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DAVID McINTOSH

Legislators press for GA focus in Plane Act

by Kerry Lynch

Sen. James Inhofe (R-Oklahoma) is continuing his long-running campaign to boost pilot rights and address issues affecting the U.S. general aviation (GA) community. Together with Sen. Angus King (I-Maine), he has jointly introduced new legislation, the Promoting the Launch of Aviation's Next Era (Plane) Act of 2019.

Announced during the most recent Experimental Aircraft Association AirVenture, the Plane Act, S.2198, is designed to foster airport infrastructure, strengthen pilot legal protections, and address a host of other issues. And the bill dares to take on an issue that Congress has shown little appetite to address for more than a decade: fuel fraud.

"The Plane Act truly sets a positive path for the future of the aviation industry," Inhofe said.

"For rural Maine communities, general aviation is a vital lifeline—both literally and economically," King added. "This legislation would make important investments in this pillar of our nation's transportation system and would cut through bureaucratic burdens."

Notably, the bill would roll back the "fuel fraud" tax measure imposed in 2005 as an attempt to discourage truck drivers from purchasing aviation jet fuel to avoid paying the 2.5-cent per gallon higher tax levy on highway diesel fuel.

That law requires noncommercial jet fuel to be treated as highway diesel fuel: taxed at the same rate with the dollars deposited into the highway trust fund until approved aviation vendors demonstrate that the fuel was used for aviation purposes and seek refunds.

The net result is a significant amount of aviation revenue has been lost to the aviation trust fund as many vendors have not sought the refunds, finding the process cumbersome

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Read Our **SPECIAL REPORT**

Product Support

AIN readers rate the support they received in the last 12 months for flight deck avionics and cabin electronics. Perennial favorites topped the list.

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AirVenture 2019

The annual event in Oshkosh, Wisconsin, attracted more than 10,000 airplanes, where enthusiasts checked out the latest and greatest the industry has to offer.

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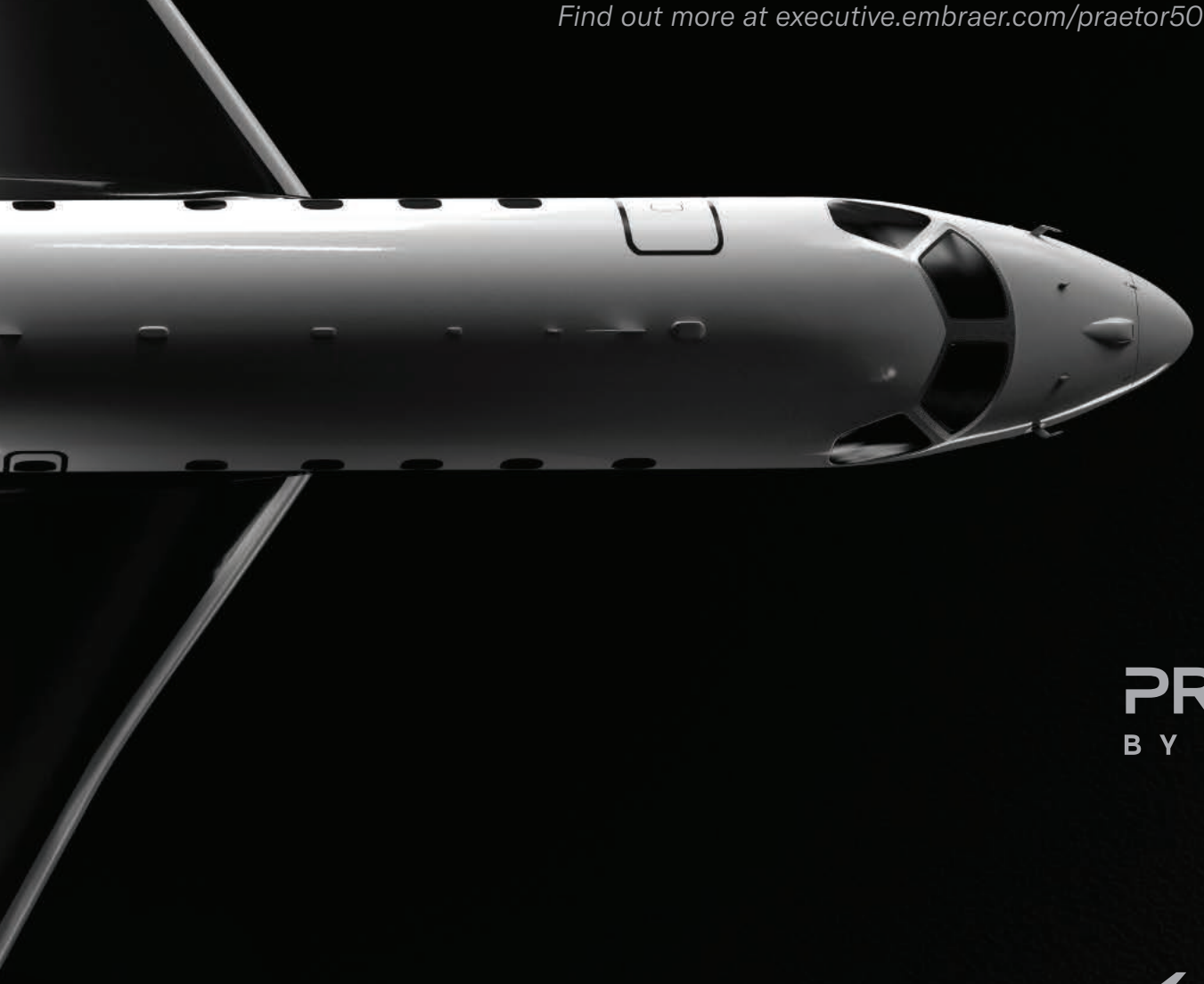

LEADING THE WAY

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BY EMBRAER

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FEATURE

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As We Go To Press

PILATUS TESTING PC-12s WITH AUTOTHROTTLE, EEC

Pilatus Aircraft appears to be working on an upgrade to its PC-12 turboprop single that entails a higher-power Pratt & Whitney Canada PT6E-67XP engine with autothrottle and a single power lever, as well as new five-blade Hartzell propeller with electronically controlled hub. Swiss aircraft registry records show that Pilatus has been flying two experimental-category PC-12s with the -67XP engine and at least one with the new Hartzell propeller system. And an EASA PC-12 type certification data sheet from May 22 indicates that the European authority has already approved the new Hartzell hub with a beta feedback mechanism that is electronic rather than hydro-mechanical." Meanwhile, at press time the FAA published two special conditions for "auto thrust" and an electronic engine control system for the PC-12. A Pilatus spokesman wouldn't comment about any such upgrade.

ESPOSITO TO LEAVE HONEYWELL AEROSPACE

Long-time Honeywell Aerospace senior executive Carl Esposito is leaving the company to take a new role in the automotive industry, as senior v-p and president of Lear Corporation's E-Systems division. Esposito will join Lear, which manufactures automotive seating and electrical systems, on September 3, reporting to president and CEO Ray Scott. He was president of Honeywell's electronic solutions strategic business unit and had a nearly 30-year career with the company. His previous roles at Honeywell included v-p of marketing and product management, v-p of avionics systems marketing and product management, and v-p of business and general aviation worldwide sales.

SECURITY CHIEFS: AIRCRAFT NEED CAN BUS CYBER SAFEGUARDS

Certain controlled area network (CAN) bus systems aboard aircraft might be vulnerable to hacking when an attacker has "unsupervised physical access to the aircraft," the U.S. Department of Homeland Security's Cybersecurity and Infrastructure Security Agency warned. It cited a report that an attacker with access to the aircraft could attach a device to an avionics CAN bus to "inject false data, resulting in incorrect readings in avionic equipment." Meanwhile, IT consultancy Rapid7, stated, "After performing a thorough investigation on two commercially available avionics systems, Rapid7 demonstrated that it was possible for a malicious individual to send false data to these systems, given some level of physical access to a small aircraft's wiring." Using such a device attached to the bus could lead to incorrect engine telemetry readings, incorrect compass and attitude data, and incorrect altitude, airspeed, and angle of attack (AoA) data.

ARGUS: U.S. BIZAV FLYING SEES 2.4% CLIMB IN JULY

Business aircraft activity rose 2.4 percent year-over-year in the U.S., Canada, and the Caribbean in July, as stronger-than-expected Fourth of July traffic boosted results, according to TraqPak data from Argus International. All operating categories saw increases in July, led by a 6.5 percent year-over-year rise in fractional flying. This was followed by Part 91 and Part 135/charter activity, which climbed by 1.9 percent and 1.7 percent, respectively, from last July. By aircraft category, midsize jets posted the largest year-over-year increase in departures, soaring 5.3 percent. Light-jet flying surged 3 percent year-over-year, while turboprops logged a modest 0.5 percent gain. However, large-cabin jets dropped slightly, falling 0.3 percent from a year ago.

ANALYST: HEAVY JETS TO LEAD BIZJETS TO 2019 GAINS

Analyst Jefferies is predicting business jet deliveries to grow 8 percent overall this year, with a 30 percent leap in heavy jet deliveries thanks in part to Gulfstream's G500 and G600 and Bombardier's Global 7500 reaching the market. Business jet deliveries in the second quarter improved 6 percent year-over-year overall and heavy jet shipments are up more than 20 percent on the quarter. Gulfstream and Embraer were drivers in the second-quarter increase, each up five units. After a 22 percent first-quarter jump, Cessna saw weaker business jet shipments on declines in the Citation M2 and Sovereign. While midsize jets have made gains over the past few years, shipments of those models have stumbled this year, down 7 percent through the first half.

HONDAJET ELITE GETS CHINA CAAC NOD

The HondaJet Elite has received type certification from the Civil Aviation Administration of China (CAAC). This will allow Honda Aircraft to begin deliveries as scheduled in China later this year via in-country HondaJet dealer Honsan General Aviation Co., Ltd. "Since we expanded to China, we have received several orders and have prioritized sales throughout China. We will continue to contribute to the maturity of the business aviation market with the HondaJet," said Honda Aircraft president and CEO Michimasa Fujino. Honsan General Aviation CEO Dr. Cheng Qian added, "We are thrilled to begin deliveries of the aircraft to our Chinese customers. The market here has reached a turning point."

DAVID McINTOSH

After an unexpected certification delay, Textron Aviation officials anticipate FAA type certification for the Cessna Citation Longitude by the end of this month.

Citation Longitude secures FAA signoff on fuel tank

by Jerry Siebenmark

The FAA recently granted Textron Aviation an exemption for the Cessna Citation Longitude's fuel tank, which is expected to resolve at least one issue that has held up certification of the super-midsize jet originally expected two years ago. Company officials anticipate Longitude type certification by the end of this month.

"We are pleased that the FAA has affirmed the permanent fuel tank exemption for the Citation Longitude," Textron Aviation said in a statement to **AIN**. "The purpose of the exemption is to align the Longitude's fuel system compliant design with the regulation, which did not anticipate the type of solution used. This is the permanent means of full compliance with the regulation." All Longitude deliveries will have a compliant fuel system, the company added.

It largely puts to rest a process that began more than a year-and-a-half ago and a requirement by the FAA that Textron Aviation asserted at one point "would result in the disruption of production deliveries of the Model 700, causing [the company] to experience a significant loss of revenue."

Textron Aviation's initial appeal for exemption in February 2018 centered around a difference in interpretation between the FAA and the company on what constitutes a center fuel tank. The Longitude is designed with the fuel tank in a conventional unheated aluminum wing, but includes a portion covered by aerodynamic fairings. The company considers the entire fuel tank to be in a conventional unheated aluminum wing (CUAW) that meets flammability requirements.

But the FAA disagreed, determining that the portion covered by the aerodynamic fairings is not a conventional unheated aluminum wing tank, which means the aircraft doesn't meet the requirements of FAR 25.981(b), amendment 25-125.

In its earlier exemption request, Textron pointed to the safety records of other jets in its fleet with similar fuel systems such as the Citation Sovereign and M2, as well as the Hawker 4000. A temporary exemption issued in August 2018 accepted an interim modification and called for a long-term solution.

A second appeal made by Textron Aviation in December 2018 was more narrowly focused on the more extensive requirements that apply to the use of the flammability reduction means (FRM) in fuel tanks. The FAA has determined that the aircraft's dedicated electric recirculation pump is an FRM and therefore the aircraft must meet those requirements.

