smart home tech,” such as the lav monitor. For flight attendants,

the system can track inventory so they'll know which cabinet contains the last carton of orange juice. It can also monitor for proper stowage of service carts for takeoff and landing, as well as checking overhead luggage bins. And the infamous “seat-back and tray table” warning can now be supplemented by sensors that will identify which passengers have not yet heeded the call.

In addition to providing such alerts, the monitoring system can also spot switches and buttons, ovens, and seat motors, for example, that aren't working—in some cases alerting ground crews at the destination airport who can locate a replacement part and have it ready for when the plane lands.

The system also monitors pressurization, humidity, and air quality.

“We have lots of telemetry data on engines and aircraft systems,” said host Andre Lutz of Boeing Services in Frankfurt, Germany, “but until now, the cabin has been a black hole.” The newer technologies bring efficiencies and time and energy savings to passenger-centric cabin components.

Boeing's Jeanne Yu, director of technology integration and head of the ecoDemonstrator department, recently celebrated 30 years with the company. She described the three pillars of the ecoDemonstrator program: “innovate, collaborate, and accelerate implementation.” She cited the shape-memory alloys of the retracting vortex generators and a laser-based turbulence-detection system as two examples of innovation of 50 technologies riding along on the 777-200. Collaboration means testing the technologies and finding synergies, not only between the vendor developers and Boeing but also among the vendors themselves.

As for accelerating implementation, Wu pointed to the history of the program and how much of the technology tested has become mainstream, such as the winglets first tested on the Boeing 737; recycled carbon fiber floors; ceramic-matrix engine nozzles; and increasingly, sustainable aviation fuels. “In 2018, the 777 ecoDemonstrator we flew was the first to use 100 percent biofuel,” she said. “Overall, we use about 30 percent biofuel in the program.” ■



A Boeing host previews the ecoDemonstrator's OLED lighting system for visitors. The Boeing 777-200 recently touched down at Atlantic City International Airport for a chance to show community leaders, industry representatives, and students what the program is all about.

AOPA warns of spikes in aircraft insurance rates

Seeing aircraft insurance premiums increasing well in the double-digits year-over-year, the Aircraft Owners and Pilots Association (AOPA) has been working with insurance industry executives and underwriters on strategies for pilots to help buffer the sharp rate hikes.

“We've been spending quite a bit of time to understand what's been happening in the insurance space and come up with strategies to help educate pilots about what they can do to help mitigate the increases,” said AOPA president and CEO Mark Baker.

Rates are going up “pretty dramatically,” particularly in the owner-flown turbine market, said Tom Haines, senior v-p of media and outreach for AOPA, adding some are seeing increases in the 15 percent to 25 percent range and “some way more than that.” This is especially true for owners who are transitioning into turbines, Haines said. For the owner-flown market, which has to absorb the costs on their own, “that's serious dollars.”

Baker added that some potential buyers are now walking away from new aircraft sales once they learn the insurance costs that are coming with it. Mitigation strategies are important, Baker said, because with the current state of the aviation insurance market, “There are going to be increases.”

Aviation insurers, and especially in the general aviation niche, have lost money for most of the past decade as rates have softened. In fact, in the past year the number of aviation underwriters has dropped from 18 to 12.

But Baker said this is more than just a market correction for the insurance industry. Insurance costs for the two Boeing Max fatal accidents are estimated to top \$1 billion. Add to that other events, such as the fatal 2018 Southwest Airlines catastrophic engine failure. That is against a backdrop where the total premium intake in the U.S. across all modes of aviation is in the neighborhood of \$1.5 billion.

AOPA has worked with NBAA and insurance executives on various strategies. Among them are sharing training protocols and other efforts to enhance safety, Haines said, stressing that exceeding minimum safety standards is key in an insurance underwriter's consideration of rates.

Baker cautioned against being too anxious to switch insurers. It helps when the underwriter “knows your story,” he said. This is especially critical if an owner is stepping into a turbine from a piston.

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NATO's Sentries have participated in numerous coalition operations over the years, and were deployed to the U.S. in the wake of the 9/11 attacks. Here one of the fleet flies over Italy.

NATO E-3As to fly until 2035

by Jon Lake

NATO's Airborne Early Warning & Control Program Management Agency has signed a \$1 billion Final Lifetime Extension Programme (FLEP) contract with Boeing to upgrade 14 E-3A Sentry Airborne Warning and Control (AWACS) aircraft to allow them to remain in service until 2035. The upgrade forms part of a wider NATO strategy to counter new and growing threats, and will be funded by

the 16 allied nations participating in the NATO AWACS program.

The FLEP upgrade will ensure that NATO remains at the leading edge of technology, providing the E-3A with sophisticated new communications and networking capabilities, including new Have Quick radios, new encryption equipment, new operator consoles, upgraded mission computing, expanded data

capacity, and increased bandwidth for satellite communications. Ground systems, including the mission training center and the mission planning and evaluation system, will also be upgraded.

Program management and engineering design will be undertaken by Boeing in Oklahoma City, while installation and modification work will be completed in Europe. The upgrade work will be combined with the normal planned technical maintenance schedule to minimize the impact on operational availability and will involve a number of companies, including Northrop Grumman, Airbus, Kongsberg, Leonardo, Thales, and Indra.

NATO originally acquired 18 E-3As, which were registered in Luxembourg (which had no air force) and delivered from January 1982.

There are forward-operating bases (FOBs) at Trapani in Italy, Aktion in Greece, and Konya in Turkey, and with a further forward-operating location (FOL) at Ørland, Norway. Aircrews are drawn from 18 different NATO nations. The UK's dwindling fleet of E-3D aircraft forms an integral part of the NAEW&C Force as the E-3D Component, while France has an observer role and ensures that its E-3F aircraft remain interoperable with NATO's E-3 fleet, with which it often conducts co-ordinated operations.

The NATO E-3A Component has 16 E-3As on charge, having lost one in an accident and having retired another in

2015 for spares recovery. The latter aircraft had accumulated 22,206 flight hours and was due to undergo a costly six-year cycle Depot Level Maintenance (DLM) inspection. The long-term fleet consists of 14 aircraft, which have been fitted with modernized flight decks under the so-called Dragon upgrade (Diminishing manufacturing sources Replacement of Avionics for Global Operations and Navigation).

Stoltenberg said that NATO is already planning to replace the AWACS in 2035 and that such a replacement will include "many of the technologies we are talking about today, such as autonomous systems, artificial intelligence, and big data." ■

First Gripen E for Sweden flies

The first series production Gripen E for Sweden has made its initial flight, piloted by Försvarets Materielverk (FMV, defense materiel administration) test pilot Henrik Wänseth, Saab announced on December 3. Flygvapnet (the Swedish air force) is to receive 60 JAS 39E single-seaters. They are equipped with a wide-area cockpit display and helmet-mounted display from AEL Sistemas, Elbit's Brazilian subsidiary. Some form of operating capability is scheduled to be achieved in 2021. The first Gripen E development aircraft took to the air on August 26 and is slated for delivery to the Brazilian air force after first being employed on trials in Sweden. The remaining three aircraft from the first production batch are initially earmarked for Swedish trials and evaluation with the FMV.

Brazil is buying 28 Gripen E/F-39 single-seaters and eight Gripen F two-seaters for delivery from 2021. Under the 100 percent technology transfer deal, Brazilian industry is building components and will open an assembly line. It is also leading the development of the two-seater, for which Brazil is currently the only customer. Between the Brazilian and Swedish assembly lines, annual production rate is set at 24 aircraft, with additional capacity available to meet export demand.

In late November, a full Systems Rig was installed at the Gripen Design and Development Network (GDDN) at Embraer's Gavião Peixoto facility. Built as a partnership between Saab, Embraer, Atech, AEL Sistemas, and the Brazilian Air Force, the "S-Rig" simulator will become an important tool in developing and testing new systems. It will also allow test pilots to rehearse trial flights prior to getting airborne and, as such, will support the activities of the Gripen Flight Test Center (GFTC) that is to be established alongside the GDDN in 2020. D.D.

MD/Elbit team on MD 530G; more 530Fs for Afghanistan

by David Donald

MD Helicopters (MDHI) has announced a strategic teaming agreement with Elbit Systems to fit the Israeli company's Integrated Weapons System (IWS) into the next-generation MD 530G Block II scout/attack helicopter. IWS is already in use in a number of helicopter types, and the companies expect to conduct live-fire and quality assurance tests on the MD 530G during 2020.

The announcement came shortly after MD Helicopters received a fourth

delivery order from the U.S. Army Contracting Command, Redstone Arsenal, Alabama (on behalf of the Multi-national Aviation Special Project Office) for earlier MD 530F models destined for the Afghan Air Force. The latest firm fixed-price award covers "up to 12" armed MD 530Fs.

The delivery order is part of a five-year, \$1.4 billion IDIQ contract that provides for up to 150 MD 530Fs and MD 530Gs for U.S. and partner nation forces. To date,

MDHI has 54 under contract. The first delivery order was received in September 2017 for 30 MD 530Fs, also for Afghanistan. On October 27 MDHI completed delivery of this order when the final batch of five was flown in a Boeing 747 freighter from MD's Mesa, Arizona factory to Kandahar. They were reassembled and flown again within 10 days of arriving in Afghanistan. With this delivery, the Afghan Air Force brought its MD 530F procurement to 60.

The MD 530G's new-design IWS has four main elements: a helmet display tracking system (HDTs) that intuitively provides pilot guidance for both daytime and nighttime operations; and both weapons and mission management systems (WMS, MMS). The digital WMS supports a range of weaponry and integrates weapons management functions into the cyclic and collective control handles.

A digital mapping application (DMap) is at the heart of the mission system, providing a moving-map on a touchscreen display. It can show aircraft positions, known threat locations, and the distribution of friendly forces.

"Design and disruption are the cornerstone of all product development efforts," said Lynn Tilton, CEO of MD Helicopters. "This partnership with Elbit Systems will allow us to rapidly expand the capabilities of the MD 530G." ■



The Block II version of the MD 530G is to receive a digital weapon and mission management system that provides pilots with enhanced situational awareness and intuitive tactical guidance and targeting.



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when the emergency floats failed to fully inflate. They were unable to extricate themselves from supplemental harnesses they were wearing as a “safety measure” during a doors-off, “shoe selfie” photo flight. The harnesses were cross-attached to the rear cabin bulkhead or floor attach points via a tether and locking carabiner with a D-ring. The pilot, who was wearing only a standard seatbelt, extricated himself and survived. The flight was operated by Liberty Helicopters for NYONair.

The NTSB determined the probable cause of the accident was “Liberty Helicopters’ use of an NYONair-provided passenger harness tether system, which caught and activated the floor-mounted engine fuel shutoff lever and resulted in the loss of engine power and subsequent ditching.” The NTSB listed contributing factors, including deficient safety management at Liberty and NYON; Liberty allowing NYON to influence operational control of the flights; and inadequate FAA oversight.

According to the Board, the severity of the accident was affected by “the rapid capsizing of the helicopter due to partial inflation of the emergency flotation system” and Liberty and NYON’s use of a supplemental “harness tether system that hindered passenger egress.”

The helicopter’s engine failed during a “doors-off” photo tour flight conducted under 14 CFR 119.1(e)(4)(iii), which allows aerial photography flights to be operated under Part 91 as opposed to the more stringent Part 135 that typically covers air tourism flights. The exemption was designed to allow professional-photography flights and other types of aerial work.

Loopholes in Regulations

During the hearing, NTSB members repeatedly blasted Liberty and NYON’s exploitation of what they saw as a glaring loophole in FAA regulations. Co-chairman Bruce Landsberg called it “a loophole one could fly a helicopter or a truck through.” He added, “What happened here was beyond the pale.”

Landsberg struggled to contain his incredulity. “I went to FlyNYON’s website. They said since inception in 2012 they have flown over 250,000 passengers and now offer flights in Miami [and] Los Angeles. That doesn’t sound like aerial work...and the FAA had difficulty understanding this?”

As it turns out, NTSB staff investigators did discover that FAA inspectors had raised concerns about FlyNYON’s operations to their supervisors but were rebuffed. However, none of these inspectors or supervisors sought out a legal opinion from the FAA as to the legality of the operations.

“What they did not do, and we did during the investigation, is contact their legal department—which is a tool available to them—to ask what was this [operation] supposed to be under [Part 91 or Part 135],” said NTSB investigator David Lawrence. “Had they done that, they would have gotten the same legal interpretation we received that said that this [FlyNYON]



NTSB chairman Robert Sumwalt presides over a hearing about the March 11, 2018 crash of an Airbus AS350B2 helicopter into New York City’s East River that killed all five passengers aboard.

is not aerial photography, it is an air tour.” Lawrence also added that the agreement Liberty had in place with NYONair was a charter agreement that specified Part 135.

However, NYON instructed its employees never to use the words “tour or charter” and to be on the watch for overly inquisitive visitors and “anyone with a badge,” according to the NTSB. Sumwalt said both Liberty and NYON were more than “not vigilant, they went beyond the lack of vigilance. They exploited a regulatory loophole to the detriment of their customers’ safety.”

Sumwalt continued, “Once you hang out a shingle and charge money in exchange for goods and services, there needs to be a higher standard of care. I think we need to take a hard line and say, ‘If you are going to charge people to go up for an air tour, it will be conducted under Part 135.’

“There is nothing like the experience of an air tour to see a location from a different perspective, but it is madness to allow the thrill of such an experience to be spiked with unnecessary risk to passengers, to crew, and to innocent bystanders,” he said.

The FAA received additional Board criticism with regard to its STC approval of the Dart emergency floats on the helicopter, specifically with regard to the position of the float activation lever on the cyclic, the inordinate amount of pull force required to activate that lever (greater than 59 pounds), and the failure of the year 2000 crossfeed tube modification to prevent asymmetrical float inflation in the event one of the gas cylinders failed.

But the board’s most scathing criticism was reserved for Liberty and NYON, which were broadly faulted for their respective safety cultures characterized as “deficient.” Safety shortcomings mentioned by the Board included: a lack of a safety management system (SMS) at both organizations; a “misleading” NYON passenger safety video that characterized the supplemental harnesses as quick-release and equipped with an easily used cutting tool; purging pilots from safety meetings; and disregarding pilot safety concerns.

A crisis communications firm hired by NYONair to field media inquiries failed to respond to AIN’s request for comment.

Liberty executive Jerry Eisenberg said the company could not comment on the NTSB’s findings “at this time” due to ongoing accident litigation. An FAA spokesperson told AIN, “We are reviewing the NTSB’s recommendations and will respond as required within 90 days.”

Recommendations

Along with its probable cause finding, the NTSB issued 20 findings and 15 recommendations.

The Board found that “Liberty Helicopters’ and NYONair’s decision to use locking carabiners and ineffective cutting tools for passengers to rapidly release from the harness tether system was inappropriate and unsafe.” It further said the FAA’s approval process for supplemental passenger restraint systems implemented after the crash is “inadequate” because “it doesn’t provide guidance to inspectors to evaluate any aircraft-specific installations or the potential for entanglement that passengers may encounter during emergency egress.”