In its June 26 decision granting the exemption, the FAA said: "the design modification that Textron has incorporated in the Model 700, in order to cool the fuel tanks and reduce fuel heating, improves the overall tank flammability to a level equivalent to a CUAW tank." ■

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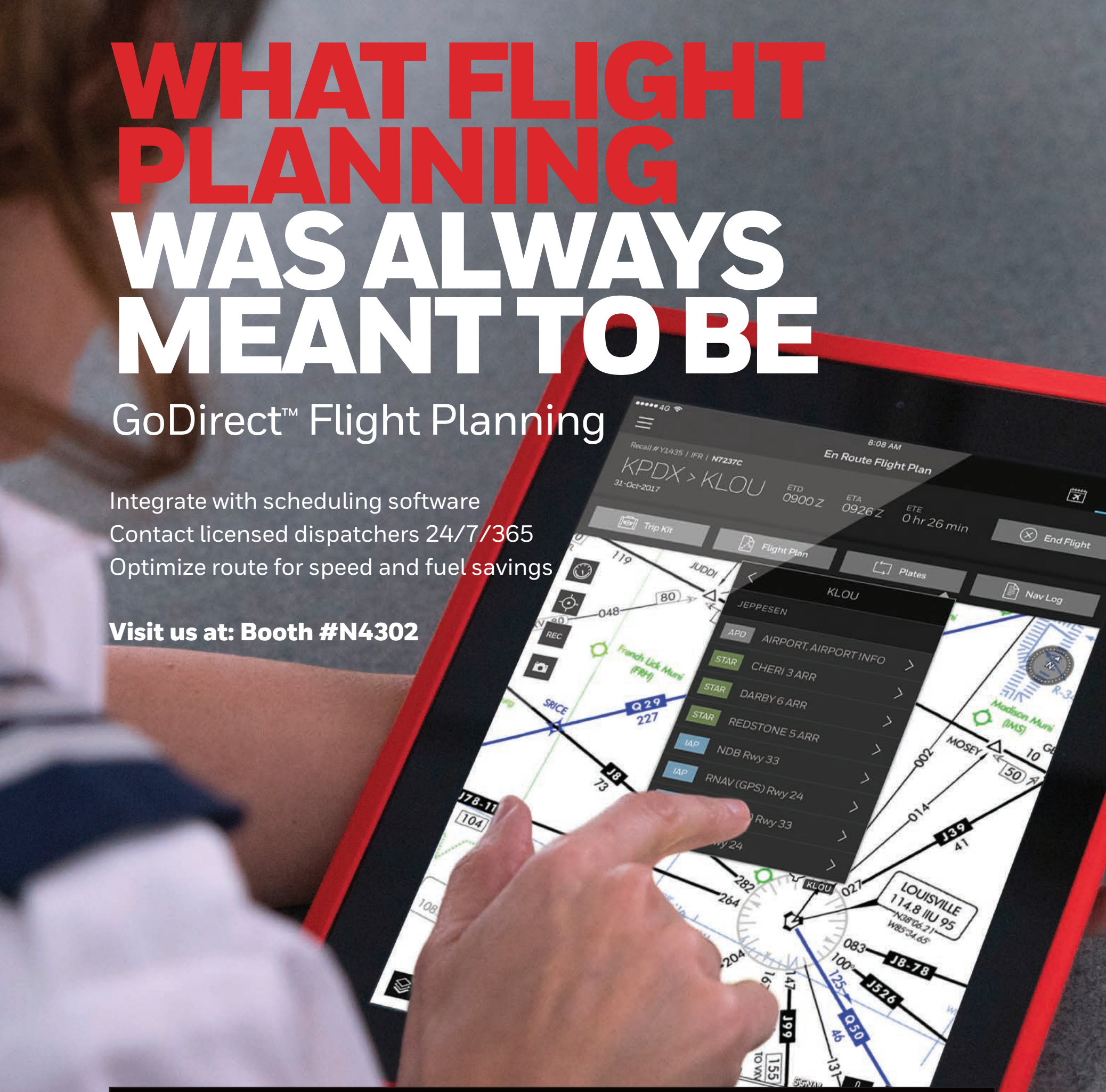

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LABACE 2019

G600 arrived in LABACE ready to serve

by David Donald

On the heels of first delivery of the G600, Gulfstream displayed the aircraft at LABACE, where it made its Brazilian debut last year. It was shown alongside a G650ER and a G280. The company handed over the first example of its large-cabin, long-range G600 to an undisclosed U.S. customer on August 8.

Handing over the first aircraft is another major milestone for the program, following the June 28 award by the FAA of both type and production certificates. The G600's smaller stablemate—the G500—also received dual certification simultaneously on July 20, 2018. The G600 certification effort included 100,000 hours of laboratory testing and 3,200 hours in the air.

"Getting both authorizations on the same day is evidence of the maturity of our G600 production processes and speaks to the safety and reliability of the aircraft's design," said Mark Burns, the Savannah, Georgia-based airframer's president.

DAVID McINTOSH

The G600 took center stage at Gulfstream's LABACE line-up flanked by a G650ER and G280.

The G500 and G600 were developed in parallel, and both aircraft are powered by Pratt & Whitney PW800-series turbofans, the first Gulfstream products not to feature Rolls-Royce power. With PW815GA engines, the G600 can achieve a range of 6,500 nm at its long-range cruise speed of Mach 0.85, and 5,500 nm at a high-speed cruise of Mach 0.9. ■

LABACE 2019

Embraer receives ANAC approval for Praetor 500

by David Donald

Brazil's ANAC handed over the type certificate for the Praetor 500 to Embraer on August 13 in a short ceremony held during the LABACE show. Michael Amalfitano, president and CEO of Embraer Executive Jets, called it "a welcome achievement for the celebration of our golden jubilee." During its flight trials, the Praetor 500 exceeded many of its certification goals.

Figures achieved during certification flight testing surpassed those established as goals for the program. Among them was an intercontinental range of 3,340 nm with NBAA IFR reserves and four passengers, a high-speed cruise of 466 ktas, and a payload of 1,600 pounds (726 kg) with full fuel. Demonstrated field performance includes a takeoff distance of 4,222 feet (1,287 meters), a figure that falls to 2,842 feet when fueled for a 1,000-nm flight. Unfactored landing distance is 2,086 feet.

This performance makes the Praetor 500 the fastest and longest-range business aircraft in its class, claims Embraer. The range figures, in particular, are significant, as the aircraft can fly true "corner-to-corner" flights within the United States between, say, Miami and Seattle, or Los Angeles and New York. With a single stop, the Praetor 500 can reach Europe and South America from the U.S. West Coast, while it can fly São Paulo to Paris with one refueling. The aircraft's good field performance opens up some of the more challenging airfields, such as Angra dos Reis and Jacarepaguá in Brazil.

Other unique features include its fly-by-wire flight control system, as the Praetor 500 is the only aircraft in the midsize class to fully employ this technology. The aircraft also has a best-in-class cabin altitude of 5,800 feet (1,768 meters), which combines with turbulence reduction technology and highly effective sound-proofing to give a comfortable ride for passengers.

The Praetor 500 comes with Honeywell's Ovation Select cabin management system and up to 16 Mbps airborne connectivity through the Viasat Ka-band satellite communications system, again a unique feature for an aircraft in this class. The flight deck is based on a Collins Aerospace Pro Line Fusion avionics system, with an optional head-up display with enhanced and synthetic vision systems, and vertical weather display radar. ■

DAVID McINTOSH

Embraer showed off its newly ANAC-certified Praetor 500 last month at LABACE.

News Briefs

First Dassault Falcon 6X Taking Shape

After freezing the Falcon 6X design in May, Dassault now says its super-midsize jet program is well into the manufacturing phase and on track to complete assembly of the first aircraft by early next year. First flight is scheduled for 2021, with deliveries expected to start in 2022. The Pratt & Whitney Canada (P&WC) PW812D engine that will power the 6X has accumulated more than 1,000 hours on a P&WC test bench in Montreal using five development engines. Meanwhile, Dassault has selected Meggitt to supply the 6X's wheels, brakes, brake controls, and tire pressure monitoring system.

NBAA Eyes Policy for ADS-B Privacy Protection

NBAA is continuing its push to ensure the privacy of business aircraft operators from real-time flight-tracking as operators transition to ADS-B with the Jan. 1, 2020 deadline approaching. The association has been actively involved on that issue with the FAA's Equip 2020 working group, which last month provided an update to the NextGen Advisory Council on the multi-pronged effort ongoing for the ADS-B transition. NBAA president and CEO Ed Bolen encouraged the group to continue progress on an "opt-out" solution that would enable operators to obtain a 24-bit ICAO code. Under this option, NBAA explained, operators keep their permanent code tied to the N-number, but could use the secondary temporary code that is not tied to an N-number, shielding the identity of the aircraft from outside flight-tracking programs. Operators could request the code at least once every 30 days, NBAA said.

Bizav Flights in Europe Continue To Slip

Business aviation activity in Europe continued to slow in July, falling 2.5 percent year-over-year, to 90,550 departures, according to data from WingX Advance. Most of the decline came from midsize and light jets, with this activity down 3 percent from July 2018; large-jet activity slid 1 percent. Year-to-date, flight activity slipped by 1.8 percent compared with 2018, while the 12-month trend is down 0.8 percent. Most of July's year-over-year decline was due to a 6 percent slowdown in flights from Germany and the UK, while activity in the busiest European market—France, at about 19,000 departures—remained flat.

Honeywell Buys Autopilot Maker TruTrak

Honeywell Aerospace has purchased privately owned autopilot designer and manufacturer TruTrak, which produces systems for experimental, light sport, and certified aircraft. It will become part of Honeywell's BendixKing business, with TruTrak's CEO and owner Andrew Barker joining the BendixKing executive team.

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MARK WAGNER

Pilatus's versatile PC-24 light jet helped buoy business jet delivery totals for the first half of 2019. The Swiss manufacturer ramped up its production from three in the first half of 2018 to 16 in the first six months of this year. Overall, private jet airframers boosted their deliveries year-over-year by 35, an increase of 12.5 percent.

GAMA deliveries mixed in first half: bizjets up, t-props and rotorcraft down

by Curt Epstein

Boosted by business jet and piston shipments, general aviation airplane billings and deliveries rose 12.9 percent and 7.8 percent year-over-year, respectively, according to first-half 2019 statistics released last month by the General Aviation Manufacturers Association (GAMA). The turboprop and rotorcraft segments declined.

Total airplane billings saw a $1 billion boost for the first six months of the year to $9 billion as jet deliveries increased by 35 units year-over-year to 316, an improvement of 12.5 percent.

Pilatus continues to ramp up production on its PC-24 light jet, handing over 16 in the first half of 2019, an increase of 13 over the previous year.

Gulfstream boosted deliveries of its large-cabin offerings from 37 in the first half of 2018 to 50 in the same period this year as it spools up production of its G500, which entered service in the second half of 2018.

Brazil's **Embraer** increased overall deliveries year-over-year from 31 to 36, adding four Phenom 300s and four Legacy 500s over its previous output, along with its first Praetor 600.

Textron bumped up Citation output by six from 84 to 90.

Bombardier's delivery totals declined from 65 in the first half of 2018 to 59 in the same period this year as the Canadian airframer handed over seven fewer Challengers (it now groups the 350 and 650 together) and one less Learjet, compared with two additional Globals.

Honda Aircraft remained static with its HondaJet, delivering 17 in the first six months of both years.

Dassault Aviation will release its first-half Falcon deliveries this month, and the current GAMA report does not reflect the French OEM's 2018 deliveries in its business jet total for the first half of that year.

Among bizliner-class aircraft, **Boeing** did not deliver any private aircraft through the first half of 2019, compared with four the previous year, while **Airbus** had no deliveries in the first half of 2018, but delivered two ACJ320neos during the first six months of this year.

Turboprops Encounter Headwinds

Turboprop deliveries, however, dropped by 11.4 percent, with high-end pressurized models seeing an even greater erosion of 24 percent.

Pilatus was the only pressurized turboprop manufacturer to not experience a decline as the company delivered 31 PC-12s in the first six months of both 2018 and 2019.

Textron Aviation saw a drop of nearly 50 percent in its twin-engine King Air 350 deliveries year-over-year, moving from 25 in the first half of 2018 to 13 through the first six months of this year, while simultaneously increasing the number of its smaller C90GTx and 250 siblings handed over by five and six aircraft, respectively.

Piper handed over 14 of its single-engine turboprops in the first half of the year, compared with 23 last year. While deliveries of its M500 rose from eight in the first half of 2018 to 13 in the same period this year, its M600 spiraled, moving from 15 deliveries from January through June last year, to just one this year. According to the manufacturer, it saw a rise in demand for M350 and M500 models for Q1 and Q2 immediately following a busy Q4 2018 M600 delivery period, and it expects to ratchet up M600 deliveries again in the second half.

Daher delivered three fewer TBMs this year, due possibly to the ramp up on its newly-introduced TBM 940, which entered service in the second quarter of the year. **Piaggio** handed over one fewer twin Avanti Evo than it did a year ago.

"While the year-to-date aircraft shipments are mixed, this should not obscure the outlook for a bright future for general aviation," said GAMA president and CEO Pete Bunce. "Our mid-year report shows new aircraft reaching entry-into-service milestones, with additional models expected to enter service before the end of 2019."

Rotorcraft Down

The rotorcraft segment also experienced a slowing of deliveries, by 15.8 percent in the first half of 2019, with turbine-powered helicopters down 11.3 percent. Deliveries declined from 337 in 1H 2018 to 299 in the first half of this year, while total billings decreased from $1.7 billion to $1.5 billion.

Airbus Helicopters was the lone airframer to buck the trend, increasing its deliveries year-over-year by more than 5 percent. The OEM boosted deliveries of its light H125/H130 by 10, and its H145 by six, while its output of H135s dipped by seven in the first half of this year.

Bell saw its deliveries drop by nearly 20 percent in the first six months of 2019. The Textron subsidiary is transitioning from the 407GXP, which had 33 deliveries in the first half of 2018, to the 407GXi (launched last year) which had 19 through the first six months of 2019. Deliveries of the 505 also declined from 59 to 48 year-over-year.

Italian manufacturer **Leonardo** also experienced a decline year-over-year of approximately 25 percent, delivering 18 fewer helicopters in the first half of 2019. Half that total is attributed to the AW119Kx. After handing over nine of the single-engine rotorcraft in 1H 2018, there were no deliveries in the same span this year.

Enstrom, which delivered three of its turbine-engine 480 light helicopters in the first half of 2018, also delivered no 480s through the first six months of this year.

California-based **Robinson Helicopter** saw its deliveries of the R66 diminish by 25 percent year-over-year. ■

News Briefs

Preowned Bizjet Inventory Rises, Turboprops Flat

Preowned business jet inventory inched up and that for turboprops remained flat as business aircraft sales transactions suffered double-digit percentage year-over-year decreases in the first six months, according to data from JetNet. Business jet transactions plunged 21.5 percent from last June and turboprop sales eroded by 13.9 percent, it said. As of June 30, preowned business jet inventory climbed by 0.4 percent from a year ago, to 9.5 percent—or 2,099 of the 22,177 in-service aircraft. Preowned turboprop inventory increased in June by three units, to 1,015, from a year ago. However, as a percentage of the in-service fleet it fell by 0.1 percent, to 6.5 percent, as 350 new-production turboprops entered service over the past year.

Ampaire Plans To Electrify Caravan, Twin Otter

Ampaire has announced plans to bring hybrid-electric power to more models of existing aircraft, including the Cessna 208B Grand Caravan and Viking Twin Otter, as well as begin airline demonstration runs without passengers later this year in Hawaii—with Mokulele Airlines on Maui—with its electric-hybrid Cessna 337 Skymaster conversion it calls the EEL. Company CEO Kevin Noertker said his company's engine conversions cut fuel consumption by between 70 and 90 percent, reduce maintenance expense by 20 to 50 percent, and produce significantly quieter aircraft.

FAA Notice Warns of Damage to AOA Sensors

The FAA has issued Information for Operators (InFo) 19009 to advise pilots and maintenance personnel of the potential for damaging angle of attack (AOA) sensors on aircraft. Based on continued airworthiness activity on multiple foreign and domestic large transport aircraft and small general aviation aircraft, the FAA has determined it is necessary to advise operators of the importance of performing proper operations and maintenance on AOA sensors. "It is imperative that all operators are aware of the criticality of AOA sensors and the potential for damage during normal operations, maintenance, and any other procedures around an aircraft where damage to an AOA sensor could occur," the FAA cautioned. In addition, all pertinent personnel "should review current procedures identified in their appropriate operational, maintenance, or servicing manuals." The most recent serious issue involving a malfunctioning AOA sensor concerned those on the Cirrus SF-50 Vision. Three in-flight incidents of uncommanded engagement of the single-engine jet's stall warning and/or stability protection systems caused by the AOA sensor prompted the FAA in April to temporarily ground the fleet. In June, the FAA published a new AD mandating replacement of the aircraft's AOA sensors with improved ones.

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XTI Aircraft says the TriFan 600 hybrid-electric VTOL will have the speed, range, and comfort of a business jet and the ability to take off and land vertically using three ducted fans.

EAA AirVenture 2019

XTI selects GE Catalyst mill for TriFan's hybrid core

by Jerry Siebenmark

GE Aviation's new clean-sheet turboprop engine, Catalyst, has been selected by XTI Aircraft as the core of its TriFan 600 VTOL hybrid-electric propulsion system, GE announced at EAA AirVenture in late July. The TriFan's performance requirements are expected to be met as GE and XTI work toward a solution in which the Catalyst will drive a generator to power the aircraft's electric motors."We need to do a lot more engineering work, a lot more analysis so that it is optimized," XTI CEO Bob Labelle told **AIN** of the work ahead for GE and XTI.

This is the first hybrid application for the Catalyst, which will make its debut as the powerplant for the new Cessna Denali single-engine turboprop. "I think the thing we see is that this XTI application is targeted at a real market with what we consider to be a valid aircraft concept that needs a megawatt-class power system, which is what the Catalyst brings to bear, and to be able to do that at altitude," Craig Hoover, advanced technology and hybrid electric pursuits leader for GE Aviation's Business & General Aviation unit, told **AIN**. "I think the first step in this is to center on the Catalyst and then to discuss the rest of the architecture with XTI." GE will likely use an existing Catalyst test engine modified to host one or more generators to determine the architecture of the TriFan's propulsion system, he added. "I think as much as we can we'll try to work with existing assets to do probably an iron bird of some type before trying to move into a real production unit."

For nearly a decade GE has been researching and developing hybrid-electric technology for regional and narrowbody jets as well as general aviation and VTOL aircraft. It was after a visit to GE's $51 million Electrical Power Integrated System Center (EpisCenter) in Dayton, Ohio, that XTI made its decision to go with the Catalyst.

"We did look at other smaller engines that are already certified and out there in service, mainly with helicopters because they have a turboshaft engine," LaBelle explained. "We finally came to the realization that there's not quite enough power there. This one gives us all the power we need."

The six-seat TriFan 600 will have a top speed of 300 knots, a range of 1,200 nm for conventional takeoff and 670 nm for vertical takeoff, and a cruise altitude of 29,000 feet. A 65 percent scale prototype completed a first flight in May.

To date, customers have placed orders for 80 TriFan 600s. LaBelle expects the hybrid-electric propulsion system to be ready in time for the TriFan's type certification in 2023.

GE has completed more than 1,100 hours of testing on the Catalyst, including initial altitude testing. A flying testbed for the new engine, a Beechcraft King Air, will be ready by the end of the year, a GE spokesman told **AIN**. "This is definitely a next chapter of what we think the Catalyst can do," he noted. ■

U.S. bizav fleet reaches 77 percent ADS-B equipage ahead of 2020 deadline

With the FAA's mandatory ADS-B equipage deadline less than half a year away now, industry data provider and flight tracker FlightAware is reporting that the U.S.-registered, turbine-powered business aircraft fleet has achieved a 77 percent equipage rate. The numbers in its just-released June report show 13,352 of the jets and turboprops, of the 17,319 registered, are now compliant with the 2020 ADS-B mandate, representing a 22 percent increase over the total a year ago.

Among the highest percentages of equipage are light jets such as the Cirrus Vision and the HondaJet, both at 97 percent of their fleet totals; Gulfstream's G150 and G650 at 93 percent; Cessna's CJ4 at 92 percent and Latitude at 91 percent; and the Beechcraft King Air 300 at 90 percent.

Business aviation analyst Rolland Vincent expressed some surprise at how much some popular legacy aircraft types are lagging at this point, such as the Citation XL/XLS (69 percent), Bombardier Challenger 300 (81 percent), and the Gulfstream IV (73 percent). He believes some owners will still wait for what they view as a more affordable option before they upgrade, even if that means parking their aircraft. "I don't see the deadline moving," he told **AIN**, adding that it doesn't mean the end of the line for noncompliant aircraft. "Obviously people who did not meet the deadline are going to be in line to get the work done in the first six or 12 months of 2020, but I think there are going to be a lot of people scratching their heads on January 1." **C.E.**

News Briefs

Operator Seeks Damages after DEF Incident

Air charter provider Air Trek and its Ambulance by Air Trek aeromedical services subsidiary plans to file a lawsuit against Florida's Punta Gorda Airport for damages after two of its aircraft fell victim to the latest instance of fuel contamination with diesel exhaust fluid (DEF). According to a letter sent by the company's attorney, the May 9 incident resulted in irreparable damage to a pair of the company's Cessna Citation 550s that were fueled at their home base before departure. One of the jets, bound for Niagara Falls, New York, suffered a dual-engine flameout but landed safely in Savannah, while the other, headed to Chicago, diverted to Louisville, Kentucky, when it experienced engine failure. No injuries were reported in either instance. The damages sought include incurred costs, as well as loss of revenue from the inoperable aircraft.

Bell Jet Ranger X Reaches 200th Delivery Milestone

Bell on August 15 announced delivery of the 200th Bell 505 Jet Ranger X, with the milestone helicopter going to Austria-based operator Hubi-fly Helikopter for corporate transport use. The first Bell 505 was handed over to Pylon Aviation in March 2017. The 505 is being used for electronic newsgathering, law enforcement, emergency medical services, corporate transportation, and utility missions, among others.

ExecuJet MRO Services Malaysia Gets Chinese Nod

ExecuJet MRO Services Malaysia has been granted CAAR-145 certification by Civil Aviation Administration of China (CAAC) to conduct line and heavy maintenance on Gulfstream GIV and Bombardier Challengers and Globals. Ivan Lim, vice president ExecuJet MRO Services Asia, said the company applied for the approvals from CAAC in response to demand from operators in China. According to Asia Sky Group fleet report, there are 62 Challenger series jets and 25 Global Express family jets based in Mainland China. Including Hong Kong and Macau, that number increases to 76 and 61, respectively.

Lower Heavy Jet Ops Hampers Signature's Revenues

Signature Flight Support revenue overall slid 0.9 percent to $879.1 million in the first six months, reflecting lower fuel prices, negative foreign exchange movements, and a relatively flat market for business and general aviation movements, according to parent company BBA Aviation. In the U.S., business and general aviation movements inched up 0.3 percent in the first half, but overall revenue at Signature was down. Organic revenue was up 1 percent in the first six months, offset by a dip in heavy jet traffic in the Signature network. However, the company still believes the U.S. represents a long-term growth market.


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Leonardo lands orders in Brazil

by David Donald

DAVID McINTOSH

Among the five orders Leonardo secured at last month's LABACE in São Paulo was one for the AW169. The most recent order for the model will bring Brazil's total fleet to five by year-end.

Leonardo's helicopter division has secured five new orders from Brazilian customers, the company announced at the 2019 LABACE show last month. Valued at nearly €30 million ($33.5 million), the sales cover three AW109 Trekker light twins, an AW109 GrandNew, and an AW169 intermediate twin. The sales will take the number of Leonardo helicopters flying in the country to more than 170.

Brazil has proven a good market for the AW109 family. Two of the Trekkers have been ordered in VIP configuration by Icon Aviation, the Brazilian distributor for the type based at São Paulo-Congonhas. The third Trekker, also in VIP configuration, and the GrandNew are for private regional customers.

The Trekker is the latest version of the popular AW109, combining the airframe and large cabin of the AW109 Grand with a skid undercarriage. It is fitted with the latest Genesys Aerosystems avionics suite. More than 60 have now been sold worldwide, including orders received from other Latin American nations, including Chile.

Meanwhile, the latest order for the VIP-configured AW169 will bring the number of this version operating in Brazil to five before the end of 2019. By then another eight AW169s will also be serving on VIP and emergency medical services (EMS) duties elsewhere in Latin America.

Featuring a customizable cabin that can seat up to 10 and that boasts excellent soundproofing and entertainment systems, the AW169 has attracted a good number of VIP/corporate customers. One of the attractions is its auxiliary power unit mode that permits climate control and onboard system use with the rotors at rest.

Global AW169 sales have topped 200, and in addition to VIP/corporate use, the type has been ordered by a range of customers that fly the AW169 for EMS, search and rescue, offshore transport, law enforcement, newsgathering, firefighting, and government/military missions. ■

Wing Spirit upped its order for HondaJet Elites from the two it took in July to a total of 15.

Wing Spirit expands HondaJet order to 15

Hawaii-based Wing Spirit, which in early July celebrated the delivery of its first two HondaJet Elites, has expanded its order to a total of 15 of the light jets, Honda Aircraft announced on July 23. It "is a realization of our goal to expand the world's business jet market," said Honda Aircraft president and CEO Michimasa Fujino. "Prior to the HondaJet's entry into service in the region, no other light jet had operated in Hawaii. We are confident the HondaJet's efficiency, comfort, and best-in-class performance are well-suited to Wing Spirit's mission to revolutionize business aviation in the region."

Plans by Wing Spirit for the jets include inter-island charter flights and air ambulance operations. HondaJet Elites serving as air ambulances will be outfitted with custom medevac configurations—a first for the HondaJet program.