NTSB recommendations included suspension of doors-off passenger flights until the FAA’s supplemental restraint approval process is improved; mandating SMSs for all air tour operators; closing the photo-flight loophole; modifying the fuel shutoff lever on the AS350 to protect it from “inadvertent” activation; and training employees to recognize signs of passenger impairment and to deny boarding as appropriate. The front-seat passenger, whose entangled tether triggered the fuel shutoff lever, had a blood alcohol content level of 0.18—more than twice the legal limit. However, his intoxication was found not to be a factor in the accident. Sumwalt praised the airmanship of accident pilot Richard Vance.

“Within two seconds, he initiated descent. He went to shut off the fuel shut off lever. He slammed it back down to try to open the valve and then went back to try to relight the engine. He did activate the floats. He had a lot going on in that less than a minute. And I was frankly impressed that he got that much done under a high-stress situation.”

“The ditching was survivable,” Sumwalt said. ■

News Update

IHSF Launches Sixth Annual Safety Survey

The International Helicopter Safety Foundation (IHSF) has begun its sixth annual global survey of civil helicopter operators. The IHSF will use the results to understand where safety initiatives are being implemented—both geographically and by industry segment. Last year’s analysis of 1,000 helicopter accidents pointed to eight leading areas to improve safety: structured maintenance programs that fully comply with manufacturer recommended practices; structured programs for initial and recurrent training; implementation of safety management systems; implementation of flight data monitoring; installation of wire strike kits; implementation of manual and health and usage monitoring systems; and use of night vision systems when warranted, the organization said.

EASA Pushing for Recorders on Small Helicopters

The European Union Aviation Safety Agency (EASA) is recommending the installation of flight recorders on Part 27 helicopters, those with mtows of 7,000 pounds or less and nine or fewer passenger seats. In a recent EASA safety information bulletin (SIB), EASA noted that light-weight flight recorders are available that meet less demanding requirements than crash-protected flight recorders. In addition, the agency has previously published standards for recorders. According to EASA, flight recorder data (e.g. time, flight parameters, attitude, alarms, pilot control input, audio, inertial acceleration) is “highly beneficial for...operational fleet management, training, troubleshooting, data analysis, and risk assessment, and accident/incident investigation.”

Inmarsat Moving Forward with Helo Connectivity Service

Inmarsat is rolling out of a new high-speed system specifically designed to provide reliable connectivity services to rotorcraft. SwiftBroadband Helo X-Stream was developed to enable advanced streaming through intermediate and high-gain antennas, alleviating long-standing connectivity issues that have stemmed from rotor-blade interference. Testing last year showed that the SB-Helo X-Stream service can achieve a 40 percent reduction in data packet loss and deliver up to 400 kbps per single channel. Multiple channels can be aggregated to enhance the overall performance of the system, Inmarsat said.

Miami-Dade Orders Four AW139s

Miami-Dade Fire Rescue signed a contract for four Leonardo AW139s to be used for fire suppression, emergency medical services, and search and rescue. First delivery is expected from Leonardo’s Philadelphia facility in the third quarter of 2020.



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Pratt & Whitney Canada will provide its PW207 turbine engine for the VRT500.

P&W tapped to power Russian VRT500 helicopter

by James Wynbrandt

VR-Technologies, a division of Russian Helicopters Holding Company (RHH), and Pratt & Whitney at the Dubai Airshow signed a contract for outfitting the in-development VRT500 light helicopter with the PW207V gas-turbine engine. The same day, RHH announced the impending purchase of half of the subsidiary by the UAE's Emirati Tawazun Holding Company.

The Pratt & Whitney PW207V is an advanced version of the PW200 engine family designed for light rotorcraft and will be adapted to power the single-engine copter. The five-passenger VRT500, whose first flight is anticipated late next year, will be offered in passenger, cargo, utility, training, EMS, and VIP configurations.

"The main component of any operating system is the engine," said VR

Technologies CEO Alexander Okhonko, lauding the PW200 family as "having a proven track record in safety, reliability, economy, and ease of maintenance."

Added Andrey Boginsky, RHH director general, "PW200 engines are being operated in more than 80 countries worldwide, which should considerably simplify the certification of the VRT500 and render its after-sale support more accessible and efficient."

Deal to Close This Year

RHH's agreement with the Emirati Tawazun Holding Company, signed at the show, calls for the latter to buy half the shares of VR-Technologies, with the purchase slated to close in Q1 2020.

Abdullah Nasser Al Jaabari, chief officer and head of Tawazun Strategic Development Fund, said, "This agreement stems from the Fund's commitment to support the UAE's strategic vision of investing in advanced industries and transferring relevant technologies."

Subsequent to the closing, RHH plans "to invest at least €400 million in the development of VR-Technologies, which will help make the company's products competitive and in demand all over the world," Boginsky said.

Both parties will also cooperate in promoting VR-Technologies' products in the Middle East, and the Gulf States in particular.

In an indication the partners' confidence is well founded, VR-Technologies closed out the day by signing a corresponding dealership agreement with Sweden's Rotorcraft Nordic, under which Nordic intends to acquire ten VRT500 helicopters in a basic configuration prior to 2023. ■

Drone hits newscopter over L.A.

by Mark Huber

A news helicopter cruising at 87 knots and 1,100 feet hit a drone over Los Angeles the evening of December 4. The 2004 Airbus Helicopters AS350B2 (AStar) was being operated by long-time electronic newsgathering aviation and charter firm Helinet for television station KABC. The drone punctured, dented, and scraped the leading edge of the right vertical stabilizer immediately forward of the tail rotor.

The collision occurred over downtown Los Angeles at approximately 7:15 p.m. local time. Chris Christi, the news reporter aboard, said the impact initially sounded like a bird strike. It did not affect the ability of the pilot to control the helicopter, which made a safe precautionary landing.

The Air Support Division of the Los Angeles Police Department (LAPD) dispatched its own helicopter to the scene in an attempt to locate the drone pilot. LAPD issued a statement via Twitter reminding Angelinos to "be a responsible and legal unmanned aircraft operator" and to "know the rules." Those include a local ordinance passed in 2015 that prohibits recreational drone flights that violate federal laws or that are operated in a "careless or reckless manner." The still-unidentified drone apparently was operating in violation of a number of them, including flight after civil twilight and flight above 400 feet agl. ■

Falcon plans urban mobility terminal for Expo 2020

Falcon Aviation has unveiled a special-purpose terminal it expects to contribute to the development of urban mobility transportation in the UAE, set to launch at Dubai Expo 2020. The timing of the Leonardo-designed terminal's opening should fit nicely with upcoming certification and service entry of the Leonardo AW609 tiltrotor, George Prentzas, Falcon Aviation executive managing committee member, told **AIN** on the sidelines of an unveiling ceremony for the concept that took place at the Dubai Airshow. Urban air mobility vehicles hold the promise of providing short-distance electrically powered flight in congested metropolitan areas.

"The aircraft is under evaluation at the moment," he said, referring to the AW609 (although it is not electrically powered). "We have confirmed that the terminal—the building that is going to accommodate all passenger requirements in one area—is going to [meet] the level of service that we want

to offer to our passengers. We are evaluating several locations, but at the moment we know for a fact that it's going to be [in operation] at the Expo 2020. [In time, there could be] several of these around the country."

Prentzas said Falcon is in the middle of a thorough analysis of whether to induct the tiltrotor into its fleet, as EASA and FAA certification should occur relatively soon.

"When you do your studies in general,

and this is my personal opinion, tiltrotor is the future, but I cannot confirm right now the results of the evaluation the Falcon operation is doing," he said. "There is a key moment where you have to decide where are you going commercially. There are so many missions that we need to explore and certain aspects that need to be evaluated."

The AW609 has a range of 600-700 miles and would be ideal for point-to-point operations, said Gian Piero Cuttillo, managing director of Leonardo Helicopters. "It will be a step higher on mobility. You won't need to go to the airport and take a plane from Milan to Paris. It will change the way we do transportation."

In Prentzas's view, the question of urban mobility is bound up in the need to develop cleaner air transportation. "Air mobility is affecting lives. Everybody has to contribute from any position in any industry in order to add better, more efficient, and cleaner transportation. Travel on autonomous air taxis—these aircraft will not be piloted—[will become commonplace] around 15 years from now." **P.S.-S.**



Falcon Aviation's special-purpose terminal designed by Leonardo.

Air Methods addresses cost, as industry faces scrutiny

by Mark Huber

Helicopter EMS provider Air Methods is expanding its in-network health insurance agreements and partnering with the American Red Cross to carry blood and plasma on its aircraft. Air Methods also said it is refunding fees for Medicare beneficiaries enrolled in its advantage membership program, which was terminated in April.

The company was one of several air ambulance operators selling annual “memberships” to the public that guaranteed they would not be billed beyond the amount of their insurance reimbursement. Such plans generally cost \$100 per year per person or less. Company competitors PHI Air Medical and Air Evac Lifeteam and its AirMedCare network affiliates continue to offer the plans.

Air Methods noted that Medicare Part B beneficiaries are already covered for air medical services without a membership and that in 2018 the average out-of-pocket cost for Medicare patients transported by Air Methods was \$280, including copays and deductibles. The company said it now has 47 in-network agreements with health insurers across the U.S. and that 75 percent of its patients are covered for its services through commercial insurance, Medicare Part B, or Medicaid.

Further, Air Methods will continue to work with patients to settle insurance claims that are denied or underpaid, in or out of network. “When a patient works with the patient-advocacy team, they normally only pay their deductible or co-insurance. On average, for all patients, regardless of payer, the out-of-pocket cost for Air Methods’ services is only a couple hundred dollars,” the company said. Air Methods also said it works with local and county governments to educate patients about advocacy and financial-assistance programs.

Industry Analysis

Air Methods’ moves come as the air ambulance industry continues to face scrutiny for charging privately insured and uninsured patients substantially more than it charges Medicare and Medicaid patients and more than private insurance often covers. Patients with private insurance are often liable for the difference between the billed and reimbursed amounts. The industry has defended this so-called “balance billing,” claiming that reimbursements are less than actual costs for patients covered under government-funded health care programs and some private insurance or that their private insurance excludes the air ambulance provider from its in-network covered services.

A 2019 study by the U.S. Government Accountability Office (GAO) found that 69 percent of air ambulance transports of privately insured patients were out of

network and were therefore subject to balance billing. A GAO analysis of 2017 data showed that the median price for a helicopter air ambulance transport was \$36,400, an increase of 60 percent since 2012 (\$22,100). The 2017 figure was based on data that showed a median charge per mile of \$242 and a median distance of 45 statute miles.

During the survey period (2012 to 2017), the number of privately insured patient transports increased from 13,087 to 20,726, but the proportion of out-of-network transports of these patients declined from 75 to 69 percent. Over that same period, the geographic area served by helicopter air ambulance bases also increased 23 percent, while the number of air ambulance bases increased from 752 to 868. (Within that total, the number of fixed-wing air ambulance bases grew during the period from 146 to 182.) Roughly 60 percent of the new air ambulance helicopter bases were in rural areas, with the largest growth occurring in the southern and western U.S.

The GAO pointed out that slightly less than half the new helicopter bases are in areas that have more than 50 percent existing air ambulance coverage and not all these areas have demonstrated additional demand. While the industry touts air ambulance growth in rural areas as an essential guardrail in the face of hospital closures there, the GAO notes that out of the approximately 2,400 rural hospitals, 3 percent closed between 2013 and 2017. And the air ambulance industry reports that while overall it is operating fewer flights, the trend is toward flying more hours and longer distances with a nationwide EMS helicopter fleet that has more than doubled since 2003 to more than 900.

The “rural rationale” also has spawned a move to larger EMS helicopters that carry more medical equipment and supplies. This includes the aforementioned agreement with the American Red Cross to supply blood and plasma for all its aircraft currently unaffiliated with a regional blood center or health system. The agreement covers 98 Air Methods bases nationwide.

Air Methods noted, “This partnership with the American Red Cross ensures that all Air Methods aircraft will have the life-saving biomaterials ready when needed.”

The shift to larger helicopters in some markets comes as the industry seeks to reposition itself as the provider of “flying emergency rooms” as opposed to just a time-saving conveyance that gets patients to hospitals within the “golden hour” following an accident or medical emergency. It was also part of the impetus for Airbus Helicopters to offer the lower-cost, lighter-weight EC145e intermediate twin in the U.S. ■



Three firefighting agencies in California recently took delivery of Sikorsky’s S-70i Firehawk. The helicopters are outfitted for firefighter transport and suppression ops.

New Firehawk helicopters delivered to three California agencies

Last month, Air Methods’ United Rotorcraft unit and Sikorsky announced the delivery of three new S-70i Firehawk helicopters to separate California fire agencies: the Department of Forestry and Fire Protection (Cal Fire), the Los Angeles County Fire Department (LACoFD), and the City of San Diego Fire-Rescue Department. The helicopters are manufactured by Sikorsky and outfitted by United Rotorcraft.

Jason Lambert, vice president of Sikorsky global military and mission systems, said the new Firehawks give firefighters “a powerful and proven helicopter that can attack fires at night, in strong Santa Ana winds, maneuver with agility and safety in canyons and terrain from sea level up to 10,000 ft altitude, while dropping water with tremendous precision and force.”

The aircraft can transport up to 12 firefighters, perform rescue operations, and fly fire suppression. They are equipped with a 600-pound external rescue hoist, a 9,000-pound cargo hook with load cell system, forward recognition lights, and a high-intensity searchlight. Avionics

installations include tactical communications and navigation systems. The fire-suppression system consists of a newly-designed 1,000-gallon water tank attached to the belly; an extended landing gear to accommodate the tank; and a retractable snorkel that can refill the tank in less than one minute. United Rotorcraft contracted with Kawak Aviation Technologies of Bend, Oregon, to design and manufacture the water tank to new specifications based on input from LACoFD.

Cal Fire’s Firehawk is the first of nine aircraft currently on order, with an option for three more. LACoFD has operated three older S-70A model Firehawks since 2001. The county’s new S-70i Firehawk is the first of two ordered and is more powerful and faster than the older S-70A model.

“With the increase in wildfire danger, the Firehawk has never been more relevant to the State of California,” said Mike Slatery, president of United Rotorcraft. “This capability brings unmatched multi-mission capability to these firefighting agencies to protect lives and property.” **M.H.**

Thora Capital enters helicopter lease market

Chicago-based Thora Capital is entering the battered helicopter finance market with an initial \$50 million in capital commitments.

To date, the company has closed two transactions, the most recent a placement of two utility helicopters on long-term lease with Uniflight Global Flight Services of Grand Prairie, Texas. The helicopters will be operated by Aviation Services Unlimited (ASU) in Rome, New York.

Thora acquired one of the helicopters from ASU via sale-leaseback and imported the other from Canada. Leases on both run for seven years. ASU will operate the aircraft

in upstate New York and New England on long-term contracts with regional power companies, primarily focusing on electrical grid infrastructure.

“Thora is well positioned to support the financing needs of the industry during this period of elevated demand for creative capital solutions,” said company CEO Matthew Rothschild. Thora is financed by limited partners, including family offices, high-net-worth individuals, and registered investment advisors. Company services include financing, asset and portfolio management, and asset disposal and divestment execution. **M.H.**



Thales is developing PureFlyt in Toulouse, France, for retrofit and forward-fit programs and envisions service entry as soon as 2024.

Thales unveils PureFlyt, its next-generation FMS

by Ian Sheppard

With the world of computing and “big data” changing rapidly and environmental pressures coming to the fore more than ever, French avionics specialist Thales has presented the development environment for its “PureFlyt” next-generation flight management system (FMS) for commercial airliners and beyond. It even envisions it running on UAVs and military aircraft, depending on demand.

PureFlyt will connect more than ever to the outside world to draw on the advantages of real-time updates that allow constant planning and replanning, taking into account slot times and the latest weather information. Thales will also make available PureFlyt software for pilots’ electronic flight bags (EFBs) so that flight plans and other data immediately download to their aircraft—with safeguards protecting the aircraft and making it cyber-secure.

Thales believes PureFlyt will provide a “step-change” in various aspects of functionality to the extent it offers all OEMs an opportunity to adopt it, though it looks destined to make the first application an existing Airbus type. The company provides flight deck avionics suites, including the FMS, for all Airbus aircraft, most recently the A350, but faces stiff competition from Honeywell of the U.S.

Honeywell and GE Aviation dominate the Boeing market but, according to Peter Hitchcock, v-p of commercial avionics for Thales, the European company sees PureFlyt as an “inflection point,” where it could become the FMS supplier for a mainstream Boeing type for the first time.

However, Hitchcock, speaking to journalists at Thales’s avionics development center in Toulouse, France, acknowledged

it would mean “reconnecting” to up to 30 major aircraft systems. He said airlines would serve as the driver, adding that a potential first customer is working with Thales with a view to a possible application. However, he would not elaborate on the identity of the customer or aircraft type.

He did say, though, that Thales envisions a first application entering service around 2024. Beyond that, the company has already been presenting PureFlyt to various OEMs and airlines and envisions its incorporation into clean-sheet aircraft designs.

Hitchcock said the system features four core principles—powerful, trusted, flexible, and connected: “and it will be available for both existing and future aircraft.” Its design also considers the fast-growing aircraft fleet and increasingly crowded

skies, airport capacity constraints, and the need to manage everything better for greater efficiency of the whole aviation ecosystem.

At its core lies ensuring aircraft trajectory can be permanently “controlled, adapted, and enhanced, resulting in optimized flight and decreased fuel consumption.” Hitchcock suggested an immediate fuel savings of 3 to 4 percent. According to Thales calculations, that would equate to cost savings of up to \$500,000 per aircraft per year, or a total of up to \$100 million a year for a large carrier.

Thales further estimates that adopting PureFlyt capabilities by 2025 could mean a saving of 40 million tonnes of CO₂, “equivalent to the emissions of one-third of the cars in France,” said Jean-Paul Ebanga, Thales v-p of flight avionics.

Thales also said PureFlyt will enter service at a high maturity level due to the amount of simulation testing in which it would apply artificial intelligence technologies “to simulate two billion test cases...equivalent of 100 million actual flight hours.”

The company calls PureFlyt’s design “future-proof,” accommodating the implementation of concepts such as the Initial 4D trajectory management methods now under study by SESAR (Single European Sky ATM Research) in the EU and Next-Gen in the U.S. It will, in fact, take into account a fifth dimension as well—aircraft weight management (thus 5D).

“In the air, the digital revolution has only just begun,” said Ebanga, a former CEO of CFM International. “A paradigm shift in onboard cockpit electronics is taking place in the connected airspace and PureFlyt is at the forefront of this digital new age, leading the next generation of flight management system that truly makes the aircraft a node of connectivity.

“By computing and sharing vast amounts of data, PureFlyt will make flights safer, greener, easier for the pilots to manage, more profitable for airlines and, all this, ultimately for the full benefit of passengers.” ■

News Update

Aspen E5 EASA Approved

The European Union Aviation Safety Agency (EASA) has approved the Aspen Avionics Evolution E5 Electronic Flight Instrument (EFI), which is available for a variety of light aircraft. The E5 EFI contains the attitude indicator and directional gyro and course deviation indicator all in one display with its own backup battery. The E5, like all Aspen Evolution indicators, fits into standard panel cutouts, replacing the original attitude indicator/directional gyro without requiring any panel modification. When installed in an aircraft with a panel-mounted GPS, the E5 EFI can be used for IFR flying. Price of the E5 starts at \$4,995, and includes GPS steering and air data computer and attitude heading reference system. Buyers of the E5 EFI can convert it later to an Evolution Pro Max configuration and then add advanced features such as synthetic vision and angle-of-attack indicator. A key benefit of installing the Aspen display is that the vacuum system that drives the removed attitude indicator and directional gyro can also be eliminated, saving weight and improving reliability.

DAC GDC64 Now Compatible with ForeFlight

Aero Precision Holdings subsidiary DAC International’s GDC64 iPad interface now works with ForeFlight’s electronic flight bag app, displaying ADS-B In weather and traffic information delivered by the FreeFlight Systems Rangr ADS-B receiver. The GDC64 is a wired system, connecting the iPad to the Rangr and eliminating any reliability issues with wireless Wi-Fi or Bluetooth connections. The GDC64 Tablet Aircraft Interface Unit also provides power to connected tablets, which meets Apple specifications, although iPad Pros with USB-C connectors will require a Lightning-USB-C adapter. The GDC64’s interfaces include four Arinc 429 ports and eight discrete inputs.

Viking Updating CL-415 Avionics

Canada’s Ministère des Transports du Québec (MTQ) is the launch customer for an avionics upgrade to the Canadair CL-415 amphibious aerial firefighting tanker. The MTQ is upgrading eight CL-415s, and the work will be done at Cascade Aerospace in Abbotsford, British Columbia, which is responsible for design, installation, testing, and certification “in collaboration with Collins Aerospace.” The CL-415 mod replaces the original avionics with a Collins Pro Line Fusion integrated flight deck, which includes three 14.1-inch touchscreen displays, LPV approach capability, and ADS-B compliance. Once the eight aircraft are upgraded, the MTQ’s other seven CL-415s will undergo the same modification. The upgrade will also be available for Canadair CL-215T operators. According to Viking, “[The upgrade] will also address future operational and technical requirements over a 25-plus year horizon.”

Elliott charts growth with G5000 installs

Elliott Aviation delivered three Cessna Citation Excel/XLS jets upgraded with Garmin G5000 avionics in November and has another 15 Excel/XLS installation on its schedule, the Moline, Illinois-based MRO announced. “The demand for the Garmin G5000 avionics suite in the Citation Excel and XLS is very strong, and all indications show this program being a tremendous success,” said Elliott v-p of avionics programs and operational logistics Mark Wilken.

The G5000 retrofit on the Excel/XLS replaces existing Honeywell Primus 1000 avionics including the autopilot and flight

director found on the midsize business jet.

Features of the G5000 retrofit are WAAS/LPV, ADS-B, SiriusXM weather, electronic charts, SafeTaxi, engine monitor data, and emergency descent mode. It also has optional synthetic vision, turbulence detection, SurfaceWatch, under-speed protection, ChartView, controller pilot datalink communications, and lightning and hail prediction.

In addition to the Excel/XLS installs, Elliott has completed more than 25 G5000 installs on the Beechjet 400A/Hawker 400XP and more than 350 G1000/G1000 NXi installs on Beechcraft King Airs. **J.S.**

Aviation cybersecurity poses growing challenge

by Matt Thurber

Cybersecurity continues to be a critical issue for the entire aviation industry. In a recent report titled “Aviation Cybersecurity: Scoping the Challenge,” the Atlantic Council think-tank Scowcroft Center for Strategy and Security highlighted the risks and challenges faced by aviation as growing use of technology opens more avenues for cyber attacks. “The digital attack surface the aviation sector presents to its adversaries continues to grow in such a way that both managing risk and gaining insight on it remain difficult,” the report’s authors concluded in the executive summary. The report was underwritten by Thales.

“Management of aviation-cybersecurity risk remains challenging,” the report said. The first challenge involves “trying to weave aviation cybersecurity into flight safety, security, and enterprise information technology.” Another set of challenges “orbits the relationship between aviation-sector suppliers and customers regarding cybersecurity, with many finding it difficult to incorporate best practices into purchases, as well as difficulties in developing consensus on adequate cybersecurity risk management and transparency.”

The result of the lack of attention paid to cybersecurity is that, according to the report, “Cyberattacks against aviation organizations appear to be increasing.” These range from attacks on IT systems, for example, ransomware and theft of personal information to targeted attacks such as one that caused problems with flight information displays at Odessa International Airport in Ukraine. There are indications that “adversary techniques are rapidly evolving,” the report noted, such as sophisticated attacks like spoofing of GPS signals in the maritime realm. As ADS-B “is quickly becoming a cornerstone of the air traffic management system...Outages, caused by either signal interruptions or spoofing, could rapidly cause operational impacts.”

The report further stated: “New aircraft designs use advanced technology for the main aircraft backbone connecting flight-critical avionics as well as passenger information and entertainment systems in a manner that makes the aircraft an airborne interconnected network.”

When it comes to the equipment connecting aircraft, the report said, “The architecture of this airborne network may allow read and/or write access to and/or from external systems and networks, such as wireless airline operations and maintenance systems, satellite communications, email, the internet, etc. Onboard wired and wireless devices

may also have access to portions of the aircraft’s digital data buses that provide flight critical functions.”

According to Josh Wheeler, Satcom Direct senior director of cybersecurity, “This isn’t found within business aviation today, but these system integrations are definitely on the horizon.”

Among Satcom Direct customers, Wheeler said, “The most common types of attacks we see from connected devices on an aircraft [local-area network] are ransomware, command control, and brute force attacks. Many of these don’t need specific software but try to compromise websites or are sent via email.”

Of more concern, according to the report, is that “as increased physical security hardens and wireless connectivity increases throughout a multitude of aviation systems, there is a growing risk that aviation-cybersecurity vulnerabilities may become a credible vector for terrorist actors—either enablement of physical attacks or as an end goal in themselves.”

Global effort

The International Civil Aviation Association published its Cybersecurity Strategy to address these issues and set out a vision for global cybersecurity: “that the civil aviation sector is resilient to cyber-attacks and remains safe and trusted globally, whilst continuing to innovate and grow.”

The report summarizes the cybersecurity situation with a number of recommendations, including setting global standards; increasing transparency in contracts and system design; working together to manage risk; sharing cybersecurity information; communicating about potential cybersecurity incidents; and incorporating cybersecurity considerations in accident and incident investigations. ■



Garmin certifies G1000 NXi for Embraer Phenom 100s

Garmin’s upgrade to the G1000 NXi configuration for Prodigy-equipped Embraer Phenom 100s received FAA approval in early December, and the upgrade is now available for installation by select Garmin dealers and Embraer service centers. Garmin will offer the NXi upgrade for the Phenom 300 equipped with the Prodigy flight deck in the second half of 2020.

The NXi upgrade’s main hardware change is replacement of the displays with new ones containing faster processors, which make panning much smoother and render maps much faster. The LED-backlit displays—which are brighter and clearer and use less power—have the same footprint and use the same connectors, so downtime for the installation is minimized.

Phenom 100 owners can take advantage of wireless connectivity features that come with the NXi upgrade. Garmin’s Flight Stream 510 and Connex technology allow for wireless transfer of database updates directly to the avionics from the Garmin Pilot app running on a mobile device. Connex also facilitates two-way flight plan

transfer and sharing of traffic, weather, GPS, and back-up attitude information, and this works with the Garmin Pilot, FltPlan Go, and ForeFlight applications wirelessly connected to the NXi avionics.

The HSI map is new for G1000 NXi and displays overlays inside the HSI, such as a moving map and other elements. NXi includes Garmin’s SurfaceWatch runway monitoring technology, which gives aural and visual cues to warn pilots if they are about to take off or land on a taxiway, a runway that is too short, or the wrong runway.

Other NXi features include split-screen view on the MFD so maps and charts can be displayed simultaneously; display of VFR sectional charts and IFR low/high en route charts; Garmin’s Smart Airspace, which deemphasizes non-pertinent airspace; 3D audio and advanced auto squelch in the audio panel; and optional Bluetooth connectivity in the audio panel; ADS-B In traffic and subscription-free weather; Garmin’s TargetTrend and Terminal Traffic; and optional GWX 75 weather radar. **M.T.**

EIT Avionics links FODR with display device

Leesburg, Virginia-based electronics manufacturer EIT has opened a new division, EIT Avionics, which is bringing new safety and efficiency products to the rotorcraft market.

The new EIT Avionics Flight Operational Data Recorder (FODR) received FAA supplemental type certificate (STC) approval in October, for installation in the Robinson R44. The FODR meets Part 135.607 helicopter flight data monitoring requirements, according to EIT, and it can capture 21 channels at five times per second, storing up to 2,200 hours of data. The unit weighs just one pound, and data is downloaded via

connection to a computer’s USB port. Data can be used for safety management systems, flight operational quality assurance, warranty repair, exceedance tracking, and accident/incident investigation.

To make the FODR even more useful, it can be integrated with EIT’s Esaid, a touch-screen display and annunciator device that helps pilots use the FODR data while flying. Esaid displays density altitude, power, hover, and airspeed performance limitations, with updates every half second, according to EIT, “giving the pilot unprecedented situational awareness.” The half-pound Esaid is also

STC approved for the R44, and its power consumption is just 0.2 amps at 28 volts. In addition to graphical display of performance information based on the pilot’s operating handbook, the Esaid also gives aural alerts for critical conditions.

“EIT Avionics was founded to develop products that promote aviation safety and efficiency using technology,” said EIT Avionics chief technology officer Joe May.

“The FAA and NTSB have great interest in promoting greater usage of data recorders like our FODR,” said avionics product manager Jeff Byrd, noting “we want you to use data from our system proactively to prevent crashes, breaking the accident chain.” **M.T.**



Stored Boeing 737 Max jets sit grounded at Seattle's Boeing Field.

Boeing set to suspend production of 737 Max

by Gregory Polek

Boeing will suspend production of the 737 Max this month amid the continued grounding of the narrowbody, the company announced on December 16. The airframe maker noted that the reduced output would allow it to prioritize delivery of the some 400 aircraft now in storage. The decision comes less than a week after FAA Administrator Stephen Dickson said the re-certification process would extend into next year, an eventuality about which Boeing CEO Dennis Muilenburg had warned months earlier could result in a halt or significant slowdown of production.

Boeing said the grounding would not result in any layoffs at its narrowbody plant in Renton, Washington, and that it

would reassign employees to other sites in the Puget Sound region. "As we have throughout the 737 Max grounding, we will keep our customers, employees, and supply chain top of mind as we continue to assess appropriate actions," said Boeing in a statement. "This will include efforts to sustain the gains in production system and supply chain quality and health made over the last many months."

The company called the decision the "least disruptive" option to maintaining long-term production system and supply chain health. Along with extension of certification into 2020, factors that led to the move include uncertainty about the timing and conditions of return to service and global training approvals.

While testifying before the House of Representative's Transportation Committee on December 11, Dickson said that authorities must meet a number of milestones before allowing the airplane to fly in service again, including a certification flight test and completion of work by the joint operations evaluation board involving evaluation of pilot training needs.

During the hearings, Dickson pledged to fly the airplane himself before clearing it for certification. "The FAA fully controls the approvals process and is not delegating anything to Boeing," he said.