"When deciding how we could best provide convenient and luxurious transportation to the residents and tourists in Hawaii, the HondaJet was a natural choice," said Wing Spirit executive v-p and COO Sal Miwa. "We are thrilled to expand our fleet to 15 HondaJets and for our customers to experience the most technologically advanced jet in its class." **J.S.**

News Briefs

Senate Extends Terms of NTSB's Sumwalt, Homendy

The Senate has reconfirmed Robert Sumwalt as chairman of the NTSB and Jennifer Homendy as a member of the Board. Sumwalt was approved for a three-year term as chairman. Meanwhile, the White House in January had renominated Homendy to a five-year term as a member of the NTSB. Her term has now been extended until Dec. 31, 2024. The Senate, however, has not yet acted on the nomination of Textron Aviation executive Michael Graham to fulfill the remainder of the NTSB term in place of Earl Weener. In addition, the White House is vetting candidates for a final opening on the Board.

Wheels Up Raises $128M To Fuel Further Growth

Wheels Up raised $128 million in new equity last month to help the private flight solutions firm accelerate growth and digital efforts. According to Wheels Up founder and CEO Kenny Dichter, this latest financing round will fund several business initiatives, including additional potential acquisitions, acceleration of membership growth through further investment in sales and marketing, and significant scaling of the company's technology and digital platforms.

Tamarack Returns To Installing Active Winglets

Tamarack Aerospace has returned to installing its Atlas active winglets following the decision of U.S. and European authorities to permit aircraft equipped with the winglets to begin flying again. Airworthiness Directives (AD) in the U.S. and Europe had grounded Atlas-equipped Cessna Citation CJ1s, CJ2s, and CJ3s and halted further installations, leading the company to Chapter 11 reorganization bankruptcy in June. Both EASA and FAA lifted the ADs in July. Early last month, a CJ1 at Tamarack's Sandpoint, Idaho facility was receiving the first new installation of Atlas winglets.

Airbus Helo Opens Malaysian Completions Center

Airbus Helicopters last month opened its new regional completion and delivery center (CDC) in Subang, Malaysia, as it streamlines its services in Asia. Previously, the regional CDC was situated in Airbus Helicopters' Singapore facility in Seletar Aerospace Park. According to Airbus, the new center can complete and deliver up to 20 helicopters annually.

JetSuiteX Transforms into JSX

Growing public charter provider JetSuiteX has taken on a new identity—JSX, rolling out the new brand, logo, livery, updated website, and ad campaign that highlights its "hop-on jet service" last month. The sibling of private charter provider JetSuite, JSX was founded in 2016 to offer regular short-haul service between defined city-pairs at costs that compete with scheduled airlines.

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Honda Aircraft breaks ground on NC facility

by Matt Thurber

At a groundbreaking ceremony held on July 30, Honda Aircraft president and CEO Michimasa Fujino and local and state government officials celebrated the imminent construction of a new 83,000-sq-ft facility at the company's Greensboro, North Carolina headquarters. The facility, set to open next July, will house a new service parts warehouse and wing manufacturing operation for the HondaJet.

During the groundbreaking ceremony, North Carolina Gov. Roy Cooper welcomed Honda Aircraft's $15.5 million investment in the new facility and the company's $245 million capital investment in North Carolina. The state now ranks as the second-largest aerospace cluster in the U.S., with 200 aerospace companies and 400 suppliers, he said. "We're making the push for first."

With the added wing manufacturing capability and new automated manufacturing technology, Honda Aircraft will have extra space for other projects. Cooper hinted that some work is under way on possible new models, although Honda Aircraft hasn't confirmed this. "We look forward to Honda [Aircraft's] next breakthrough," he said. "They're going to have some extra space, and they're being a little mysterious about what they're going to do with it. We know, too, that they're going to need a skilled workforce for their R&D, for their advanced manufacturing."

Honda Aircraft employs 1,500 in North Carolina, and as the company ramps up the HondaJet assembly line from four to five aircraft per month, Fujino hopes to add more employees.

"The [new] facility will be utilized for lean production and increased production efficiency with a highly automated process," he said. "The addition of this facility will directly translate to quicker lead times between purchase and the delivery, eventually allowing us to increase output for our customers."

The more than 130 HondaJets now in service worldwide have achieved a dispatch reliability of 99.7 percent, Fujino said. "This number exceeds industry norms. Developing an aircraft that is reliable is one of our five highest priorities. And this number is a testament to our commitment to quality and our dedication to prove the best service experience to all of our customers."

Kevin Baker, executive director of the Piedmont Triad Airport Authority, thanked Honda Aircraft for its contributions to the local community. "We don't go a year without having yet another announcement for a huge improvement to this facility," he said. "Thank you to your whole team for the continued innovation, the continued partnership, and the continued commitment to this airport, this region, and the state. Our congratulations on this next important milestone, the growth of Honda Aircraft here in our airport. And we just can't wait to see what you'll do next." ■

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Full-throttle opinion from former NTSB member John Goglia

Voluntary SMS offers big benefits for small operators

The safety benefits of maintaining a safety management system (SMS) in aviation should be well known at this point. An effective SMS provides an organization with a systematic approach to managing safety risks and making sound safety decisions. A functioning SMS begins with a commitment from the top of the corporation but engages workers at all levels of the company in identifying safety hazards so that their risks can be assessed, analyzed, and eliminated or mitigated. It will also ensure that risks are properly assessed over time and changing circumstances. Of course, the point of SMS is to reduce the potential for accidents or incidents but, in my experience consulting with airlines of all sizes, it also provides economic benefits unrelated to safety, such as improving efficiency and promoting cost-savings.

SMS Benefits

But because the FAA doesn't require SMS for corporate or Part 135 operators, I'm asked on a regular basis by these operators whether I think their company should voluntarily adopt an SMS program, whether the time and cost of adopting a program is worth the effort. Some have read something about SMS and are curious if they will soon be required by the FAA to have it. Based on the lengthy rulemaking process and the fact that there's no rulemaking proposal out there, it's pretty doubtful that any new SMS requirements would come out for operators in the next five or even 10 years. But some operators just want to know whether—and how—it could benefit them. A few Part 135 operators may have read the NTSB's 2019-2020 Most Wanted List of Transportation Safety Improvements, which includes adopting SMS to improve the safety of Part 135 aircraft operations.

The NTSB's recommendation pertains to Part 135 air medical service, air-taxi, charter, and on-demand flights and recommends that Part 135 operators be mandated to "implement safety management systems that include a flight data monitoring program, and they should mandate controlled-flight-into-terrain-avoidance training that addresses current terrain-avoidance warning system technologies." Clearly, the NTSB is strongly advocating for the expansion of SMS requirements to Part 135 operators. But the NTSB can only issue recommendations. It takes the FAA—or Congress—to make them mandatory.

Most of the companies asking me about SMS these days are the smaller business flight departments and charter operators. The larger ones (those that provide non-medical transportation) have—to my knowledge—all adopted SMSs either because they are flying customers to countries abroad that require them to have an SMS or because they need an SMS to get a high rating from a charter rating service, or both. For example, if a Part 135 or business aircraft operator wants to fly to a European Union country, the charter company must have an approved SMS program that meets the requirements of ICAO (the International Civil Aviation Organization).

> **"I have been to the scenes of far too many accidents... caused by lax organizational processes and poor safety cultures."**

In addition, to get a platinum rating from Argus, one of the major charter rating services, or qualify for IS-BAO (International Standard for Business Aircraft Operators) registration, an operator must have a functioning safety management system. Many charter customers—especially the major corporations—require a charter company to hold a platinum rating to contract for the air transportation of company employees. So, in terms of business competitiveness, a functioning SMS is highly desirable for many operators, and they have chosen to voluntarily adopt an SMS program.

SMS Utility

At this time, the FAA's SMS rule—14 CFR Part 5—applies only to Part 121 operators. So technically speaking, the Federal Aviation Regulations don't require any company other than an air carrier flying under Part 121 to have an SMS. But the FAA has been encouraging Part 135 and other operators for some time to adopt voluntary SMS programs in advance of any rulemaking. Although voluntary, the FAA has an approval process, which lays out that a Part 135 operator satisfy the requirements for operating in EU countries. The FAA's voluntary program tracks the Part 5 requirements for Part 121 operators so it's likely that if Part 5 is ever expanded to include Part 135 operators, those with an approved voluntary program will be ahead of the game when it comes to compliance.

I have been a big proponent of SMSs for years, decades really. Having been involved in aircraft accident investigations for virtually my entire working life, I have been to the scenes of far too many accidents that subsequent investigations have determined were caused by lax organizational processes and poor safety cultures. I have spoken to far too many victims' families distraught to learn not just that their loved ones had died, but that the accident might well have been preventable.

A functioning SMS can create a safety culture that encourages employees to identify and report hazards that executives in their offices would never be aware of. SMSs provide a structured approach to safety risk management that can be a significant benefit to companies of all sizes, even mom-and-pop operators. Of course, a good SMS program is not a one-size-fits-all solution. Clearly, smaller, less complex operations can do with a properly scaled program that's easy for a small operator to manage and yet provides safety benefits.

So, even if the FAA has not seen fit to mandate that Part 135 or business operators implement an SMS program, I would strongly urge operators—especially air ambulance providers who have had a challenging accident record—to voluntarily adopt one that meets the requirements of Federal Aviation Regulation Part 5.

Since SMS implementation for operators other than Part 121 air carriers is voluntary, companies have a great deal of flexibility in how they adopt a program. There are many resources for help getting started, including talking to professional associations your company may belong to. The FAA's website is a good place to start to get some background on the SMS program. ■

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

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Fuel fraud repeal gains traction under Plane Act

The nearly 15-year effort to repeal the highway diesel fuel tax on business aviation took a notable step forward with the introduction of the so-called Plane Act (S.2198). Jointly introduced by Sen. James Inhofe (R-Oklahoma) and Angus King (I-Maine), the bill would roll back the "fuel fraud" tax measure imposed in 2005 as an attempt to discourage truck drivers from purchasing aviation jet fuel to avoid paying the 2.5-cent per gallon higher tax levy on highway diesel fuel.

That law requires noncommercial jet fuel to be treated as highway diesel fuel: taxed at the same rate and deposited into the highway trust fund until approved aviation vendors demonstrate that the fuel was used for aviation purposes and seek refunds.

Lost Revenue

The net result is a significant amount of aviation revenue has been lost to the trust fund as many vendors have not sought the refunds, finding the process cumbersome or too bureaucratic. In 2016, the Government Accountability Office estimated that the aviation trust fund had lost between $1 billion and $2 billion "or more" in tax revenue, and fuel vendors have overpaid by as much as $230 million in tax revenue as a result of the then decade-old fuel fraud law.

While the aviation system has lost revenue, efforts to reverse the law had been difficult, since it created a windfall for the highway trust fund. The National Air Transportation Association (NATA), which has worked for years behind the scenes to convince lawmakers to reverse the law, praised the measure in the Plane Act to lift the tax. "[It] would undo an ill-founded policy that has taken money away from the aviation system for over a decade," said NATA president Gary Dempsey. "This legislation will enable NATA's members to keep fuel prices competitive, and ensure the tax revenue from jet fuel sales supports aviation system users."

While it is unclear whether the Plane Act will progress as a stand-alone bill this year, it is part of a series of bills that Inhofe has introduced and been successful in shepherding through Congress over the past decade to strengthen pilots rights and correct nagging general aviation issues. These include two separate Pilots Bill of Rights acts. **K.L.**