Late in November Boeing lost its approval to certify individual 737 Max jets for flight as a result of a decision by the FAA to bar the manufacturer from issuing its own airworthiness certificates under its organizational designation authority (ODA). The agency said it would reserve the authority to issue the certificates until Boeing puts in place "fully functional quality control and verification processes." In the past, the FAA shared responsibility with Boeing to issue certification ahead of delivery.

"When the 737 Max returns to service it will be because all of the safety issues have been addressed and pilots have received all the training they need to safely operate the aircraft," added Dickson. "This process is not guided by a calendar or schedule."

During his questioning at the December 11 hearing, transportation committee chairman Peter DeFazio called for a commitment by Dickson to investigate why the FAA did not ground the airplane after the first Max crash, that of Lion Air Flight 610 on October 29, 2018. DeFazio cited an FAA analysis following the Lion Air crash that projected as many as 15 more fatal crashes of the 737 Max over the model's service life if the MCAS problem went uncorrected.

"Tragically, the FAA's analysis, which never saw the light of day beyond the closed doors of the FAA and Boeing, was correct," said DeFazio. ■

News Update

SpiceJet Steps Up Plans for UAE-based Airline

SpiceJet chairman and managing director Ajay Singh has confirmed a plan to launch an airline from Ras Al Khaimah in the United Arab Emirates following the signing of an MOU in October to work toward creating an aviation hub at the Ras Al Khaimah International Airport. Plans call for the airline to fly Boeing 737 Max jets already ordered by SpiceJet primarily to points in Eastern Europe such as Budapest, Bucharest, Bratislava, Moscow, Kazan, Novosibirsk, and St. Petersburg.

The new venture would give the emirate a majority 51 percent share of the airline, while SpiceJet holds the balance, said Singh. Presently, only Air India Express flies twice weekly to Ras Al Khaimah from Kochi in South India. Now offering 1,400 seats a week to the emirate, that carrier plans to start flights from Delhi early next year.

Although the partners have not decided on a name for the new airline, they will file for an air operator certificate "shortly," Singh told AIN.

Boeing Rolls Out 737 Max 10

Thousands of Boeing employees in Renton, Washington, gathered on November 22 to watch the rollout of the commercial jet maker's newest 737, the Max 10. In what some on social media described as a muted ceremony compared with past Boeing airplane debuts, official speeches focused largely on employees assigned to the narrowbody jet program, Max variants of which remain grounded worldwide since last spring following two deadly crashes five months apart.

Designed to carry up to 230 passengers, the 737 Max 10 is the largest of the Max family of jets. The first aircraft will undergo system checks and engine runs before its first flight, scheduled for early this year. More than 20 global customers have placed orders and commitments for more than 550 Max 10s, Boeing said.

United Airlines Helps Trigger Avianca Restructuring Effort

Colombian airline Avianca Holdings took another step toward stability on December 9 with \$375 million in new financing provided by major shareholders United Airlines and Kingsland Holdings. Some 88 percent of debt holders agreed to an exchange of \$550 million in bonds due in May 2020 for securities due in May 2023, conditioned on the new financing.

As part of its "Avianca 2021 Plan" the airline has canceled unprofitable routes and sold aircraft and nonessential assets such as subsidiaries. Avianca has re-profiled more than \$4.5 billion of lease and debt obligations to ensure liquidity, as the 100-year-old airline—it passed the century mark on December 4—works to improve efficiency, cut costs, and increase profits.

UAL president Scott Kirby to replace Munoz as CEO

United Airlines president Scott Kirby will assume the airline's chief executive post from Oscar Munoz next May as part of a succession plan that will also see Munoz replace Jane Garvey as executive chairman of the board. Munoz, 60, replaced Jeff Smisek as CEO in September 2015 and led United's recovery from a merger with Continental Airlines plagued by integration complications and customer service complaints.

"With United in a stronger position than ever, now is the right time to begin the process of passing the baton to a new leader," Munoz said in a statement. "One of my goals as CEO was to put in place a successful leadership transition for United Airlines. I brought Scott to United three years ago,

and I am confident that there is no one in the world better equipped to lead United to even greater heights."

Munoz recruited Kirby to become United's president in August 2016. Kirby's 30-year career in the commercial airline business included a term as president of American Airlines beginning with that airline's merger with US Airways in 2013. He also worked in senior leadership positions at America West and US Airways, where he served as president from 2006 until its merger with American. Kirby started his career at the Pentagon and in the technology sector.

Under United's transition plan, Munoz will serve as executive chairman for a one-year term and will continue to work closely



United Airlines' president Scott Kirby

with Kirby, said the airline. Meanwhile, United chairman Jane Garvey will retire from the board in May after more than a decade. She has served as chairman since May 2018 and has agreed to remain in her role for a year beyond the board's mandatory retirement age. **G.P.**

Boeing's Tinseth envisions an 'orderly' return of Max

by Cathy Buyck

Boeing Commercial Airplanes vice president of marketing Randy Tinseth expects to see “a fairly orderly sequence” of certification of the 737 Max by the world’s aviation authorities, notwithstanding concerns expressed by Airbus CEO Guillaume Faury and International Air Transport Association head Alexandre de Juniac about a “dealignment” of regulatory agencies resulting from the twin crashes and uncoordinated grounding of the new narrowbody. Although Tinseth acknowledged the absence of the typical unanimity among international regulators at the beginning of the re-certification process as several authorities indicated they will set their own terms and conditions, he also said he has seen more coherence of opinion recently. “There are different views, but there has been a convergence over the last months,” he told **AIN** at Boeing’s European offices in Brussels early last month. “This is a welcome sign.”

Although Tinseth said he did not expect

all aviation safety regulators to lift the grounding of the Max at the same time, he added that he doesn’t think the process would become chaotic. “By definition, the U.S. Federal Aviation Administration [FAA] has to be the first as [certifying Boeing aircraft] is their jurisdiction. Different regulators will have different issues, but that is nothing new,” he asserted, citing the example of the certification process of new escape doors on the 737-800NG. While all authorities approved the design for a load of up to 189 passengers, France set a different limit—of 186 passengers.

“Things are coming together, which is positive,” according to Tinseth. He confirmed Boeing’s view it expects the FAA will re-certify the Max by the end of the month and that the jet will fly again in January. “This is still the plan,” he insisted, admitting that the regulator holds the final say. The FAA has repeatedly stated it has set no timeline on the Max’s approval.

Meanwhile, Boeing continues to try to

regain public and industry trust in the beleaguered jet. “A first step in rebuilding confidence [in the 737 Max] is having it available, ensuring a safe return to service of the aircraft, and [getting] the changes of the software right and certified,” Tinseth said. Regaining the confidence of pilots and cabin crew in the Boeing 737 Max represents an essential step to gain support for the return in service, he added. For several months now, Boeing has invited pilots and cabin crew to its premises to explain the changes to the airplane’s Maneuvering Characteristics Augmentation System (MCAS) and training, and vice-versa. “We went to speak to pilots and cabin crew of Max customers in every major market,” Tinseth revealed. Boeing also works closely with airlines on how to reassure the traveling public, albeit within limits. “Airlines have told us they feel they are better placed to do this as they have more B-to-C knowledge than Boeing,” he explained. “So airlines will take the lead on reassuring the public and define their approach depending on the market and business model.”

Tinseth admitted he did not know how quickly all the grounded Max airplanes would return to service after gaining approval. Some 400 of the aircraft delivered to customers currently stand idle while Boeing has built some 300 examples since the type’s grounding in mid-March. ■

Authorities charge pilot in crash of Aeroflot SSJ

by Vladimir Karnozov

The Investigative Committee of Russia (RIC) has formally charged commanding pilot Denis Evdokimov with wrongdoing for his role in the May 5 crash of an Aeroflot Sukhoi SSJ100 at Moscow Sheremetyevo Airport. The authorities have accused the captain of infringement of flight procedures and manuals, resulting in excessive vertical speeds during final approach and too high of an angle of attack at touchdown and the initial portion of the ground run, causing the airplane to bounce as it decelerated along Sheremetyevo’s main runway. The investigating team, led by Ivan Sibul, concluded the pilot’s lack of professionalism led to the airplane catching fire, resulting in property loss of 1.5 billion rubles (\$23 million, not including the value of the passenger baggage). Most of the 41 people on board who died fell victim to fire and fumes.

Last month the RIC called Evdokimov to its offices to read him the charges, which name him as the only person guilty of causing suffering to the other 77 people onboard, including copilot Maxim Kuznetsov. Evdokimov, who has logged 6,800 flight hours including 1,400 hours in the Superjet, refuses to acknowledge guilt. During lightning strikes, he said, the Superjet developed various technical malfunctions, including those involving avionics and fly-by-wire flight controls, causing a switch to direct control mode. The pilot further maintains the airplane became unstable in flight and difficult to control, responding incorrectly to sidestick movements. As for the fire inside the fuselage, he has taken the position that the flames erupted after the cabin crew opened the airplane’s doors for evacuation.

Reacting to the new developments, Moscow media noted the rather short period of time in which the RIC put together the factual basis for accusations and moved the case to judgment; similar cases took years, not months, to reach such a stage. Reports also note that the RIC invited the pilot to read the charges against him even ahead of official publication of a final crash report by the Interstate Aviation Committee. That document has yet to come out.

Lawyer Pavel Gerasimov, who represents families of deceased passengers, told journalists they will not demand financial compensation from the pilot, but rather from Aeroflot if the court finds the airline guilty. ■

United order for Airbus A321XLRs strikes blow to NMA

United Airlines’ announcement of an order for 50 Airbus A321XLRs to replace its fleet of aging Boeing 757s might have struck another serious blow to the business case for Boeing’s proposed twin-aisle NMA (new midsize airplane), a project about which the U.S. company has said little since the second crash and subsequent worldwide grounding of the 737 Max. In fact, not long after Boeing CEO Dennis Muilenburg told investment analysts during the company’s third-quarter earnings call that the NMA remains a subject of study, Boeing Commercial Airplanes vice president of marketing Randy Tinseth responded to a question about the status of the NMA at a Dubai Airshow press conference with a reference to how the company’s priorities reside with the Max.

United, meanwhile, had already reached the late stages of negotiations on the A321XLR, an airplane it calls an “ideal one-for-one replacement” for its older, less fuel-efficient jets—namely, its 757s.

Although United hasn’t completely ruled out an NMA order if and when Boeing offers it, the XLR deal will certainly lend support to Airbus’s argument that its airplane can serve many, if not most, of the markets Boeing’s product would target. For its part, Boeing pointed to its own commercial successes with United. “We are proud of our decades-long partnership with United Airlines, and our team is focused on delivering



United Airlines plans to take delivery of its first Airbus A321XLR in 2024.

on outstanding orders for nearly 200 new airplanes for United in the coming years,” it said in a statement. “We look forward to continuing to support United’s future fleet and operational requirements.”

United expects to take its first A321XLR in 2024 and start flying between Europe and North America with the new narrowbodies the following year, not long before the time Boeing originally had targeted for service entry of the NMA. With the order, United becomes the second airline to choose the longest-range version of the A320neo family. Over the summer,

American Airlines placed a new order for 20 XLRs and converted delivery positions on 30 A321neos to the new jet.

Launched during June’s Paris Air Show, the A321XLR will fly as far as 4,700 nm, or 700 nm farther than the A321LR. Changes in the XLR include a permanent rear center fuel tank as opposed to the auxiliary fuel tanks in the LR, modified landing gear to account for an increase in mtow to 101 tonnes from 97 tonnes, and an “optimized” wing trailing-edge flap configuration to preserve the takeoff performance and engine thrust requirements of today’s A321neo. **G.P.**



Pratt & Whitney is investing \$30 million in its Bridgeport, West Virginia facility after designating it as the MRO site for PW800 series engines.

P&W Investing in W.Va Engine Service Site

Pratt & Whitney (P&W) has selected its West Virginia engine services facility as the site for maintenance, repair, and overhaul of its PW800 turbine engines, specifically the PW814GA and PW815GA engines that power Gulfstream G500 and G600 twinjets, the engine maker announced. As part of the selection, P&W will invest \$30 million in the Bridgeport facility, which encompasses nearly 193,000 sq ft.

Fifty new jobs will be added at Bridgeport for the new work, which will eventually include other PW800 engine models. Bridgeport serves as the specialist MRO for PW300 and PW500 engines, a spokeswoman told **AIN**.

Gulfstream Aerospace Opens New European Parts Center

Gulfstream Aerospace has opened its European customer support parts distribution center after moving it from the London area to a 25,000-sq-ft (2,323-sq-m) facility in the Fokker Logistics Park adjacent to Amsterdam Schiphol Airport, the Savannah, Georgia-based airframer announced. The facility, which is now fully operational, has already received more than \$20 million in inventory. By the end of the year, it will carry \$28 million in inventory, according to Gulfstream.

UK-based customers will continue to receive support from the OEM's service center at London Luton Airport, which has \$45 million in parts inventory.

Tamarack Expands Dealer, Service Network

Tamarack Aerospace Group is expanding its network of authorized dealers and service center partners with the addition of Banyan Air Services of Fort Lauderdale, Florida; Rose Aircraft Services of Mena, Arkansas; and RBR Aviation of Dallas. These MROs will offer sales and installation of Tamarack's Atlas active winglet system for Cessna

Citation 525, 525A, and 525B twinjets.

Tamarack's dealer and service center network now includes 19 companies around the world.

Flightdocs Establishes Canadian Office

Flightdocs has opened a new, permanent Canadian office in Toronto, Ontario, to support what it says is an important and long-term growth market for the Florida-based developer of maintenance tracking, flight operations, and inventory management software.

The new office is located within 10 minutes of Billy Bishop Toronto City Airport (YTZ) and Toronto Pearson International Airport (YYZ).

Elliott Sees More Than 600 Installs under Its ADS-B STC

More than 600 business aircraft have been equipped with Elliott Aviation's remote-mount, Garmin-based ADS-B Out STC, the Moline, Illinois-based MRO provider said. Those aircraft include Beechjets, Challengers, Citations, Falcons, Hawkers, and Learjets.

The STC integrates with existing cockpit controls including aircraft equipped with TCAS II. It also offers ADS-B In through a Bluetooth-compatible device via Garmin's Flight Stream wireless platform. Remote-mount Garmin GTX-3000 smart transponders replace an aircraft's transponders as part of the STC, which Elliott said doesn't require any modification to a current avionics package nor upgrades to current equipment.

Embraer Exec Jets Expands Mx Footprint at FLL

Embraer Services & Support has expanded its executive jets service center at Fort Lauderdale-Hollywood International Airport (FLL) via a lease agreement with Jetscape Services for a dedicated hangar.

The company's Florida presence is "strategic" to its business jet customers

throughout the Southern U.S., the Caribbean, and Central America, as well as to those who transit South Florida. Embraer's service center in South Florida is also the base for its airworthiness management program.

AMAC Sees Influx of Completions, Mx Projects

AMAC Aerospace has seen a recent influx of maintenance and completions projects on aircraft ranging from Airbus and Boeing narrowbody aircraft to Bombardier Globals, the Basel, Switzerland-based MRO provider and completions center announced. In all, the company has secured work on four privately owned Boeing 737s, three Airbus A319s, and a Bombardier Global 5000 and 6000.

The first of four Boeing 737s is scheduled for a pre-purchase inspection. It will be joined by a 737 needing a base maintenance check and another scheduled for A1 and B1 due maintenance. A fourth 737 is slated to arrive in February for a C3 check. On that airplane, AMAC also will carry out a landing gear overhaul, installation of ADS-B Out and future air navigation system (FANS), and a partial cabin refurbishment.