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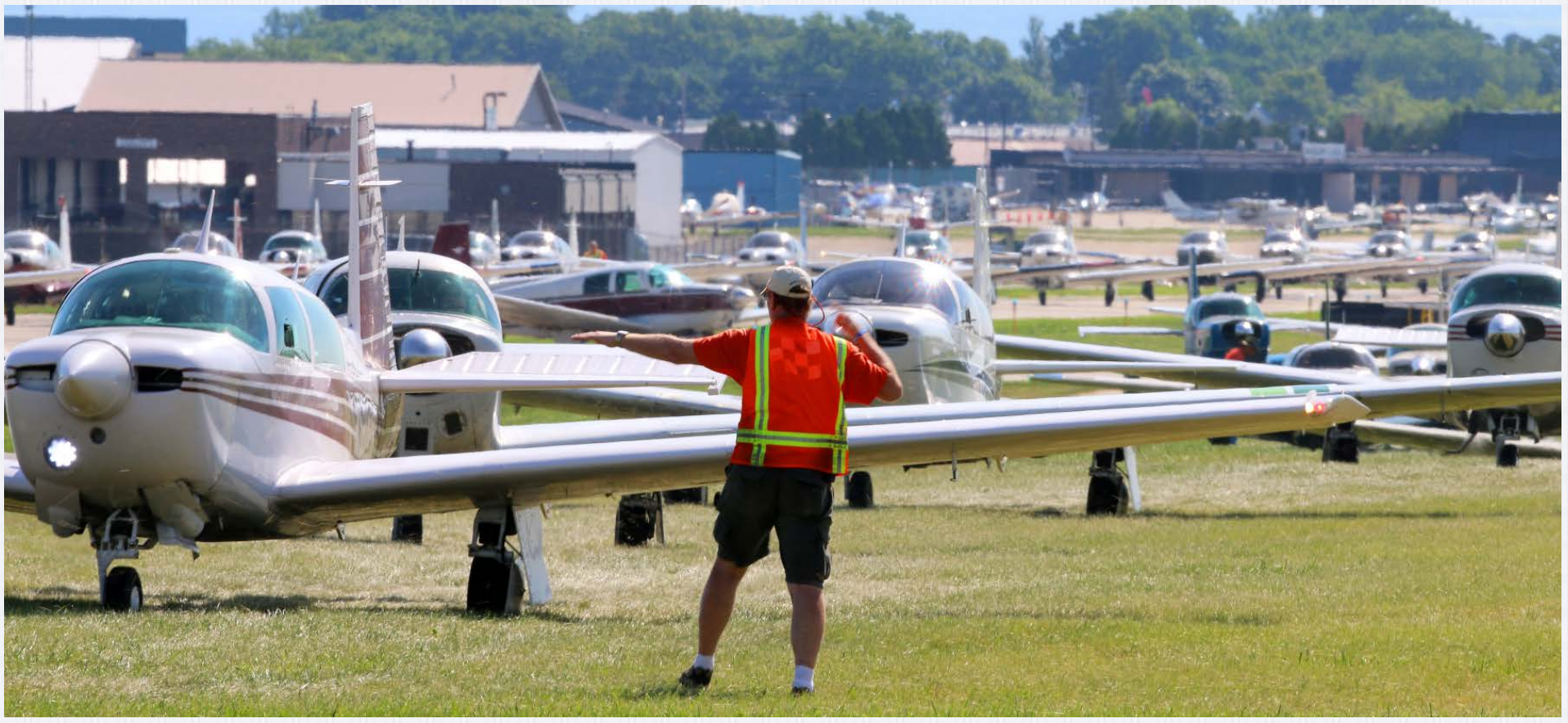


AirVenture 2019

The past, present, and future appeared together at the GA mecca

by Mark Phelps

As they do every year in the days leading up to EAA AirVenture, show organizers were keeping a close eye on the prog charts. After all, "Oshkosh," the world's largest aviation celebration, is an almost exclusively VFR event, and weather can be fickle. The forecast for this year looked encouraging, with a frontal system swinging down from the northwest a few days ahead of show opening, promising cool air and clear skies for the week. But Wisconsin weather can deliver a nasty curveball.

The Saturday before opening day—traditionally one of the busiest for early arrivals—lines of much-stronger-than-expected storms associated with the front brought violent winds (a tornado touched down in Appleton, about 15 miles north) and heavy downpours. In all, some six inches of rain fell on Saturday, flooding grass aircraft parking areas and campgrounds. Even after the storms passed, arrivals were restricted to aircraft with reservations for hard-surface parking areas and—among the more unusual restrictions for a "lower-48" airport—those equipped with oversize tundra tires.

ALL PHOTOS BY MARK PHELPS

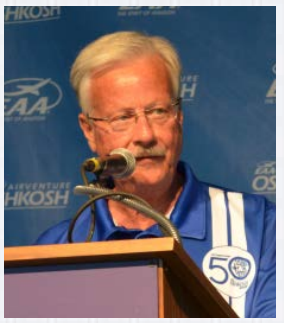
With memories of "Sloshkosh" 2010 on everyone's mind, AirVenture 2019 got off to a soggy start, but EAA and its scores of volunteers rose to the occasion.

Despite the resulting slow start to the show, the follow-up weather arrived on schedule and attendance broke records, with approximately 645,000 clicks of the turnstiles—up by 6.8 percent from last year's record showing. Other pertinent numbers: more than 10,000 aircraft arrived at Wittman Regional Airport and overflow airports in the area. Wittman saw 16,807 operations between July 19-29—an average of approximately 127 takeoffs/landings per hour. Of the visiting aircraft, 2,758 showplanes were on display, including 1,057 homebuilts, 939 vintage aircraft, 400 warbirds, 188 ultralight/light-sport airplanes; 105 seaplanes; 62 aerobatic aircraft; and seven that apparently did not fit into any particular category. That's Oshkosh for you.

A Resilient Industry

In his show-opening remarks, EAA president and CEO Jack Pelton recounted how EAA took the floods in stride. "We all remember 'Sloshkosh' in 2010," he said, recalling another year of heavy rains. "Just as we did back then, EAA and all the volunteers have responded with that 'how do we get it done' attitude."

Pelton recalled a visit to the camping area, where accommodations typically range from miniscule pup tents to massive luxury motor homes. He said he watched as one of the volunteers "literally dove underneath" one of the swamped megabuck land-yachts to attach a chain to pull it out. Pelton said, "I went to shake the guy's hand. All he said was, 'It's our job to make sure everyone has a good time.'"



Jack Pelton, EAA president and CEO

> **"EAA and all the volunteers have responded with that 'how do we get it done' attitude."**

Pelton went on to review the lineup of the week's themes starting with the 50th Anniversary of EAA's tenure in Oshkosh. Paul Poberezny founded EAA in Hales Corners, Wisconsin, in 1954, but the fly-in now known as AirVenture settled at Wittman Field in Oshkosh in 1970. This year, EAA reached out to aircraft owners who flew in that year and invited them to bring their airplanes back for special recognition. A handful complied. Pelton also said the organization would be honoring Oshkosh's 50-year

volunteers. AirVenture 2019 also paid tribute to the 50th Anniversary of the Apollo moon landing, with astronaut Michael Collins in attendance.

Moving back to more current events, Pelton noted the strong presence of urban mobility technology on the show grounds this year. "Innovation and development in this area will generate advanced technology—a piece that will come very quickly," he said, adding that even if aspirations for swarms of urban air vehicles ultimately fall short, the technology that the movement generates will nevertheless advance the utility and performance of current light aircraft.

The EAA leader further cited the organization's contributions toward stoking the supply of future aviation professionals, with scholarships and mentoring programs at the local chapter level. Looking ahead, he suggested that EAA could also help by showing students that there are exciting and rewarding careers in aircraft maintenance and other professions related to things that fly.

And as a Kansas City Chiefs fan living in the midst of Packer-land, he couldn't resist making a comparison while pointing out that the EAA AirVenture event generates $170 million in positive economic impact for the region. "That's more than a full season for the Packers," he said.

Military History

Prominent among the milestones being celebrated was the recent 75th anniversary of the Allied invasion of Normandy on June 6, 1944—D-Day. Three pilots from the famed Tuskegee Airmen, triple-ace Bud Anderson, and some special aircraft were on hand to highlight the event, including one of the prototype P-51 Mustangs tested by the U.S. Army during World War II and the world's only flying P-82 twin-Mustang.

Arguably most noteworthy was a Douglas C-47 transport named "That's All Brother," serial number 42-92847, the very airplane that led the first wave of jump planes carrying American paratroopers on D-Day. In an amazing story, C-47 s/n 42-92847 was discovered in storage right at Wittman Airport in 2015.

U.S. Air Force historian Matt Scales was researching Lt. Col. John Donalson, the D-Day lead pilot who flew That's All Brother that morning (the Alabama pilot selected the name to paint on the C-47's nose as a message to Hitler that the end of the Third Reich was at hand). Scales contacted Basler Turbo Conversions in Oshkosh, a company that retrofits the old transports with turboprop engines, and asked if they might know of the whereabouts of the plane Donalson flew that day. Lo and behold, the derelict airframe was sitting engineless right there on the Basler lot, waiting to be converted.

The Minnesota Wing of the Commemorative Air Force (CAF), spearheaded by then-CAF executive v-p of strategic development Adam Smith, stepped in to begin a crowdfunded restoration project to return That's All Brother to the configuration it was in when it flew over Normandy for the 87th Troop Carrier Squadron in 1944, complete with rough brush-painted black and white invasion stripes. The ambitious goal was

Fresh from its appearance over the beaches of Normandy for the 75th Anniversary of D-Day, Douglas C-47 "That's All Brother" made a homecoming of sorts to Oshkosh.

Michael Maniatis's 1928 De Havilland Gipsy Moth is outfitted with rare, original instruments, including a Zenith "Height" gauge, measured in hectometers. The mag switch is mounted outside the cockpit, in view of the person swinging the prop.

to complete the restoration in time for the airplane to join 14 other C-47/DC-3s that crossed the Atlantic to join several Europe-based transports for the 75th Anniversary D-Day commemorative flyover in Europe last June 6.

Veteran CAF pilot Doug Rosendaal, who also regularly flies the CAF's "Red Tail" P-51B to commemorate the Tuskegee Airmen, was at the controls of the painstakingly restored C-47 not only for the D-Day commemoration flight, but also for much of the transatlantic ferry flight to get there. Even with all the flying he has done in so many historic aircraft, Rosendaal told **AIN** that retracing That's All Brother's flight path over the beaches at Normandy was the most moving experience of his flying career.

Still freshly processing the memory of his unforgettable trip to Europe, Rosendaal was flying That's All Brother at AirVenture, one of a dozen C-47/DC-3s at the show to help commemorate the bravery of so many young soldiers from three quarters of a century ago.

Industry Looks Ahead

While history plays a giant role in AirVenture every year, innovation is the engine that drives EAA. It's named the Experimental Aircraft Association for a reason. The annual show is an incubator for new ideas and products that make flying safer, more practical, and yes, more fun.

The show is also the financial epicenter for many of the companies, large and small, that cater to aircraft enthusiasts, owners, pilots, homebuilders, and restorers. As the singular place where so many like-minded aviation enthusiasts gather all at once, AirVenture is one huge candy store, with everything on sale from hard-to-find AN nuts and bolts to complete aircraft—albeit often with "some assembly required." A number of vendors told **AIN** that not only were the crowds larger than those of years past, but they had brought their credit cards and weren't afraid to use them. One speculated that perhaps fears of an impending economic slowdown were motivating people to "buy now, while they have the money."

To stoke sales, many companies choose AirVenture to launch new products, or to offer "show special" pricing. For example, Aspen Avionics, based in Albuquerque, New Mexico, offered an upgrade to synthetic vision to AirVenture customers who bought its newest 2000Max system or MFD1000Max—and $100 cash back on its entry-level E5 unit. A former Boeing engineer, Aspen president and CEO John Uczekaj told **AIN** this year's show was one of the busiest he could recall. "And it's not just foot traffic," he said.

Uczekaj also discussed how the avionics industry is changing, noting the differences from the consumer electronics industry, where a product life cycle can sometimes be measured in months. Aspen places priority on what he calls "worry-free obsolescence protection," a growing industry trend, he said. "We focus on providing cost-effective, upgradable avionics that can grow with a pilot's needs."

To that end, pilots can "blow off some steam" (a reference to replacing old-style "steam gauges") by starting with the sub-$5,000 E5 display, which is designed to easily fit in the space left by removing the mechanical gauges. As with all Aspen primary flight displays and multi-function displays, the E5 can be upgraded with more features and performance with software, not requiring removal and re-installation.

Uczekaj noted that Aspen's new products are better than the original displays, and less expensive. "The new system is $1,000 less than the legacy system," he said. "Technology is cheaper, and the price should come down." He also noted that the new systems generate far less

› continues on next page

heat. Uczekaj said, "One of our customers joked, 'Are you telling me I can no longer warm my hands on my panel?'"

At EAA AirVenture's Breakfast with Innovators, Dan Schwinn, founder and CEO of Avidyne, discussed how his company is helping explore autonomous flight. "AI [artificial intelligence], and a full-time, mission-critical data connection between ground and the vehicle; the whole model for how they're operated depends on full-time access to connectivity."

Schwinn said Avidyne recently began working with Daedalean AI, a Swiss company developing autonomous flight controls for "electric personal aircraft of the near future." Daedalean recently mounted sophisticated cameras on an Avidyne Cessna 180, and Schwinn flew multiple approaches to gather data the company will use to create algorithms for teaching an AI system how to pilot an aircraft.

Short of piloting an aircraft, such AI systems "might be useful for the aftermarket as a safety-increasing retrofit" as a pilot's assistant, for example, recognizing airports in difficult visual conditions. "Autonomy is not black and white," Schwinn said. "There are all kinds of autonomy functions."

Garmin announced its latest product, the GNC 355 GPS/comm, described as the navigator portion of its GPS 175 GPS, with a "modern" comm radio added. The new product, which was scheduled to begin shipping last month, is aimed at the sub-6,000-pound aircraft class and provides localizer performance with vertical guidance (LPV) approach capability, wireless connectivity, and voice communications in a standard 6.25-inch by 2-inch size. The GNC 355 sells for $6,995—$7,695 for the European version with additional frequency spacing.

Garmin also announced its GSB 15 USB charging hub, a high-speed charging connection for electronic devices that is available in two sizes, and can be mounted with optional installation kits on the flight deck or in the cabin for passengers. The price is $395.

The daily airshows over Wittman Regional Airport in Oshkosh, Wisconsin consist of what has to be the widest range of aircraft types in history.