For the three A319s, one will receive six- and 18-month due maintenance, scheduled to start before year-end 2019. A second one, to arrive this month, will receive Ka-band satcom connectivity, while a third A319 will undergo 1A, 2A, and 1C checks, as well as receive ADS-B Out and FANS.

A Global 5000 that received major maintenance in October has returned to its facility for a cabin refurbishment, while a Global 6000 is slated for cabin interior work, AMAC said.

FAI Prepares Transatlantic Ambulance Fleet for ADS-B

German MRO FAI Technik recently completed Future Air Navigation System (FANS) installations on two Bombardier Challenger 604s owned by FAI Aviation Group and was working on another scheduled for completion last month, the maintenance unit of

FAI Aviation Group announced. At the same time, it has received an STC from the European Union Aviation Safety Agency for Garmin ADS-B installations for the Learjet 60.

The STC was designed by FAI Engineering and its Part 21 design partner, S4A, based in Madrid, Spain. Three Learjet 60 ADS-B modifications have already been completed. Another three Learjet 60s were expected to receive the modifications by year-end.

That means FAI's air ambulance fleet of six Bombardier Learjet 60s and four Challenger 604s will be prepared for unrestricted transatlantic flying by the beginning of 2020, according to the company. Six of FAI's other Europe-based Learjet 60s are scheduled for the ADS-B modifications in the first half of next year.

MRO Insider Adds Yingling To Mx Quoting Network

Yingling Aviation—a Wichita-based FBO and maintenance, repair, and overhaul provider—has joined Michigan-based maintenance quoting platform MRO Insider. "They have a stellar reputation for providing quality Cessna Citation and King Air maintenance in a timely manner," said MRO Insider co-founder Andy Nixon. "With around 300 Citations and King Airs registered on MRO Insider to date, this addition will allow yet another option for maintenance besides the OEM."

Textron Aviation Opens Bigger European Parts Warehouse

Textron Aviation has opened an expanded parts warehouse in Düsseldorf, Germany, that doubles its space there, the Wichita-based airframer announced. Following the expansion, its European Distribution Center comprises 22,000 sq ft and increases parts availability for Beechcraft, Cessna, and Hawker aircraft in the region to nearly 35,000 items, the company said.

More than 1,800 jets and turboprops comprise Textron Aviation's installed base in Europe, where it also operates a network of six service centers, five



A new Garmin ADS-B STC has allowed FAI Technik to prepare FAI Aviation Group's six Bombardier Learjet 60s for trans-Atlantic flying beginning this year.



Textron Aviation's expansion of its European Distribution Center added 10,000 sq ft to its facility in Dusseldorf, Germany.

line stations, and a mobile service unit.

Expansion in Düsseldorf also follows a company-wide revamping of its parts operation that included the addition of about \$100 million in inventory this year.

TAE Gets GE Turboprop Mx Nod for Americas

GE Aviation has expanded its service center agreement with TAE Aerospace, authorizing the Australia-based company to support its H-Series and M601 turboprop engines in North and South America.

In 2012 the company was named GE's designated repair center for those engines in the Asia-Pacific region, and over the past year TAE acquired two U.S. maintenance facilities: Copperstate Turbine Engine Company in Phoenix, Arizona, and Ag Air Turbines in Midvale, Idaho. Under this new authorization, TAE will be able to perform work in the Americas starting in 2020, including line maintenance inspections, routine installed engine maintenance, removal and replacement of engines and components, as well as heavy repairs using OEM-provided parts.

StandardAero Opens Vancouver Helicopter Mx Facility

MRO provider StandardAero has opened its newest helicopter maintenance facility in Vancouver, Canada. The new facility is part of StandardAero's move to establish dedicated centers of excellence and to consolidate helicopter support operations across its footprint.

At 24,000 sq ft, the new facility will house helicopter maintenance work that was previously performed at other StandardAero facilities. Transport Canada has validated the facility's activities.

West Star's Perryville Shop Earns its Part 145 Approval

West Star Aviation's aircraft maintenance facility at Missouri's Perryville Regional Airport has earned

its FAA Part 145 maintenance repair station certification. The authorization process took 18 months to complete the FAA requirements.

The Perryville location is the last of West Star's large service centers to earn its FAA authorization, joining its facilities in East Alton, Illinois; Grand Junction, Colorado; and Chattanooga, Tennessee.

Air Bear Expands, as Logan Restricts Bizav Ops

Massachusetts-based FAA Part 145 aircraft maintenance provider Air Bear Aviation has established its third repair facility, at Beverly Regional Airport, 14 nm north of Boston Logan International, which recently announced that business aircraft will require prior permission to use the airport and are limited to a maximum of four hours on the ramp. Those changes, which will be in effect over 2020 at least, are a result of the airport's Terminal E modernization program, which will encroach upon half of the FBO ramp space.

Raisbeck Wins FAA STC for Hartzell King Air 200 Prop

Raisbeck Engineering has received an STC from the FAA for Hartzell's new composite five-blade swept propeller introduced at NBAA-BACE

2019 for Beechcraft King Air 200 series twin-turboprops, allowing installations and first deliveries to begin, the Seattle-based aircraft modification company announced.

According to Hartzell and Raisbeck, the structural carbon fiber composite propeller with nickel cobalt leading edges provides for a larger, 96-inch-diameter prop with less blade tip noise, weighs 48 pounds less than OEM-installed propellers, and offers more than 15 percent greater takeoff acceleration, more than 20 percent improved climb rate, and 30 percent less noise in the cabin.

Metrojet Completes Gulfstream G650ER 4C Check

Business aviation services provider Metrojet has completed its first 4C maintenance check on a Gulfstream G650ER. Conducted at the company's headquarters MRO facility in Hong Kong, the job was completed within the approved 11-day downtime and on budget.

This was accomplished despite the aircraft being required for three ad hoc flights during the scheduled maintenance period.

C&L, Electromech Ink New Parts Agreement

C&L Aerospace will provide more than 70 different aircraft components through a new partnership with Wichita parts manufacturer Electromech Technologies, the Bangor, Maine-based MRO provider announced this week. The parts include blowers, motors, valves, and actuators for a variety of business aircraft, including Beechjet 400As, Beech 1900s, Cessna Citations, Hawkers, King Airs, Learjets, Pilatus PC-12s, and Premier Is.

Many of the parts included in C&L's acquisition of Global Parts' Beechjet 400 rotatable inventory last year were manufactured by Electromech.

In a separate announcement, C&L said it recently signed an exclusive supplier agreement with Thai Aviation Industries, which allows it to better support the Royal Thai Air Force's Saab aircraft fleet.

King, Thurmond Partnership Aims For More ISR Work

MRO provider King Aerospace and aviation and software engineering specialist the Thurmond Group have formed a strategic partnership to grow their business in intelligence, surveillance, and reconnaissance (ISR) and related aircraft modifications, the two companies announced in December. "Combining our joint resources provides a total aircraft maintenance and modifications solution, resulting in lower overhead, reduced turnaround time and overall program cost savings," King Aerospace president Jarid King said.

Pennsylvania-based Thurmond's specialty in ISR includes integration services of sensors, networking, operation systems, and the Federal Risk Management Framework. Under the partnership, Dallas-based King will perform the maintenance, engineering, and FAA-certified modifications at its 200,000-sq-ft facility in Ardmore, Oklahoma. There, King said it can accommodate the most common turboprops and jets for ISR applications including the Boeing 737, Beechcraft King Air, Gulfstream, and Bombardier Challenger aircraft.

Gulfstream Mod Ends G650/650ER Speed Restriction

Gulfstream has released Aircraft Service Change (ASC) 134 for the G650/650ER that modifies the rudder trailing edge contour to prevent an aircraft yawing condition in the event of rudder control failure. Once completed, this modification eliminates a speed restriction for the twinjet "to remain at or below 250 KCAS/Mach 0.925, which is typically not an impact in cruise flight." The limit came per a maintenance and operations letter issued by Gulfstream last month, following an October 24 rudder control failure incident that resulted in yawing motion not previously "seen on in-service G650 aircraft and did not take place during flight testing."

According to Gulfstream, ASC 134 incorporates a rudder trailing edge wedge installation to adjust the rudder hinge moment characteristics in sideslip to avoid adverse aircraft response in the event of a rudder control failure. To ensure fleet compliance with the ASC, Gulfstream will release a Customer Bulletin to require installing the wedge within 12 months.

A Gulfstream spokeswoman told AIN that all required parts inventory has been procured and is readily available to support installation. "There are more than 50 dedicated teams across 16 Gulfstream and Jet Aviation facilities approved to perform the installation; this total includes Field and Airborne Service (FAST) teams to perform work, or required training, at additional locations if/as necessary," she added. ■



Hartzell says its new composite five-blade swept propeller for King Air 200-series aircraft weighs 48 pounds less than OEM-installed propellers.



Jet Aviation has opened its new permanent FBO at Los Angeles-area business aviation hub Van Nuys Airport. The newest of five FBOs on the field, it is co-located with a new service center for sister company Gulfstream.

Jet Aviation Opens New VNY FBO

Jet Aviation has opened its new FBO complex at Los Angeles-area business aviation hub Van Nuys Airport (VNY). In 2016, the company was awarded a 30-year lease to redevelop the 17-acre site on the north side of the field, which was formerly occupied by the Pentastar Aviation/Basenet facility.

Jet Aviation had been operating from a temporary facility during construction. The \$40 million location includes a 10,000-sq-ft terminal and a 43,000-sq-ft hangar with 8,000 sq ft of office space and 30-foot clearance that can accommodate current and future ultra-long-range business jets, as well as a new service center for sister company Gulfstream.

“As part of one of the country’s busiest general aviation airports, we are proud to offer our customers a comprehensive solution for all of their aircraft service needs, including traditional FBO services like fueling, hangarage, aircraft cleaning, and domestic and international handling, as well as full-service aircraft management, charter, and on-demand maintenance,” said Michael McDaniel, the FBO’s director and general manager. “Most excitingly, we did it using sustainable building practices.” The facility was built to Leed Silver specifications using regional materials, energy-efficient lighting, and low-flow plumbing fixtures in its construction. The FBO is the first to offer sustainable aviation fuel (SAF) at VNY, as well as the first of Jet Aviation’s locations to carry the blended fuel.

Million Air Buys Rival San Juan FBO

Million Air San Juan has acquired its competitor Signature Flight Support’s facility at Puerto Rico’s Fernando Luis Ribas Dominicci Airport (TJIG). The move makes it the only FBO at the San Juan gateway, which offers a 5,539-foot runway. According to Million Air

San Juan president Thomas (Tommy) Hill, the Signature facility never truly recovered from the damage suffered during 2017’s ferocious Hurricane Maria. He told **AIN** he plans to renovate and relocate the FBO’s ground handling operations into the 5,000-sq-ft former Signature terminal, which has taller ceilings and more glass than the current Million Air terminal.

The purchase also adds nearly four acres of additional ramp space, which when combined with the company’s adjoining apron acquired in the 2017 purchase of a San Juan-based charter provider, will give it more than five acres directly in front of the new terminal, plus an additional three acres near its existing terminal. That facility will continue to house its charter division.

The company currently has 88,000 sq ft of existing hangar space at TJIG, and it has already cleared away the small rundown hangars on the new property in preparation for building a 30,000-sq-ft hurricane-proof concrete hangar, capable of sheltering the latest big business jets. Altogether, it expects to spend \$6 million on the project, which is slated for completion in late 2020.

Ohio Airport Takes Over FBO Operations

The city of Middletown, Ohio, took over management of the lone FBO at Middletown Regional Airport/Hook Field (MWO) on January 1. Early last year, the city notified 10-year incumbent operator Start Aviation, which also runs a skydiving business at the airport, that it would not be renewing its ground-handling contract. The city began its FBO operations from a temporary trailer, while Start’s skydiving operation will continue to occupy the 8,000-sq-ft terminal—which includes a pilot lounge, snooze room, and showers—until the two sides agree where on the airport Start will relocate. According to John Hart, Start Aviation’s owner, the facility pumps approximately

100,000 gallons of jet-A a year, a large portion of that to fuel his company’s three skydiver-hauling turboprops.

The city recently approved a \$150,000 measure to install a self-service fueling system at the FBO, along with funding the trailer rental for the first half of the year. MWO—which has the longest runway (6,100 feet) of any non-towered general aviation airport in the state—sees approximately 40,000 operations a year. It features a 24,000-sq-ft maintenance hangar and 39,000 sq ft of community hangar space.

Fort Lauderdale FBO Rebrands and Expands

Sano Jet Center, one of four FBOs at Florida’s Fort Lauderdale Executive Airport, has rebranded as Fort Lauderdale Executive Jet Center. Lynda Zur, who opened the facility in 2003, has partnered with new co-owner Marshall Myles, most recently head of Skyserve, one a Canadian business aviation service provider, to expand the business.

“I’m excited to build upon this foundation that Lynda’s built during the last 17 years,” said Myles, adding that Florida is one of the top states in the U.S. for business aviation. “We’ve just re-signed a 30-year lease, and we’re making a major investment in expansions.” The first phase of those plans began in November with groundbreaking on a 20,000-sq-ft hangar, which when completed next year, will bring the location to 120,000 sq ft spread over six hangars, including a paint shop and maintenance facility.

A second project, slated to start later this year, will see the construction of another hangar and more ramp space as part of the development of an additional 4.5 acres of leasehold, which will be done in 2021. A renovation of the terminal lobby is underway and is expected to be completed in time for the upcoming Super Bowl, which will take place in nearby Miami next month. As part of the changes, the FBO also joined the Phillips 66 branded aviation network.



Fort Lauderdale Executive Jet Center (formerly Sano Jet Center), one of four FBOs at the South Florida business aviation hub, sees growth and expansion ahead.

Upstate NY Airport Gets Second FBO

New York’s Elmira-Corning Regional Airport (ELM) has received its second FBO with the opening of Premier Aviation. The privately-owned company now occupies a facility on the Northwest corner of the field that was formerly home to a charter flight operator. The location offers a 28-foot door height, 12,000-sq-ft heated hangar that can accommodate large-cabin business jets, while the adjoining 6,000-sq-ft terminal features a passenger lounge/lobby, 12-seat conference room, snack bar, pilot lounge with snooze room and shower facilities, and flight-planning area. Amenities also include crew car, on-site car rental, and concierge service.

“We have committed over \$2 million to the facilities and equipment at ELM, and we are excited about bringing enhanced aviation services to the Twin Tiers,” said company president Robert Cleary.

The FBO is open from 6 a.m. until 10 p.m. with 24-hour call-out availability. An Avfuel-branded FBO, it will participate in the Avtrip customer loyalty rewards program as well as offer contract fuel. Premier also provides aircraft maintenance for the airport’s commercial operators and this month will open an on-site specialized brake and wheel shop as it moves toward establishing an FAA Part 145 repair station.

Universal Begins Ground Handling in Beijing

Under a recently signed agreement that took effect last month, Universal Weather and Aviation’s Universal Aviation China has begun providing on-ramp ground handling at China Capital Jet (CJet) Beijing, which operates the lone FBO at Beijing Capital Airport. Universal has had a presence in China for the past two decades and provides private aviation ground handling at Shanghai Pudong International and Guangzhou Baiyun International Airports.

“The combination of our local expertise, award-winning ground handling service, and safety standards, with CJet’s experience and commitment to improving business aviation infrastructure, will help reduce our clients’ risk and stress when operating to Beijing,” said Universal chairman Greg Evans.

“We look forward to developing training and information-sharing programs with CJet that will further advance and ease the business aviation operating environment throughout China.”

CJet, the only authorized private aviation ground service and customer passage provider in the greater metropolitan Beijing area, signed a deal in 2015 with FBO chain Million Air, which saw the facility rebranded as Million Air Beijing. That agreement had seen the location move toward adopting Western FBO service and operating procedures over the past several years, with staff members brought to Million Air’s Houston headquarters for training. It is unclear what this latest deal means for that alliance. When asked by **AIN**, Million Air replied only that it remains in negotiations with its Chinese counterparts.

London-area FBO Joins Avfuel Network

Stobart Jet Centre, the lone FBO at London Southend Airport, has joined the Avfuel branded network. The facility, which opened in 2018, offers 24/7 service, with transfer from airplane to automobile in less than a minute thanks to ramp access for vehicles. Located less than 40 miles from the heart of London, with train and helicopter transfers available, the location offers on-site immigration and customs service with pre-clearance availability.

“We are delighted to welcome Avfuel to London Southend Airport, the UK’s fastest-growing airport,” said Fiona Langton, the facility’s managing director. “Our customers enjoy award-winning customer service and great travel connections right into the heart of London, one of the world’s financial and entertainment capitals.”

Stobart, in addition to fueling the airport’s commercial traffic, also provides private aviation with jet-A and avgas, and as a branded FBO, will now offer Avfuel contract fuel and Avtrip points. The facility operates a fleet of six jet-A tankers and one 100LL avgas truck to service its fuel farm.

New Madrid GAT Ready for Operations

After nearly a year of work, the renovation of the general aviation terminal (GAT) at Spain’s Madrid Barajas Airport has been completed. Last January, a consortium consisting of Universal Aviation Spain, United

Aviation Service, and General Aviation Service, was selected by Aena SME, the government-owned company that manages the country’s airports, to renovate and co-manage the general aviation terminals at Madrid, as well as Barcelona El Prat International Airport, under the names of Spanish FBO-Madrid and Spanish FBO-Barcelona, respectively. In addition to shared common lounges, the GAT at Madrid features private crew and VIP lounges and facilities for each of the three companies’ clients. A common area also features a “living wall.”

Arriving aircraft will be met on the ramp and their passengers and crew will be driven to the GAT—a ride of five minutes. All customs, immigration, and quarantine inspections will be performed there, as well as luggage x-ray scanning. After this, users can either access the shared common lounges for a fee or use their handler’s private lounges at no additional charge. The similar upgrade project at the Barcelona GAT is expected to be finished by the end of this month, according to a Universal spokesman.

One Airport Replaces Two in Iowa

Following last year’s opening of Iowa’s Sioux County Regional Airport (SXX), the county has submitted paperwork to the FAA indicating it will permanently close nearby dedicated business and general aviation gateway Orange City Municipal Airport (ORC) on January 31. As required under the National Plan of Integrated Airport Systems (NPIAS), which listed ORC and its 4,252-foot main runway, the FAA must formally approve the closure of the airport, located five miles from SXX.

According to Sioux County Regional Airport board member and past chairman Harold Schiebout, fueling and FBO services at ORC, which had no taxiway, had already been unavailable there for more than a year.

“We discontinued those services last fall, as well, but because we were going through the formal closure process with headquarters, the FAA wanted us to keep it open officially even though we were not providing services there,” Schiebout told **AIN**.

County-run Sioux Center Municipal Airport (SOY), a non-NPIAS airport with a 3,800-foot-long, 50-foot wide runway was closed in 2018, and in a letter to the FAA, Schiebout noted the assets of ORC and SOY will be transferred to the new airport. SXX, which replaced the two, has a 5,500-foot-long, 100-foot-wide runway and a full-length taxiway. Ground handling, hangarage, maintenance, and aircraft charter services there are provided by FBO operator AirFlair. ■

FBO PROFILE: Colorado Air and Space Port



LORI HAGUE

Facility serves Denver-area bizav

As the world remains in the thrall of the conclusion of George Lucas’s four-decade-old Star Wars saga, you might be excused for thinking the Colorado Air and Space Port (CASP) was someplace the Millennium Falcon landed during one of the movies. But the facility formerly known as Front Range Airport (FTG), located just outside Denver, exists as one of 12 authorized commercial space launch centers in the U.S.

CASP’s field elevation—5,512 feet msl—offers the tag line “the first mile is free” and a leg up on competitors in horizontal space launch operations, once that technology becomes viable.

FTG, which began operations in 1984, was originally designed as a heavy cargo port to support cramped Stapleton International Airport. But as the plans for the new Denver International Airport (DEN) solidified, it was decided the new commercial airline hub airport would accommodate cargo operations as well, and that FTG would, instead, be completed as a general aviation reliever airport. As such, runways initially planned to be 12,000 and 10,000 feet were shortened to 8,000 feet each.

Owned and operated by Adams County, FTG earned its spaceport licensing in 2018, a move that was endorsed by the entire region, from the state governor’s office on down. That led to rebranding as CASP.

The lone FBO on the field occupies a 5,000-sq-ft, two-story terminal. It includes a passenger lounge/lobby, refreshment bar, pilot lounge with snooze room and private crew shower facilities, a business center, onsite car rental, and upstairs, two large A/V-equipped conference/meeting rooms seating up to 50 and 100. A full-service restaurant, the Aviator Bar and Grill, can prepare on-demand catering for flights in addition to serving airport customers. The FBO also provides shuttle service to DEN, which is approximately 15 minutes away.

The Phillips 66-branded facility is open from 7 a.m. until 9 p.m. every day and pumps approximately 360,000 gallons of fuel a year. That total is currently split evenly between jet fuel and avgas, but Lori Hague, CASP’s customer service

supervisor, told **AIN** the volume of jet-A has been rising. The location has a fuel farm with a capacity of 50,000 gallons of jet-A and 10,000 gallons of avgas, the latter available either through 24-hour self-serve or from a 5,000-gallon refueler operated by the NATA Safety 1st-trained line staff. A pair of 5,000-gallon tankers serve jet-A customers.

Given its proximity to some of Colorado’s legendary ski resorts, the facility’s peak season for jet traffic starts around Thanksgiving and runs through the winter. During that period, CASP can see as many as 180 operations a day, and it will put on extra staff to handle the busier shifts.

Currently, the FBO has a single heated hangar with 10,000 sq ft of space that can accommodate aircraft up to the size of a GIV. It is home to 10 turboprops, including King Airs and MU-2s, and during ski season, several jets such as a Gulfstream GV and a Hawker 900 take up residence on a frequent basis.

According to CASP director David Ruppel, as soon as the snow melts in the spring, CASP will break ground on \$7.5 million 37,500-sq-ft hangar, with a 32-foot-high door. Like its smaller sibling, this new-build hangar will also include office space and is expected to be completed by late 2021. A private contractor is currently constructing a major private hangar facility consisting of 25 T-hangars, and a similar number of box hangars will go up later in the year.

The complex just finished a \$1 million ramp resurfacing project, and Ruppel noted long term plans call for CASP to finally get its 12,000-foot runway as originally intended. “We’ll want to add length to the runway. That’s going to be positive both for the aviation side and the space side of things,” he said.

Also on his wishlist: a major upgrade to the facility’s aircraft rescue and fire fighting capability, which is currently dependent upon the local municipal fire department. Ruppel is looking to have a permanent full-capacity fire and rescue presence on the field, particularly once those rocket-fuel-loaded space flights begin. **C.E.**

PRELIMINARY REPORTS

Pilatus Accident Claims Four Generations

PILATUS PC-12, NOVEMBER 30, 2019, CHAMBERLAIN, SOUTH DAKOTA

Nine members of a prominent Idaho family were killed when their single-engine turboprop went down immediately after takeoff. Three other family members were rescued and hospitalized with injuries initially described as critical. The victims, ranging in age from seven to 81, represented four generations of the Hansen family of Idaho Falls. The ages of the survivors were given as 17, 27, and 28.

The accident site was barely a mile beyond the departure end of Chamberlain Municipal Airport's Runway 31. A winter storm warning was in effect at the time, with snow accumulating at up to one inch per hour. An NTSB press release issued on December 2 cites Chamberlain's automated weather observation station as having recorded conditions including "one-half mile visibility in moderate snow and icing, low-level windshear, and clear-air turbulence conditions" under a 500-foot overcast. Reported winds were only six knots, but gusts as high as 40 knots were recorded in Pierre at about the same time, leading some meteorologists to question the accuracy of the Chamberlain reading.

The family arrived on the morning of November 29 for an annual pheasant hunt and refueled the airplane after landing, parking it on the ramp overnight. Eight to nine inches of snow had reportedly accumulated in the interim. It is not known what the pilot did to try to remove the accumulated snow or any ice or frost that had formed underneath, but the Chamberlain airport offers only self-service fuel with no fixed-base operator, making it unlikely airport-based deicing services were available.

RFS Helicopter Pilot Unhurt in Hard Landing

BELL UH-1H, DECEMBER 7, 2019, CRAWFORD RIVER, NEW SOUTH WALES, AUSTRALIA

New South Wales's Rural Fire Service temporarily grounded its remaining helicopters after impact forces separated the main rotor and gearbox from the Bell Iroquois in what was officially described as a "hard landing." The solo pilot extricated himself from the wreckage and was pronounced uninjured after a precautionary exam at a Newcastle hospital. The aircraft had been conducting water drops on one of many brushfires wracking much of eastern Australia.

No information on the status of the investigation or possible causes of the downing had been released at press time. Aerial operations were suspended until the RFS could complete safety checks

on its other rotorcraft. This was the second accident of this type in the region in less than four weeks. On November 13, a 70-year-old pilot was hospitalized after a hard landing in a fire zone west of Brisbane, Queensland.

FINAL REPORTS

Cause of Approach Stall Remains Mysterious

CESSNA 510 CITATION MUSTANG, DECEMBER 14, 2017, NEAR WALDBURG, GERMANY

German investigators have been unable to determine why an Austrian-operated Cessna Mustang stalled and crashed while intercepting the localizer for the ILS approach to Runway 24 at Friedrichshafen. Two pilots and their only passenger were killed when the six-seat jet crashed into a forest after initially striking trees 1,000 meters (0.6 miles) away. Its wreckage was strewn through a 140-meter debris field, with many components from the right side of the airplane found on the left side of the ground scar and vice versa. Investigators were able to determine that at the time of impact, the landing gear, flaps, and speed brakes were all retracted.

The flight departed from Frankfurt Egelbach Airport at 5:43 p.m. local time and proceeded uneventfully through the hand-off to Zurich Arrival at 6:05, reaching a maximum altitude of FL210. Zurich Arrival issued a series of vectors and descent clearances to align the aircraft for the approach. At 6:13 the crew leveled the airplane at 4,000 feet and read back an instruction to fly a 215-degree heading until established on the localizer. After a slight overshoot, it corrected back to the right at an indicated speed of 240 knots, crossed the localizer to the northwest, and descended rapidly until radar contact was lost.

The airplane's G1000 avionics suite was not equipped with a flight data recorder, and the panel's SD memory cards were destroyed in the crash. Based on the flight's radar track, investigators concluded that it was almost certainly operating on autopilot, but this could not be confirmed directly. The jet was also certified for flight in known icing conditions, and its airspeed at the time of the accident was well above the 160-knot minimum Cessna specifies for flight in icing conditions but almost 100 knots faster than its published stall speed in a 60-degree bank in its high-stall-speed configuration.

Conditions along the route were conducive to icing, with precipitation, abundant humidity, and below-freezing temperatures. The captain of a transport-category aircraft reported severe icing between 15,000 and 7,000 feet during an approach to Stuttgart. Another Mustang flown by the accident aircraft's operator reported only light icing during an

approach to Friedrichshafen 10 minutes before the crash, but a Beech 1900 that arrived 45 minutes later "had been covered with massive layers of clear ice." A frontal boundary had moved farther north than forecast, increasing the possibility of moderate to severe icing during descent, but the German Federal Bureau of Aircraft Accident Investigation (BFU) was unable to positively attribute the loss of control to a roll upset from asymmetric ice accumulation, overcontrol following an uncommanded autopilot disconnect, or a tailplane stall—or to exclude any of those possibilities. The BFU did note that excessive speed during the approach almost certainly increased pilot workload, a tendency noted in other approaches to the Friedrichshafen airport.

Equipment Status Uncertain in Apparent Missed Approach Accident

SOCATA TBM 700, FEBRUARY 18, 2018, EVANSTON, WYOMING

In a probable cause report published on November 6, the NTSB attributed the pilot's loss of control during the apparent initiation of a missed approach to spatial disorientation but was unable to determine whether the pilot was attempting to fly using his standby instruments due to a failure of his primary flight display. The pilot and only passenger were killed when the airplane crashed just after initiating a climbing left turn from the final approach course for the ILS 23 approach to the Evanston-Uinta County Airport. The accident occurred in gusty winds and reduced visibility due to snow and mist with ceilings of 700 to 1,400 feet and the potential for low-level wind shear and clear air turbulence. There is no evidence the pilot had updated his only documented weather briefing, obtained 17 hours before the flight.

The pilot changed his requested destination three times in the course of the nearly four-hour flight, which departed from the Tulsa, Oklahoma International Airport at 11:10 Mountain Standard Time with a filed destination of Englewood, Colorado's Centennial Airport. About 20 minutes after takeoff, he requested a change to Pueblo, Colorado, then, an hour and 20 minutes later, to Provo, Utah. At 2:53 he requested routing to Evanston, citing improved weather since his departure. The airplane dropped as much as 600 feet below its assigned altitude during the transition to the initial approach fix for the ILS to Evanston's Runway 23; the pilot acknowledged several low-altitude alerts, saying that the airplane was "bouncing around" as the autopilot tried to maintain altitude.

Tracking the final approach course, it dipped just below the 7,343-foot (MSL) decision height 1.6 nautical miles from the runway threshold and then climbed

to 7,700 feet. This was consistent with the published missed approach procedure, which calls for a climb to 7,700 before turning slightly left to intercept the 213-degree radial from the Evanston VOR and continuing the climb. The left turn continued through 270 degrees before the airplane began descending and turned right; radar contact was lost at 7,900 feet.

The Evanston airport manager recalled the pilot telling him that several months earlier the TBM's flight display had gone blank during an instrument approach; he'd completed the approach by referring to information displayed by the ForeFlight app on his iPad. There is no record of any subsequent troubleshooting. The TBM's standby instruments were located on the far right side of the instrument panel, outside the normal scan of a left-seat pilot. At the time of the accident, surface conditions recorded at the Evanston airport included winds from 350 degrees at 14 knots, one-half mile visibility in snow and freezing fog, and vertical visibility of 800 feet.