Garmin also provided updates on several of its other products, including new approvals for its G1000NXi in Cessna 172 and 182 models, as well as the Beech G58 Baron. Garmin also outlined upgrades to its Garmin Pilot mobile app, driven in part by coordinating the features from FltPlan.com, which Garmin recently acquired.

Now part of the Boeing family, ForeFlight was a popular destination for AirVenture visitors wanting to explore its 3D preview feature. Driven in part with imagery from Boeing sibling Jeppesen, the 3D preview enables pilots to call up a destination runway ahead of arrival time and get a detailed view of what the approach will look like from the cockpit. Released earlier in the year, the latest version of ForeFlight Performance Plus also enables detailed fuel load planning and takeoff performance calculations, similar to how a business jet's flight management system sets limits.

At AirVenture, ForeFlight also announced the latest version of its Sentry ADS-B In receiver. Priced at $299, the Sentry Mini was available for sale at the ForeFlight booth. Important features include a dual-band ADS-B receiver that displays weather and traffic through the ForeFlight Mobile app; Built-in WAAS GPS that displays GPS position; and Weather Replay, which records an animated radar replay. The Sentry Mini can connect with as many as five devices, and over-the-air firmware updates are available via the ForeFlight Mobile app.

Simon Caldecott, Piper Aircraft CEO

> **"We started in 2009, largely identifying aircraft parts that could be manufactured using additive manufacturing."**

Tyson Weihs, ForeFlight co-founder and CEO, said, "Every pilot should fly with the benefits ADS-B has to offer. With Sentry Mini, ForeFlight customers have access to essential inflight weather, traffic and GPS information in a surprisingly compact device."

Piper Aircraft CEO Simon Caldecott discussed the advantages of producing training aircraft at a time of great demand. "Boeing forecasts there will be a need for 800,000 new pilots over the next 20 years," he said, adding that Piper's "build-to-order" production strategy "is working well." He said that within the previous two months, the Florida OEM had signed contracts for more than 100 aircraft, including 50 of its Pilot 100 and Pilot 100i (instrument) single-engine trainers.

He noted that Piper has invested $3.5 million in upgrading its production facilities, including adding a new additive manufacturing (aka 3D printing) center. Caldecott is clearly enthusiastic about the prospects for improving production through additive manufacturing. "We started in 2009, largely identifying aircraft parts that could be manufactured using AM [additive manufacturing], then working on getting FAA approval." Holding up a part, he said, "This environmental duct element for the M600 made with AM represents a 94 percent cost saving." To date, Caldecott said, Piper has identified more than 200 parts that could be manufactured with AM.

Unusual Efforts

The AirVenture clan breeds some of the more interesting niche projects. One example is RDD Enterprises, which came to the show with its sleek LX7. The airplane is a conversion of an existing Lancair IVP—a pressurized kit-built four-place airplane. RDD's David McCrae told **AIN**, "We had heard from a lot of IV-P owners that they loved their airplane, but would love it a lot more if they could fly approaches at 63 knots instead of 75 knots."

So the RDD business plan calls for "modifying" already-built and certified Lancair IV-P kitplanes (of which there are about 250 on the FAA register). The goal is less about greater speed and more about refining the design for better efficiency and low-speed handling.

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While it might sound like an odd business plan, RDD Enterprises hopes to convert existing Lancair IV-Ps to its updated and improved version, the LX7.

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So RDD seeks out "donor" airframes, from which it will then remove both wings and the entire empennage aft of the rear fuselage. It replaces them with a much more sophisticated single-piece wing and redesigned empennage. The wing is a good example of how RDD incorporates "best practices from multiple disciplines" to improve the airplane. The new wing has dual-slotted flaps, a dual-redundant spar, and carries 180 gallons of fuel with an automatic fuel leveling system. Rather than the weeping wing de-icing system on the original IV-P, the LX7 uses a leading edge cuff de-icing system, which retains much greater consistency in the leading edge for improved aerodynamics, particularly at the low-speed end.

"Using precision tooling, our tolerances for the leading edge are within 30 thousandths of an inch, said McCrae, "compared to the plus or minus half an inch for the IV-P." Multiple other refinements are made to the exterior, systems, and the cabin.

But the big question for any ambitious project like this is always the business plan. RDD's is modest, calculating that it can subsist on as few as three conversions per year of the 250 existing IV-P airframes, and already has commitments for more than a dozen. Current production capacity is about 10 per year, but that could double without major changes to the facilities, according to McCrae. The cost of the conversion (depending on the condition of the donor airframe) is pegged at $980,000 for the PT6-A-powered version; and $830,000 for a 350-hp TSIO-550-powered piston model.

For something completely different, consider the project just completed by Michael Maniatis of Milton, New York. His De Havilland Gipsy Moth was built in England in 1928, serial number 910 for the company that was to go on to build tens of thousands of Tiger Moths, Rapides, Mosquito bombers, and on up to Canadian bushplanes and regional turboprops.

Southwest captain and former Navy fighter pilot Tammie Jo Shults chose AirVenture to launch her new autobiography, Nerves of Steel.

The airplane was originally owned by Englishman Gar Wood, a famous high-speed boat racer. "Gar Wood was an innovator and a sportsman," Maniatis told **AIN**. "He also invented the garbage truck." In its lifetime, the airplane found its way to Canada, where it was involved in a fatal accident and sat in storage until Maniatis acquired it from the estate of well-known De Havilland collector Watt Martin in 2014. As it sat on the grounds at AirVenture, NC431 had about six flight hours logged since restoration.

While there are plenty of later Tiger Moths flying, the early version is much more rare, and for an odd reason. Maniatis explained, "At the beginning of World War II, England conscripted all civilian airplanes for the military. But the Moths weren't of much use, so one of the things they did was to soak them in gasoline and park them on the perimeters of air-

Grandpa was in Army aviation, so "Alex" got his own Apache helicopter. pedal car.

fields during the Battle of Britain. German fighter pilots would shoot at the Moths, and leave the camouflaged Spitfires and Hurricanes alone. The Moth is made of wood, so they burned very satisfyingly when hit by machine gun fire." One wonders how many Luftwaffe strafers flew home thinking they had inflicted much greater carnage than they had, in reality.

Among the innumerable other niche products at AirVenture, consider Wipline, the float manufacturer, which also reported booming sales. Its model 1300 floats are sold out through next year's production capacity, and its 800-gallon-capacity Fire Boss water bomber, based on the Air Tractor agricultural aircraft, has been so busy fighting forest fires, it couldn't appear at AirVenture.

As this year's show closed, the famous "airplane ghosts" were left to dot the parking areas—airplane-shaped patches of green grass protected from the shoe traffic that browned all the surrounding turf. With the slow start from the heavy storms, it might have seemed unlikely that the show could best 2018's record crowds. But like the can-do volunteer spirit that drives the organization, AirVenture attendees did not disappoint. ■

On long final to Runway 27 at Wittman Regional Airport and EAA AirVenture, Oshkosh, Wisconsin. The dark cloud above was part of a line of severe storms.

En Route to KOSH

Flying to Oshkosh is on a lot of pilots' bucket lists, and I've flown the VFR arrival procedure many times, but this year I was riding along with **AIN** contributor James Wynbrandt in his turbocharged Mooney 252 on an IFR flight plan. Our agenda was to leave New Jersey early Saturday morning, hoping to arrive at Wittman Field before some afternoon storms that were expected. We would depart from Caldwell Airport (KCDW), which involved following the strict procedures for exiting the 30-mile outer ring of a Presidential Temporary Flight Restriction (TFR). But with a flight plan on file, it shouldn't be a problem. We'd just need to be sure not to bust the inner 10-mile zone over Bedminster, or we could expect a fighter escort to the nearest airport.

We saddled up early and were taxiing by 8:30 a.m. Wynbrandt requested a takeoff from the longer Runway 22 rather than the recommended Runway 28 to be extra sure the Mooney would have plenty of pavement. It could be my imagination, but I thought I sensed a bit of unease in the tower controller's voice, since Runway 22 pointed us directly at the forbidden airspace. But with plenty of mileage to spare, we were westbound and on our way.

All was routine for the next few hours, as we kept an eye on the incoming weather with ForeFlight's ADS-B In display. The red and purple splotches were conveniently standing pat near the border of Wisconsin and Minnesota, so we kept on at 8,000 feet, crossing Pennsylvania and then Ohio, edging into Canadian airspace for a short while, and into Michigan.

Somewhere over Ohio, ForeFlight's traffic display showed another target almost directly below us at 6,000 feet. Eavesdropping on the ATC communications and checking the ADS-B data, we could see that the airplane was matching our course and speed almost exactly. It was a good bet he was also headed for Oshkosh, and sure enough, he was. As we got closer to Lake Michigan we started to get a little more concerned about the weather. The frontal storms had started moving eastward, and they were picking up speed.

Now with a few other aircraft on the frequency, we were looking for another plan. The controller was saying the heavy storms had overrun Oshkosh. Sheboygan, Wisconsin, just inland from the eastern shore of the lake, was looking like the safe haven of choice, and that's where we headed. The gust front was visible as Wynbrandt turned onto final, and we were overtaken by the deluge before we could even taxi to the ramp.

After waiting out the heaviest of the weather for about an hour and a half, and talking things over with a weather briefer, it looked like we had a window to get into Oshkosh, a mere 33 nm away. We took off on an IFR flight plan, hoping to get in ahead of the next wave of weather. ATC vectored us for the VOR approach to Runway 27, and between our position and Wittman Regional Airport, we could see an ugly, low-hanging cloud.

As we descended, it was clear that the airport was in sunlight on the other side of the cloud, and at our assigned altitude, we were slipping in just underneath. The ATIS was reporting winds at 21 knots, gusting to 41, but right down the runway. Wynbrandt kept the airspeed up to avoid windshear, and his landing was smooth. Not wanting to park the Mooney on grass, he had already reserved a hard-surface parking spot days before, so we followed the flagmen's directions and taxied to Basler Flight Service.

After shutdown, the lineman quickly inserted the wheel chocks and when we cracked open the door to a howling breeze, he greeted us with a warm, "Welcome to Oshkosh!" **M.P.**

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NATA aims to arm against illegal charter with website

by Kerry Lynch

Concerned that paying passengers don't understand the risks they face when stepping aboard illegal charters, the National Air Transportation Association (NATA) has retooled its "Avoid Illegal Charter" website to "empower the market" with the ability to look up charter operators, access fact sheets, and report questionable operations.

Rolling out the revamped site, NATA executives highlighted a need to ensure safer skies as new models push boundaries of what is legal.

In the past, new models have come to fruition—from the advent of aircraft management more than 50 years ago to fractional ownership and more recently, jet cards, charter empty legs, and per-seat models—noted Jacqueline Rosser, senior advisor, regulatory affairs–air charter, for NATA. "In each of those cases, the boundary...has been more between when are we crossing the line from the on-demand framework into the scheduled realm," Rosser said. "We've managed to address all of those issues within the industry and get clarity on how you can do certain things where other certifications are required."

But, she added: that focus now appears to be shifting to what defines a private operation and a commercial operation. "Our primary goal from the organizational standpoint, the air charter standpoint, is to establish clarity," she said.

Entities are "popping up, commercializing the [Part] 91 space," Ryan Waguespack, v-p of aircraft management, air charter services, and MROs, agreed, adding, "It is a real concern because the general flying public does not truly understand the risks they are getting into. You are not getting into an Uber when you get into an aircraft."

Compounding the issue is a lack of clarity on not only the definition of an illegal charter but on who is actually operating them.

Unreported Incidents

NATA is currently surveying operators on their encounters with illegal operations and how it is affecting their business, Waguespack said, noting that one clear trend stands out: some 70 percent of operators do not report their encounters with illegal operations. "That was kind of staggering to me," he said. Those respondents listed a number of reasons for this, but mostly out of concerns that the activity is in their backyard and, being in a small industry, they know it is going to come back on the legal entity. "They are concerned about losing their consumer, they are concerned about the FAA, and they don't want to be the squeaky wheel."

The survey, he said, was receiving a "tremendous" response as of mid-August, and NATA said it would keep it open through the end of the month.

NATA plans to share the data with the FAA and the Department of Transportation to provide a picture of what is happening. "The effort really needs to be 'we want to keep our skies safe.' We are all about innovation. We're all about change," he said, but added, "We are a firm believer you can be innovative and still adhere to the regs."

This comes back to education and resources, he said. The association a little more than a year ago established a task force focused on education about illegal charter. And the illegal charter website is designed to build on that. "You can look up a charter operator, you can submit a questionable operation—we've had a number of those—or you can call the illegal charter hotline," he said. "We're trying really to push out there how charter brokers, other operators, and end-users can look up and see if the aircraft they are engaging is on a charter certificate."

The website aggregates numerous FAA lists to enable a search by operator or tail number of legal operations. That list is updated quarterly, but NATA's goal is to update it monthly. Operators further are able to fill out a form through the website to report potential illegal charter activity. In addition, the website houses fact sheets with data on operations and provides operators with templates that they can show to prospective customers that explain the complexities of the industry.