Conquest Trim Malfunction Not Confirmed

CESSNA 441 CONQUEST II, FEBRUARY 22, 2018, ROSSVILLE, INDIANA

Fragmentation of the wreckage made it impossible for investigators to determine which trim system, if any, was malfunctioning during a flight from Indianapolis to Green Bay, Wisconsin, in night instrument conditions. The pilot initially reported control problems about one minute after checking in with Indianapolis departure control and requested a 90-degree heading with a block altitude of 4,500 to 5,000 feet. Following a handoff to the Chicago ARTCC and a clearance to climb to FL 230, the pilot transmitted "my trim kind of going out on me." The airplane dropped off radar after a last hit at 18,300 feet in the vicinity of the accident site. The pilot and both passengers were killed when the airplane hit a plowed field in a near-level attitude, leaving a 250-foot ground scar. Crucial components of its elevator, aileron, and rudder trim systems were either not recovered or too badly damaged for meaningful examination, leaving investigators unable to determine the role of any possible mechanical malfunction.

Two friends of the pilot recalled his expressing concern about the airplane's avionics and "temperamental" autopilot. Both urged him not to fly it until those problems had been addressed. The airplane's maintenance manager had no record of any discrepancies beyond erratic oil pressure readings on the right engine, which had tended to resolve after about 20 minutes of flight. The pilot had completed unusual attitude recovery training just over two years before the accident. ■



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Citadel and Aviation Link Team To Promote A340 Completions

Citadel Completions has partnered with Saudi Arabia's widebody design and completion consultancy Aviation Link to promote VIP conversions of the ultra-long-range Airbus A340-500. The concept "has generated significant interest in the Middle East, Africa, and Asia," the partners said. Aviation Link president and CEO Abdulaziz Al Rowaished noted the A340-500 offers "exceptional performance capabilities with a young airframe, four engine safety, global support, no ETOPS restrictions, and a range of over 9,000 nm...and provides a surprising and very compelling price point."

Townsend Leather Refurbs Facility

Capping its 50th anniversary year, Townsend Leather has expanded into a newly restored, 66,000-sq-ft former knitting mill in Johnstown, New York. The move, said Tim Beckett, senior v-p, was prompted by a shortage of storage space at its former HQ for the premium cowhides it purchases from Germany.

Interior Shops Find Home at German Airport

Germany's Nuremberg Airport (EDDN) is becoming a regional interiors center. Aero-Dienst has opened an interiors showroom at its headquarters at the airport, while Complete Aircraft Services (CAS) has enhanced its wood refinishing services at the field.

The Aero-Dienst showroom, opened in October, features an extensive selection of materials including fabrics and leathers for seating and panel covers, and wood veneer, carpet, heated stone flooring, plating for metal fittings, and LED cabin lighting samples, said Mark-André Mann, who leads the Interior Solutions department. It's also equipped with a 75-inch Ultra HD display to show realistic renderings of cabin design ideas.

CAS offers a three-year warranty on its proprietary, crack-resistant lacquer system. Development and use

of innovative materials such as "liquid metal" are a signature of CAS's services, said CEO Siegbert Rauch.

Lufthansa Technik Preps for A350 Completions

Hamburg-based Lufthansa Technik (LHT) commences in April the first head-of-state interior completion of an Airbus A350 widebody airliner, undertaken for the German Federal Government's Special Air Mission Wing. Floorplan includes an office and conference area, multifunctional lounge, and seating for accompanying delegations. LHT supported the A350's initial development, while the German Air Force was LHT's first external customer, noted Wieland Timm, senior director sales, VIP and special mission aircraft.

F/List Sets Up U.S. Base

Austrian bespoke interiors specialist F/List has established a U.S. base of operations near Colorado's Rocky Mountain Metropolitan Airport, ensuring "fast and efficient realization of highly sophisticated refurbishment and cabin modification projects" and "prompt and precise execution of the extensive range of aircraft aftermarket services for F/LIST's North American customer base," the company said. In addition to all aircraft-related services, "the F/LIST staff are prepared to handle residential interior projects."

MSB Aerospace Designs PED Stowage Systems

Canada's MSB Aerospace has a new portfolio of precision engineered stowage systems for personal electronic devices, joining its line of Hi-Lo pedestal tables and galley storage inserts. The system securely stows and holds any sized tablet with its arm and grip mechanism, deploying from side ledges to any desired viewing position in the seating area. Developed with Gulfstream, which offers an exclusive version on the G500 and G600, the system can be metal plated and finished to match the design of any mid- or large-cabin interior, MSB said. ■



Complete Aircraft Services showcases its woodworking skills with this Challenger interior.

**Within 6 Months****Jan. 1, 2020 Compliance Now Required
U.S./Taiwan/Mexico:
ADS-B Out Mandate**

ADS-B Out equipment must be operational starting Jan. 1, 2020, in aircraft that fly in the U.S. in airspace where transponders are currently required, and in Taiwan IFR airspace above FL290. Mexico: Requirements scheduled to start Jan. 1, 2020, in Class A, B, C, E above 10,000 feet, and other specified airspace.

Jan. 8, 2020

**EASA: Helicopter
Human Factors**

A notice of proposed amendment seeks to introduce specific provisions into the rotorcraft certification specifications to ensure that human factors are systematically taken into account during the design and approval processes of rotorcraft cockpits. The proposed amendments are expected to “moderately increase safety.” Comments are due on Jan. 8, 2020.

Jan. 30, 2020

**Datalink Com
in North Atlantic**

Aircraft flying within the North Atlantic Tracks between FL290 and FL410 must be equipped with FANS-1/A controller-pilot datalink communications and ADS-C starting on Jan. 30, 2020. Aircraft that are not FANS-equipped will be able to operate at cruise altitudes of FL430 and above.

Feb. 18, 2020

EASA: Halon Banned

Under EASA rules, operators of large airplanes and large helicopters shall ensure that built-in lavatory extinguishers on aircraft newly certified on or after Feb. 18, 2020 do not use Halon as the extinguishing agent. The goal is to gradually mitigate the environmental impact that Halon extinguishing agents in firefighting equipment have on the ozone and climate. The requirement applied to portable extinguishers on these classes of aircraft starting last May.

June 7, 2020 **5 Months to Deadline****Australia/Europe:
ADS-B Out Mandate**

The ADS-B Out retrofit requirements in Australia and Europe take effect June 7, 2020. In Europe, this mandate applies only to aircraft with a mtow exceeding 5,700 kg (12,566 pounds) or having a maximum cruising speed greater than 250 knots, and received its individual certificate of airworthiness

before June 8, 2016. In Australia, this mandate applies to foreign-registered aircraft flying under IFR. Australia-registered aircraft had to be compliant starting January 2. Also in Australia, non-complying aircraft can apply for a temporary exemption to fly under IFR without being equipped with ADS-B.

Within 12 Months

Aug. 14, 2020

EU: Pilot Mental Fitness

The European Union has published revised air operations safety rules to incorporate provisions to better identify, assess, and treat the psychological fitness of air crew. The rules, applicable to commercial air transport operators, go into effect Aug. 14, 2020. The requirements include mandatory alcohol testing of flight crews during ramp checks.

Oct 1, 2020

**Australia:
Rest and Duty Times**

New fatigue rules apply to holders of commercial air operator certificates (AOCs), including charter, on-demand air taxis, and Part 141 flight schools. Operators who select the prescribed limits must be in compliance by June 30, 2020. Operators who develop their own fatigue risk management system must be in compliance starting Oct. 1, 2020.

Beyond 12 Months

Jan. 1, 2021

U.S.: Stage 5 Noise Rules

Effective Jan. 1, 2021 more stringent noise certification rules apply for new type certificates for airplanes less than 121,254 pounds. The new rule, known as Stage 5, is intended only for newly designed airplanes and is not aimed at phasing out existing noise standards that apply to the production or operation of current models.

Feb. 25, 2021 and Jan. 27, 2022

Mandate Withdrawn**Canada: ADS-B Out**

The implementation date of Feb. 25, 2021 for ADS-B Out use in Canadian domestic airspace, initially in Class A airspace and the expansion to include Class B airspace above 12,500 feet on Jan. 27, 2022 are no longer mandated. The mandate was lifted in response to stakeholder feedback that “more time is required to prepare for the ADS-B Out mandate.” Non ADS-B Out-equipped aircraft will be accommodated within the airspace until a performance requirements mandate can be implemented. ■



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KEN SAIN



FRÉDÉRIC BUGEON



PATRICK PRULHIERE



FRÉDÉRIC LINO



BERNARD (BEN) CHOWANIEC

Ken Sain was named CEO of Panasonic Avionics. He succeeds **Hideo Nakano**, who held that position since 2017 and transitioned to the role of special advisor. Sain most recently was v-p of digital solutions and analytics for Boeing Global Services and CEO of Boeing subsidiary Jeppesen.

Eviation named **Roei Ganzarski** chairman of the board. Formerly CEO of software provider BoldIQ, Ganzarski also is chairman of Clermont Aerospace and CEO of magniX, both of which are collaborating with Eviation on the Alice aircraft.

FlightSafety International appointed **Mike King** president of FlightSafety Services, responsible for the aircrew training systems and contractor logistics support provided to government and military agencies. King, who previously served with FlightSafety from 1990 to 2014, returns to the training provider after serving as COO for Simcom Aviation Training.

Elevate Jet named **Michael Horrisberger** chief information officer. A former U.S. Navy pilot, Horrisberger brings more than 20 years of experience to his new role, including leading large scale, technology-based business initiatives.

Elliott Aviation hired **David Fenton** to serve as chief administrative and financial officer, succeeding **Jeff Hyland** who served as CFO for 28 years. Most recently CFO/COO of Dixline Corp. in Galva, Illinois, Fenton began his career with Alcoa and later was COO of Russell Companies.

The *General Aviation Manufacturers Association* (GAMA) named its 2020 executive leadership with *Jet Aviation Group* president **David Paddock** stepping in as chairman. Currently vice-chair, Paddock will succeed this year's chairman, *Gulfstream Aerospace* president **Mark Burns**. Meanwhile, Burns remains on the Executive Committee as the immediate past chair. **Nicolas Chabbert**, *Daher's* senior v-p for aircraft, is the incoming vice-chairman. He previously has chaired the association's Safety and Accident Investigation committee. Additionally, GAMA has created a European Leaders Steering committee, naming *Luxaviation* chief technical officer **David Van Den Langenberg** to steer the new panel.

The *International Aircraft Dealers Association* (IADA) appointed QS Partners managing partner **Paul Kirby** chairman for 2020-2021, succeeding outgoing chair, Mente president and CEO **Brian Proctor**. **Peter Antonenko**, COO of Jetcraft, is taking the role of vice-chairman; **David Monacell**, executive v-p of CFS Jets, is treasurer; and **Joe Carfagna Jr.**, president of Leading Edge Aviation Solutions, is the new secretary.

Safran Helicopter Engines appointed **Frédéric Bugeon** executive v-p of strategy, succeeding **Serge Maillé** who is retiring. Most recently v-p of sales, marketing, and customer

satisfaction for the organization, Bugeon has nearly 25 years of industry experience, also including with Thales and Alstom. In addition, **Patrick Prulhiere** has become executive v-p purchasing for Safran Helicopter Engines, succeeding **Frédéric Rascouailles** who moved to another position within the company. Prulhiere has nearly 30 years of experience, holding positions with Labinal before joining Safran Electrical and Power in 2014.

ACASS hired **Brenda Paauwe-Navori** as executive v-p for the Americas. Paauwe-Navori brings 20 years of experience to her new position, including nine in aircraft sales, previously with Virgin Charter, Bombardier, and Embraer.

Gulfstream appointed **Julien Nargeot** regional v-p of sales for Southeast Asia, Australia, and New Zealand and **Brian McCarthy** as a regional sales manager in the region. Nargeot brings 12 years of business jet OEM experience to his new role, including providing pilot

training, operational support, aircraft technical support, and customer service and most recently holding a sales role in the Middle East. McCarthy joins Gulfstream with nine years of business aviation experience, most recently as a sales manager for an aircraft brokerage company, responsible for the Northeast U.S. and Asia-Pacific markets.

Frédéric Lino was named v-p of purchasing of *Safran Electrical & Power*. He succeeds **Patrick Prulhiere**, who has become v-p of purchasing for Safran Helicopter Engines. Most recently v-p of purchasing at Safran Landing Systems, Lino joined the company after serving with the Laboratory of Accidentology and Biomechanics, which was created by PSA Peugeot Citroën and Renault, and later for Renault Group.

Mark Tattershall was named v-p of business development and strategy for *Arnprior Aerospace*. Tattershall has more than 30 years of industry experience, including with Kaman

Aerospace, Breeze-Eastern, Unitech, Stark Aerospace, Capewell, and Westland Helicopters.

Bernard (Ben) Chowaniec was appointed v-p and general manager of Cadence Aerospace—Tell Tool. Previously v-p of operations for Cadence, Chowaniec will direct daily operations at the Cadence Tell Tool business in Westfield, Massachusetts.

JetHQ added **John Daut** as v-p of sales. Daut, who heads up JetHQ's East Coast base from White Plains, New York, most recently was base president with Jet Linx in New York and has 15 years of aviation sales experience. ■



FINAL FLIGHT

Patricia Luebke—whose aviation marketing and writing career spanned more than five decades with organizations including Women In Aviation International (WAI), Aircraft Electronics Association, and Flying Magazine—died on November 22 following a brief illness. Over the past 20 years, Luebke has been a freelance writer, editor, and marketing consultant for publications and organizations such as Avionics News, Sporty's, AOPA, Lightspeed Aviation, and Aspen Avionics, among others. At WAI she contributed to *Aviation for Women* and *Aviation for Girls* magazines and was a creative force behind many programs and events including Take Your Daughter to Conference, which became Girls in Aviation Day, and the Honor The WASP event on Memorial Day weekend.

She joined Flying in 1974 as an advertising assistant and her first general aviation airplane ride involved a trip to the former Reading Air Show. Luebke rose up to become vice president for the Flying publishing company before embarking on her own career as a freelance writer and consultant in 2002.

WAI highlighted her ability to lead a team "with her quick wit and creative inspiration" and said Luebke was particularly proud of her work to develop future leaders in aviation and to encourage women to be confident in their fields. ■



AWARDS and HONORS

Bombardier honored **Michael Ott** of the international air ambulance provider *Phoenix Air Group* with the 2019 Bombardier Safety Standdown Award. Presented during the 23rd annual Safety Standdown held in November in Fort Worth, Texas, the annual award recognizes an "aviation professional who has demonstrated exemplary dedication to improving aviation safety through the Safety Standdown principles of learn, apply, and share." Ott was nominated for outstanding leadership in aviation safety management over a 35-plus year career, Bombardier added.

Currently director of government contracting and lead international captain/instructor pilot for Phoenix Air Group, Ott also has spent more than a decade as a line captain for the operator and steered the development and implementation of its safety management system. He further served as a designated IS-BAO auditor, a member of the IS-BAO standards board, and on the NBAA Safety Committee.

A retired Marine and airline transport pilot in both multi-engine airplanes and helicopters, Ott has amassed more than 14,200 flight hours, half of which involved international missions that included evacuation flights out of North Korea and out of West Africa during the Ebola crisis.

Andy Nureddin, v-p of customer support

for Bombardier Aviation, praised Ott "for his great passion and his exemplary leadership in promoting aviation safety and professionalism in our industry."