Partnering with the FAA

NATA further took over the illegal charter hotline (888-SKY-FLT1), which it is using to gather data and pass along to the FAA's special investigative team in Fort Worth, Texas. Noting that calls in the past have been somewhat vague, he said, "The biggest challenge is to gather as much data as possible."

Another key component of this effort is working with the FAA. What started as a group of a little more than a dozen Flight Standards District Office (FSDO) officials has now swelled to close to 90 that are actively engaged and speaking regularly. NATA has collaborated with the FAA on gatherings between FSDO officials and operators to discuss what has been happening. These have taken place in South Carolina, Indiana, Tennessee, and Florida. Several more are in the works with meetings targeted to possibly take place in Texas, California, and Iowa, among others. The FSDO managers also are discussing holding a larger event next year to gather all interested parties together.

"The operators are really enjoying getting that one-on-one time with their inspectors and the leadership within the FSDOs," Waguespack said. "But also, it is a good opportunity for the FSDOs to truly learn what is happening in the 91 space—what is behind these doors."

Additionally, at the behest of Congress, the FAA has nearly completed guidance on one area that has been blurring the lines of commercial and private operations, flight-sharing, Rosser said. The Government Accountability Office further has been working on a report on this activity.

"As long as we continue to see cases of suspected illegal charter, more must be done to sound the alarm and educate the industry and public at all levels of the inherent risks and dangers of these activities," added Waguespack. "We are pleased to partner with more and more FAA field offices in supporting events designed to highlight these potentially life-saving messages in their particular region. Together we will make a greater impact." ■

@ LABACE 2019

S-92 OK'd for SAR in Brazil

by David Donald

Brazil regulator ANAC has approved the Sikorsky S-92A for use in its search-and-rescue (SAR) configuration. The certification was received in late March, but Sikorsky's parent company Lockheed Martin did not make the announcement until this week.

ANAC had approved a 27,700-pound maximum gross weight allowance in December and, with the 2014 approval for the Rig Approach software, the latest certification permits the S-92A to be employed in all of its production configurations, which cover offshore work, SAR duties, airline passenger services, and VIP transportation.

Eight Brazilian operators fly 90 Sikorsky helicopters, and the company has been closely involved with the offshore industry for some time. "For more than 47 years, Sikorsky helicopters have been the workhorses of the Brazilian offshore oil transport market, first with the S-58T in 1972, the S-76 since 1979, and over the last 10 years with the larger, farther-reaching S-92 heavy aircraft," noted Adam Schierholz, Sikorsky regional executive for Latin America. "These new certifications—along with the announcement of the forthcoming S-92 A+/B—help ensure that the S-92 will continue to be the aircraft of choice in Brazil for safe, reliable, deep-water offshore oil exploration."

In 2018 the company relocated its forward stocking location from near Rio de Janeiro's Galeão airport to a site at Barra da Tijuca near Jacarepaguá airport, to be much closer to the principal operators: Lider Aviação, Omni Helicopters International, and CHC Helicopter. At the same time, the company increased parts stock by nearly sevenfold, reducing typical parts-supply times to around two hours.

Also in 2018, the Composite Technology do Brasil (CTB) rotor blade repair facility was expanded to include S-92 work, eliminating export fees and cutting around 30 days from the overall process by removing the need for transportation to and from the United States. CTB is a joint venture between Sikorsky-owned CTI and Líder Aviação, created in 1999 to repair S-76 blades in-country. ■

MARIANO ROSALES

The S-92 is used by several SAR organizations around the world, including the UK Coast Guard.

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Cabin safety training is not just for crews

by Curt Epstein

While corporate and Part 135 flight crewmembers are typically required to take cabin emergency training on a periodic schedule—usually every two years for pilots and every year for flight attendants—for the past several years FlightSafety International has been offering a similar program to corporate executives and their assistants, as well as aircraft owners and their families. **AIN** was recently invited to participate in one of the classes.

The three-hour session was held at the company's Teterboro, New Jersey training center, one of only five in its network (along with Savannah, Dallas, Long Beach, and Paris) to offer cabin safety training as part of its curriculum. According to Ronald Clements, the Teterboro center's cabin safety program manager, the executive version of the course is given at his facility four or five times a year, with similar numbers at the other locations.

It begins in an upstairs classroom with a brief introduction, followed by an assessment of the various classifications of fires that might be encountered on board an aircraft and how to combat them. Typically, the course instructor will have made a visit to the company's or individual's flight department ahead of the scheduled course date, or at the very least spoken with its director of maintenance, to take an inventory of what specific emergency equipment their aircraft is stocked with. Armed with that information, FlightSafety gathers examples of those particular items from its collection and has them on hand in the classroom to provide hands-on familiarity.

With the prevalence of personal electronic devices, dealing with rechargeable batteries in thermal runaway now merits its own close scrutiny, and Clements detailed how an immediate, aggressive response to this emergency is required, first by knocking down the flames, usually with a Halon fire extinguisher, and then cooling the device with liquid. If the aircraft is equipped with a fire containment bag or box, a similar example will be present in the classroom as the proper procedures for its use are explained.

Other equipment demonstrated included smoke hoods, as approximately 40 percent of business jets are currently equipped with them, and portable oxygen bottles for passengers.

Putting Learning to the Test

The next stop was downstairs in the cabin simulator. Made from the fuselage of a former Gulfstream GII, with video screens outside each window giving the illusion of flight (or a crash landing depending on the program selected), it is used for a variety of purposes, including teaching cabin service with real catering for flight attendants. But in this case its mission was emergency evacuation. It is equipped with overwing exits corresponding to those on Bombardier, Dassault and Gulfstream aircraft, and Clements demonstrated how the windows are removed in preparation for an emergency escape. On occasion, the course is taught at the customer's home base, scheduled to coincide with inspections of the actual aircraft's emergency exits, providing participants with the opportunity to remove the real window panels.

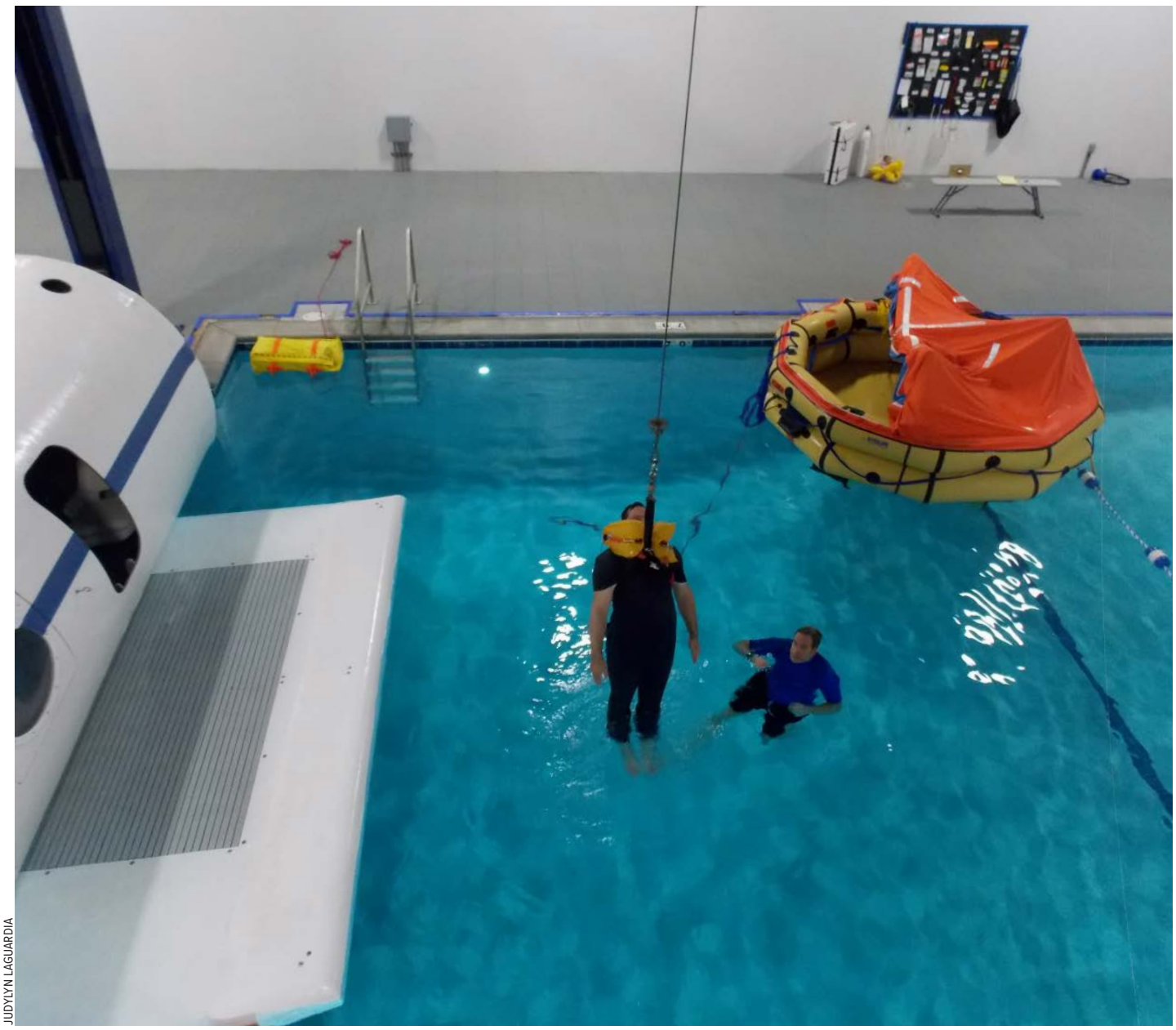
The simulator is equipped with functioning drop-down oxygen masks for decompression training, and each seat has an inactive inflatable life vest in its compartment underneath. During several scenarios, accompanied by appropriate imagery on the video screens, Clement played the role of crewmember, demonstrating the proper brace position for an emergency landing, and then had me wait for the signal to unbuckle, move to the window exits, scan for obstructions, remove the window, and exit. Also demonstrated was how to operate the main cabin door and airstairs. The training is particularly helpful for Part 91 passengers, where, depending on their personal or company preference, the pre-takeoff safety briefing is not required before every flight.

Clements explained the differences between a planned emergency landing and an unplanned crash, giving examples of the types of cabin preparation that can be done with advance warning, such as a ditching at sea. Valuable emergency supplies such as uneaten catering and water bottles can be gathered, along with emergency equipment such as flashlights, blankets, and the airplane's medical kit. Given enough time, passengers are even told to change their clothing to garments made from natural fibers (if not wearing such already) as added protection in case of fire.

He then demonstrated the preparation of an inflatable life raft, showing where it is stored, how it is unpacked, and how it is fastened to the aircraft by a tether before being pushed out of the overwing exit and inflated.

In addition to providing familiarity with this equipment, the training also helps turn the course participants into "force multipliers," allowing them to become a resource for the flight crew in case of emergency. "Another takeaway is encouraging a conversation between crew and passengers unique to that model aircraft," said Clements, "unique to the captain's preference for what their role can be in emergencies." Before joining FlightSafety, Clements served as a flight crew member in the military, and he noted similarities in the unique dynamics that can occur in an aircraft environment during an emergency. While the flight crew may be considered employees and subordinates of the company CEO or high-net-worth individual they are transporting, the passengers, much like the high-ranking officers Clements was responsible for during his service days, must understand that they need to obey the instructions of the flight crew in an emergency.

We then ventured forward to the simulator's cockpit. He demonstrated how, in the case a pilot becomes incapacitated, passengers can assist by allowing the



JUDYLYN LAGUARDIA

The Executive Emergency Training course at FlightSafety International's Teterboro location features water-evacuation instruction in the facility's pool. Here, helicopter rescue hoist equipment and techniques are being demonstrated on the author.

remaining pilot to concentrate on flying the airplane, while they help by securing the ill pilot's harness and applying the easy-don oxygen mask.

Using an oxygen tank equipped with such a mask, Clements demonstrated what breathing supplemental oxygen is like at altitude during a decompression event, and explained that flight crew members may not be able to speak to issue instructions under those circumstances.

Clements presented those scenarios to introduce the customers to the concept of crew resource management, which he describes as "adults playing well together under duress in an expensive confined space with limited time and resources."

Last, for some in-cabin fire fighting practice, I was handed a simulated fire extinguisher. When activated, it emitted a laser-pointer-like beam, which interacted with a device that was hidden somewhere in the cabin. On cue from Clements, smoke began issuing from a floor-level storage cabinet at the back of the fuselage, along with flickering orange and red lights. I grabbed the extinguisher, pulled the pin as shown, and headed back to fight the mock blaze. Once the laser beam made contact with the sensor at the base of the device for the prescribed amount of time, it "extinguished" itself.