Michael Benton, founder and managing director of *VyClimb Consulting*, was honored with the Jim Charlson Aviation Safety Award at the recent Association of Air Medical Services (AAMS) Air Medical Transport Conference in Atlanta.

Presented annually to an individual who has made significant contributions to promoting aviation safety within the air medical transport community, Benton has more than 22 years of aviation industry management and operations experience. A former armed reconnaissance helicopter instructor pilot and member of the Directorate of Evaluation & Standardization with the U.S. Army, he has served as a helicopter emergency medical services pilot, check airman, accident investigator, regional aviation director, and a director of aviation compliance before launching his own consultancy in 2015.

During that time, he has steered organizations through a range of safety initiatives, including the FAA's Safety Management System Voluntary Program and Aviation Safety Action Program. Benton has served as a Helicopter Association International committee chair and an instructor at the NTSB Training Academy. ■

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House panel approves bill for foreign mx inspections

by Kerry Lynch

Despite strong objections from industry, the U.S. House Transportation and Infrastructure (T&I) Committee recently passed a bill 39-19 to mandate unscheduled inspections and additional standards at FAA-certified foreign repair stations.

T&I chairman Peter DeFazio (D-Oregon) introduced the measure, H.R.5119, the Safe Aircraft Maintenance Standards Act, saying, "We're at an unfortunate moment in our aviation system's history where safety standards are being questioned, and the bottom line is safety has to be the number-one priority."

He added he has pressed FAA officials for years to do more to close the gap on foreign repair station safety standards. "The bill I'm introducing today does just that by establishing one standard of safety regardless of where the aircraft is maintained."

H.R.5119 was unveiled with seven co-sponsors, a number that now is at a dozen. It requires unannounced

inspections at foreign repair stations; minimum qualifications for mechanics and others working on U.S.-registered aircraft at foreign repair stations (including FAA certification for mechanics and supervisors); data analysis; moratoriums on new FAA-certified foreign repair stations until the bill is implemented; and a repository of heavy maintenance history.

The Aeronautical Repair Station Association (ARSA) called H.R.5119 "policy-making at its worst." Noting the bill was introduced without warning and passed shortly afterward without hearings or opportunity to comment, ARSA v-p Christian Klein said, "No-huddle offense may win football games, but it's a loser when making policy, particularly in a heavily regulated sector like aviation safety."

Klein added that it would disrupt both air carrier and general aviation operations, add to the burden of regulators

and undermine global aviation regulatory cooperation. "Aviation laws and regulations must be based on facts with safety as the overarching goal. In stark contrast, H.R.5119 is a political bill that will disrupt international travel."

Ten other organizations joined ARSA in opposition to the legislation, urging the T&I leadership to scrap the bill in a letter that said H.R.5119 would threaten jobs, hurt small businesses, disrupt air travel, and weaken the competitiveness of the U.S. aerospace industry.

"The bill mandates onerous new record-keeping and reporting requirements that do nothing to help focus regulators on safety-critical information and will simply overwhelm them with irrelevant data," the organizations said, adding some of the requirements would be impossible to implement.

They also expressed concern about the threat to international cooperation. "Passenger and cargo airlines and general aviation operators that rely on FAA-certified facilities around the globe will be unable to get their aircraft serviced at foreign destinations," they said, expressing the additional fear that U.S. repair stations could also be vulnerable to losing approval from foreign aviation authorities.

Also signing the letter were the Aerospace Industries Association, Aircraft Electronics Association, Airlines for America, Aviation Suppliers Association, Cargo Airline Association, General Aviation Manufacturers Association, International Air Transport Association, Modification and Replacement Parts Association, National Air Carrier Association, and Regional Airline Association.

While those organizations opposed the bill, several unions and other organizations backed it, including the Aircraft Mechanics Fraternal Association, Consumer Reports, International Association of Machinists and Aerospace Workers, National Consumers League, Professional Aviation Safety Specialists, and the Transport Workers Union of America Transportation Trades Department.

Committee Republican leaders pointed to industry opposition and said the bill "unilaterally imposes U.S. law on FAA-certificated repair stations in foreign countries, regardless of their compatibility with foreign laws, and prohibits new foreign repair station certificates until new and burdensome regulations are enacted." Aviation subcommittee ranking member Garret Graves (R-Louisiana) was unsuccessful in offering a substitute during the committee vote in November. ■



Other Voices

Just culture: is aviation there yet?

by Stuart "Kipp" Lau

A Boeing 747-400 attempting to take off during a typhoon crashes through construction equipment and barriers, killing 83 of the 179 people on board. Three days later, authorities declare "pilot error." For the next two months, all three flight crewmembers—the captain, first officer, and relief pilot—are detained while prosecutors began building a case to pursue criminal manslaughter charges.

This event, nearly two decades ago, was the tragic crash of Singapore Airlines Flight 006 (SQ 006) in Taipei, Taiwan. A fiery crash, a massive loss of life, a rush to judgment, misplaced blame, and another attempt to criminalize an aviation accident were all outcomes of this event. It's difficult to determine if the aftermath would be any different today.

Since SQ 006, criminal proceedings following aviation accidents and incidents have been initiated in Brazil, France, Greece, India, Indonesia, Spain, Switzerland, and, most recently, Russia. These government "overreaches"

are a clear threat to aviation safety.

In a recent editorial, Flight Safety Foundation president and CEO Dr. Hassan Shahidi said criminalization of aircraft accidents "can have a chilling effect on the flow of crucial safety information and have a long-term adverse impact on safety. Holding controllers, pilots, and aviation technicians criminally liable for honest mistakes ultimately threatens the safety of the traveling public."

The primary objective of an investigation is to prevent future incidents and accidents. ICAO Annex 13—the global guide for aircraft accident and incident investigations—clearly states "it is not the purpose of an investigation to apportion blame or liability." Yet today, many authorities around the world would rather seek retribution for an incident or accident than determine cause.

For example, earlier this year, India's DGCA suspended more than 40 pilots' licenses for up to 12 months for perceived safety violations (non-alcohol related) without a full investigation or process. This heavy-handed approach stifles the spirit of openness and cooperation that is the foundation of any technical investigation and modern safety beliefs.

Unfortunately, the concept of applying a just safety culture in aviation is elusive. It's truly a global clash—a conflict between blame and accountability. According to aviation safety expert James Reason, the components of a safety culture include just, reporting, learning, informed, and flexible cultures. A just culture is an atmosphere of trust where individuals are encouraged and sometimes

rewarded for providing safety-related information.

A key principle of a just culture is the clear understanding of the difference between acceptable and unacceptable behavior. Defining what is acceptable or unacceptable is a trick. Who gets to decide?

The left side of this line allows for human error, omissions, and lapses, and accounts for other vulnerabilities in the system, whereas on the right side of the line are behaviors that are determined to be culpable, such as intentional willful violations, reckless behavior, or criminal acts.

Back to SQ 006. Just days after the accident, Taiwan's Civil Aeronautics Administration (CAA) director-general said the three pilots "must shoulder the responsibility." Blaming the accident on pilot error made the pilots the scapegoats.

The claim of pilot error—more of a symptom than a cause—related to the aircraft attempting to take off from a closed runway. It was clear that blame would trump accountability. This claim of pilot error would be dismissive of the critical "what" and "why" of a major event; that's how we learn.

In the end, a multitude of other issues were identified during the investigation: intense rainfall, low visibility, strong winds, communications, poor runway markings on the closed runway, a lack of ground surveillance radar, and runway lighting circuitry that lit both the active and closed runways. Just before midnight and amid a typhoon, "Cleared to take off on Runway 05L" were the instructions from ATC.



Pilot, safety expert, consultant, and aviation journalist Stuart "Kipp" Lau

The crew rather than making the second right hand turn onto Runway 05L, made the first right onto a partially lit Runway 05R that was closed. Approximately 41-seconds after setting takeoff thrust, nearing rotation speed, the aircraft struck barricades and machinery, breaking into three major pieces. The middle section of the fuselage and wings exploded and were incinerated; most of the casualties were seated in this section. The rest is history.

Significant in many ways, case studies of SQ 006 introduced me to the idea of a systems approach to aviation safety and that the efforts of safety professionals are often eclipsed by overly aggressive judicial authorities. Human error that results in a runway incursion or excursion is an opportunity to learn and should not be punished.

Retribution against an individual for an honest mistake holds the potential to interfere with the prevention of future incidents or accidents. Motivation by fear will limit participation in change. ■

Pilot, safety expert, consultant, and aviation journalist Stuart "Kipp" Lau writes about flight safety and airmanship for AIN.



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DAVID MCINTOSH

JANUARY

THE PRINCIPLES OF AIRCRAFT VALUATIONS AND APPRAISALS...January 10, Fort Lauderdale, Florida.
Info: aeropodium.com/valuation.html

HAI HELI-EXPO...January 27-30,
Anaheim Convention Center, Anaheim, CA. Info: rotor.org.

NBAA WEST PALM BEACH REGIONAL FORUM...January 29, Palm Beach International Airport, West Palm Beach, FL. Info: nbaa.org.

FEBRUARY

SINGAPORE AIRSHOW...February 11-16,
Changi Exhibition Center, Singapore. Info: singaporeairshow.com.

MARCH

AIR CHARTER SAFETY SYMPOSIUM...March 3-4,
NTSB Training Center, Ashburn, VA. Info: acsf.aero/symposium/.

NBAA SAN JOSE REGIONAL FORUM...March 5,
San Jose International Airport, San Jose, California.
Info: nbaa.org.

INTERNATIONAL WOMEN IN AVIATION CONFERENCE...March 5-7,
Disney's Coronado Springs Resort, Lake Buena Vista, FL.
Info: wai.org/conference.

NBAA SCHEDULERS AND DISPATCHERS CONFERENCE...
March 10-13, Charlotte Convention Center,
Charlotte, North Carolina. Info: <http://www.nbaa.org/sdc>.

NBAA INTERNATIONAL OPERATORS CONFERENCE...
March 16-19, Charlotte, North Carolina. Info: [nbaa.org/](http://nbaa.org/events/2020-international-operators-conference/)
[events/2020-international-operators-conference/](http://nbaa.org/events/2020-international-operators-conference/).

FSF 6TH ANNUAL SINGAPORE AVIATION SAFETY SEMINAR...March 17-20, Singapore Aviation Academy, Singapore. Info: [flightsafety.org/](http://flightsafety.org/summit-seminar/6th-annual-singapore-aviation-safety-seminar/)
[summit-seminar/6th-annual-singapore-aviation-safety-seminar/](http://flightsafety.org/summit-seminar/6th-annual-singapore-aviation-safety-seminar/)

AIRCRAFT ELECTRONICS ASSOCIATION INTERNATIONAL CONVENTION AND TRADE SHOW...March 24-27,
Nashville, TN. Info: aea.net.

OPERATING LEASE SEMINAR...March 24-26,
Doubletree by Hilton Sawgrass Mills,
Fort Lauderdale, Florida. Info: [everestevents.co.uk/event/](http://everestevents.co.uk/event/operating-lease-aviation-finance-seminar-2020/)
[operating-lease-aviation-finance-seminar-2020/](http://everestevents.co.uk/event/operating-lease-aviation-finance-seminar-2020/)

SUN 'N FUN...March 3-April 5, Florida Air Museum,
Lakeland, Florida. Info: www.flysnf.org/.

APRIL

AERO FRIEDRICHSHAFEN...April 1-4, Messe Friedrichshafen,
Friedrichshafen, Germany. Info: aero-expo.com/aero-en/.

TECHNICAL ASPECTS OF A LEASED ASSET...April 21,
NH Amsterdam Centre, Amsterdam, Netherlands. Info: 31 (0)
206841351; nhamsterdamcentre@nh-hotels.com; [everestevents.co.uk/event/](http://everestevents.co.uk/event/technical-aspects-of-a-leased-asset-2020/)
[technical-aspects-of-a-leased-asset-2020/](http://everestevents.co.uk/event/technical-aspects-of-a-leased-asset-2020/).

MAINTENANCE RESERVES SEMINAR...April 22,
NH Amsterdam Centre, Amsterdam, Netherlands.
Info: 31 (0) 206841351; nhamsterdamcentre@nh-hotels.com;
[everestevents.co.uk/event/](http://everestevents.co.uk/event/maintenance-reserves-seminar-2020/)
[maintenance-reserves-seminar-2020/](http://everestevents.co.uk/event/maintenance-reserves-seminar-2020/).

EURASIAN BUSINESS AVIATION SUMMIT AND EXHIBITION...
April 28-30, Gostiny Dvor Exhibition Complex, Moscow, Russia.
Info: +7 9372 757 085; email: info@eabaa.show; eabaa.show.

FSF 65TH ANNUAL BUSINESS AVIATION SAFETY SUMMIT...April 29, 30, Savannah Convention Center,
Savannah, Georgia. Info: (703) 739-6700; [flightsafety.org/](http://flightsafety.org/event/65th-annual-business-aviation-safety-summit/)
[event/65th-annual-business-aviation-safety-summit/](http://flightsafety.org/event/65th-annual-business-aviation-safety-summit/).

MAY

EUROPEAN BUSINESS AVIATION CONVENTION & EXHIBITION...May 26-28, Palexpo Convention Center, Geneva,
Switzerland. Info: info@ebace.aero; ebace.aero/2020/.

JUNE

NBAA WHITE PLAINS REGIONAL FORUM...June 10,
Westchester County Airport, White Plains, New York. Info: nbaa.org.

CBAA CONVENTION...June 16-18,-Toronto, Canada.
Info: Tel: (613) 236-5611; cbaa-aca.ca/CBAA/Events.

JULY

FARNBOROUGH INTERNATIONAL AIRSHOW...
July 20-24, Show Centre, ETPS Rd, Farnborough, England.
Info: +44 (0) 1252 532800; enquiries@farnborough.com;
farnboroughairshow.com.

EAA AIRVENTURE...July 20-26, EAA Aviation Museum,
Oshkosh, WI. Info: eaa.org/airventure.

OCTOBER

NBAA BUSINESS AVIATION CONVENTION & EXHIBITION...October 6-8, Orange County Convention Center Orlando Executive Airport,
Orlando, FL. Info: 202-783-9000; [nbaa.org/](http://nbaa.org/events/2020-nbaa-business-aviation-convention-exhibition/)
[events/2020-nbaa-business-aviation-convention-exhibition/](http://nbaa.org/events/2020-nbaa-business-aviation-convention-exhibition/).

NOVEMBER

BAHRAIN INTERNATIONAL AIRSHOW...November 18-20,
Sakhir Air Base, Kingdom of Bahrain. Info: +44 1252 532800;
bahraininternationalairshow@farnborough.com;
bahraininternationalairshow.com.

DECEMBER

MEBAA SHOW...December 8,-10,
DWC South, Dubai, UAE.
Info: mebaa.aero.



Indicates events at which AIN will publish on-site issues or distribute special reports.



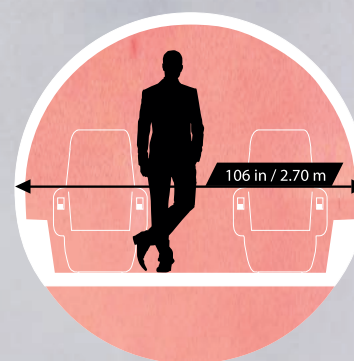
Indicates events for which AIN will provide special online coverage or e-newsletter.



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