In the parking lot behind the building, I got a taste of the real thing, using a water-filled extinguisher to fight a propane–fueled fire, while keeping the mantra of PASS (pull, aim, squeeze, and sweep) in mind. This part of the training falls under the heading of what Clements described as life skills; abilities that could be of use outside of the aircraft as well.

Preparing for a Water Landing

The Teterboro facility is one of only two in the company's system with its own swimming pool (the other locations that provide cabin safety training will contract with outside pools), and that was our next destination for water landing and rescue drills. I was given a jumpsuit and directed into the well-equipped locker room to change. On one side of the pool area was a display of the various survival items to be found in a life raft, again augmented by the inventory of the customer's actual aircraft. Clements demonstrated the use of emergency equipment such as signaling mirrors, water desalinators, and one of the newer additions to the survival equipment roster, laser flares, which are less dangerous and longer-lasting than the former pyrotechnic variety.

FlightSafety uses Winslow life rafts, and according to Clements, the company has an upwards of 80 percent market share in the corporate aviation market. For the first task, he placed an inflated 12-person raft upside down in the water and explained how to right it. I braced my feet on one of the loops hanging off the side of the raft and grabbed a similar loop on the underside of the raft and leaned back, using my body as a counterweight to flip the raft.

Part of the cabin-simulator curriculum is decompression training. The author wears a quick-don mask, usually worn by the copilot. It uses bottled oxygen to simulate breathing at altitude.

The cabin simulator is equipped with overwing exits that correspond to those on several types of business aircraft, and students learn to remove the windows to exit in an emergency.

PASS (pull, aim, squeeze, and sweep) is the name of the game in extinguishing a cabin fire, and the author practiced the procedure in the parking lot behind Flight Safety's Teterboro facility.

We then moved to the "ditcher." Meant to resemble an aircraft fuselage, it is actually a large fiberglass storage tank, suspended at both ends above the pool on a lift similar to those found in an auto repair shop. Exits and windows are cut into the sides, and several boat chairs are bolted to the floor. It looked rather benign as I entered it, donned an inflatable life vest, and took a seat, but as the simulation started, things became real when water began flowing up through the floor and swirled around my legs as the simulator settled into the water. When Clements gave the evacuation order, I stepped out onto the wing platform, and as previously advised, inflated my life vest by pulling down on the handle.

The pool area had changed. The bright overhead lights were now dark and sprays of water from sprinklers added to the illusion of a ditching at sea. I jumped off the platform, and unaccustomed to the sensation of wearing a tight, highly-inflated life vest, awkwardly followed the umbilical strap to the tethered life raft.

I will admit I encountered some unexpected difficulties hoisting myself up from the water and over the two-foot-high side of the raft, even with the rope ladder. Some due to the encumbrance of the vest, some due to my groping to find a proper handhold amidst the spray, and some to being tangled in the umbilical strap (which would remain tethered to the aircraft until subject to 500 pounds of pressure, or manually cut), but I eventually flopped over into the raft like a landed fish. Clements soon joined me and described the safety features of the raft, and where survival equipment would be stored.

For the last part of the training, a hoist suspended over the pool is used to simulate helicopter rescues. I swam away from the raft and entered a metal lift basket attached to the cable, after being shown the proper position. I was then lifted out of the water and lowered back down. That process was repeated two more times, each time demonstrating different lifting equipment that might be encountered on the end of the rescue helicopter's hook, such as a sling or a lifting chair.

After changing back into street clothes, I finished the program with a brief recap. One of Clements's biggest surprises in his six years of instructing is seeing the differences in how people learn. He recalled how one CEO seemed utterly disinterested in the classroom lesson, to the point that he ordered the instructor to click swiftly through the slide portion, yet he became a highly enthusiastic participant in the hands-on portions, such as the cabin simulator. While some executives attend the course with no intention of getting wet, Clements said they usually have a change of heart when they see the ditcher, and the company keeps spare bathing suits on hand for just such occasions. ■

Kansas senator defends ODA, highlights GA benefits

by Kerry Lynch

As a number of lawmakers continue to question the FAA's use of delegation in the wake of the Boeing 737 Max accidents, Senator Jerry Moran (R-Kansas) is stressing the need to continue to support the organization designation authorization (ODA) program, vowing, "We do not intend to turn our back on that issue."

Speaking recently at the Aero Club of Washington, D.C., Moran acknowledged the substantial number of conversations now surrounding manufacturing certification. "ODA remains an important component of the way...we are going to meet technological changes and the demands in the markets to advance innovation," he said. "The FAA doesn't have the capabilities to certify every new product. We have to rely on the private sector with FAA oversight to do this correctly."

Moran, who is a senior member of both the Senate Appropriations and Commerce Committees, added that with any changes that might come as facts arise, "we will continue to be an advocate." He added that, over the past 10 years, there has been an effort to expand delegations, not contract them. "That process is critical to the industry. We'd be in serious trouble if we were relying only on the FAA," he said.

Moran later told **AIN** that there must be a considerable education effort on Capitol Hill on the importance of ODA. Concerning to him is the perception issue that is arising out of the public dialog surrounding the ODA issues.

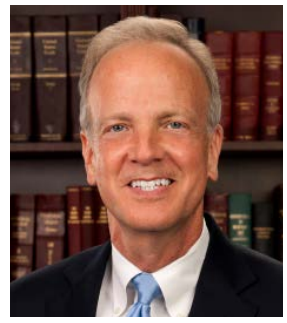
Steady Stream of FAA Funding

Along with ODA, Moran is continuing to push for his bill to shield the FAA from any future shutdowns. Moran in March introduced his Aviation Funding Stability Act of 2019 (S.762) as a companion to a similar bill in the House that was introduced by House Transportation and Infrastructure Committee chairman Pete DeFazio (D-Oregon).

He acknowledged that the bill runs counterintuitive to his role as a senior member of the Senate Appropriations Committee. He noted arguments that providing such relief would give lawmakers less leverage to reach a compromise. But Moran pointed to the damage incurred in shutdowns in previous years that stalled the delivery of hundreds of millions of dollars worth of aircraft and left air traffic controllers and security screeners without pay even as they came to work. "I'd like to avoid all that. We are very interested in seeing [bill] passage."

Moran further noted the work ahead for the Senate, including the need to pass 12 appropriations bills before the current fiscal year ends on September 30. Little time remains to accomplish that task. Congress likely will group a few bills together at a time to get them through, he said. But while his hope is to avoid temporary measures to provide time to finish the bills, "I just can't picture in my mind how you can accomplish that number of bills in a month's time," he said and stressed the need to avert another shutdown. "When a shutdown happens, it is damaging to the country, it is damaging to our economy. It is another black eye on the inability of Congress to do the basics for which we were hired."

Moran, further stressed the need for trade agreements, saying Congress needs to approve deals with Mexico and Canada—key trading partners for the state of Kansas. Tariffs also have become an issue for Kansas, he added. "I am anxious for whatever conversations to take place between the U.S. and China. The consequences of the tariff battles are real," noting that aluminum plays a key role in aircraft fuselages.



Kansas senator Jerry Moran is advocating for the continued use of ODA, pointing out the FAA must share the responsibility.

He further underscored the importance of aviation. "It's a hugely significant component of our state's economy. We have worked hard to have Wichita recognized as the Air Capital of the World." Moran added that general aviation "will never leave that place in my heart and my brain. It is so important."

While conceding that the general aviation industry is important to Wichita, he also said, "I have a lot of interest in trying to keep rural America alive and well." General aviation airports and aircraft connect those small towns to the rest of the world. Without them, he said, "We'd see a greater demise of rural communities across Kansas." ■

Jet Linx app lets owners swap empty seats | by Curt Epstein

Jet management and card membership provider Jet Linx has introduced a new empty-seat marketing program as part of its revised mobile application. Called OpenSeat Exchange, it offers the company's jet owners and members the ability to buy or sell empty seats on its flights to other Jet Linx aircraft owners or members on a per-seat basis, exclusively through the app, which allows users to search for specific city-pairs and dates.

The company's 2,000 jet card members and 115 aircraft owner clients can use the new app "to further improve, enrich, and elevate the Jet Linx private jet travel experience," said Jamie Walker, president of the Nebraska-based company, adding that last year there were more than 40,000 empty seats on Jet Linx flights. "Open Seat Exchange is a solution that gives our clients the ability to buy and sell these empty seats on a per-flight, per-seat basis. It's a secure, trusted, peer-to-peer exchange of open seats within the Jet Linx community."

Walker noted that the company had been working on a flight-sharing model for more than a decade. This solution required it to get a Part 380 exemption under existing Department of Transportation regulations. If the initial flight booker chooses to share their flight, seat availability ends 24 hours before the scheduled departure. No money changes hands between the booker and the customer who buys the empty seats as the payment is handled internally, with the seller getting a pro-rated credit for the value of the seat from Jet Linx, while the buyer is charged the per-seat price plus administrative fees.

"We're not trying to open this up to a larger audience; it's just an opportunity that we are giving them within the membership group," Walker told **AIN**. "In surveying our clients before we did this, provided it was that peer-to-peer exchange, we saw 80 percent of our clients would happily offset their costs and share some of those seats."

The flight-sharing program is the latest feature to be added to the app, which gives users the ability to book private jets in real time at guaranteed hourly rates, quote future trips, arrange catering and ground transport, make changes to the flight manifest, and view and book empty legs at discounted pricing, as well as receive company news and updates. ■

Jet Linx customers can buy and sell empty seats using a new feature called OpenSeat Exchange on the company's app.

FAA moving to smooth aircraft certification

by Mark Huber

The FAA is working to tear down the "titanium silos" within its operating organizations in an effort to make the aircraft certification process more user-friendly. That was the message from Earl Lawrence, the head of the FAA's aircraft certification organization, in July at a CAFE Foundation urban air mobility (UAM)/electric aircraft symposium at the University of Wisconsin-Oshkosh. Lawrence said the agency is currently using its UAS office to coordinate urban mobility activities, but that the agency administrator is looking at creating a new office of innovation to "focus on those activities."

Lawrence said the glut of proposed UAM/eVTOL designs—now numbering some 175—does not present a challenge to the FAA per se, but rather the inter-agency gauntlet proposed for new aircraft designers, with new ideas for aircraft operation and control, must navigate on the road to certification.

"We know how to certify aircraft," Lawrence said. "We've been building vertical-lift aircraft for decades. We understand that is not where the struggle is. A lot of people who come to us are looking to change the way the operation is conducted. They don't want pilots to have certain certificates; they want to move around airspace differently. We are not good at that at the FAA. We are a series of titanium silos. We have aircraft certification, we have flight standards, we have air traffic, airports, and we don't talk to each other very well.

"A lot of new technologies are focused on the risk of mitigating risks in all those areas. My engineers want to mitigate all the risks in your design, flight standards wants to mitigate the risks in your pilot. Air traffic is going to keep you away from everybody and mitigate the risk by not letting you fly over anybody. You can see the trend," he said.

"The FAA is working very hard to make sure we are talking to each other. We are forming agreements with companies that are coming in...across all of those silos."

Make the Case for Safety

Lawrence said aircraft builders need to make a strong safety case, first and foremost. "We really don't care about your business case or how much money you are going to make. We look to make sure all the safety risks are mitigated. When you come to us, start with safety. That's our focus, that's what all our regulations are built around. If you always come in with safety, you will keep moving forward."

One of the best ways to bolster a safety case is to liberally adopt industry standards as embodied in the new Part 23 certification rules, Lawrence counseled. "The use of industry consensus standards gives us a huge benefit. We bring in the experts from any field from anywhere in the world who put down their thoughts on paper and say if you do it this way then it is the best way to address a particular design issue or approach. That is invaluable to the agency to have access to that brain trust." Lawrence said the aircraft certification office is establishing an "industry consensus standards office" that will be focused on working with standards groups like SAE, ASTM, and Institute of Electrical and Electronics Engineers.

"The new Part 23 is not the answer to all of your problems, but it is a good example of where we want to move forward from a policy and regulatory standpoint," he said, adding that inherent in the new Part 23 is a "risk continuum" based on the aircraft/operations likely activities. "We are committed to matching the level of regulatory oversight to the level of risk in your organization."

However, he acknowledged that the FAA's use of a risk continuum is not widely adopted worldwide and that has the potential to cause issues for those seeking multi-jurisdictional certifications.

Lawrence counseled that the first UAM/eVTOL developers who file a type certificate application will likely face tough sledding. "You're never going to break through until somebody is first. It will be harder for you than anyone else. But having a real piece of hardware and a real project forces us to bring those [FAA] teams together." Nevertheless, Lawrence told UAM developers, "The FAA does want to support your project and we have the resources in place." ■

FAA's new administrator draws wide approval

by Kerry Lynch

While his nomination became controversial on Capitol Hill, the confirmation of Stephen Dickson as FAA administrator drew broad support from industry leaders who have maintained that he has been a strong safety advocate with a wealth of aviation experience.

A former U.S. Air Force F-15 pilot who spent 27 years with Delta Air Lines, Dickson was confirmed in late July to a five-year term at the helm of the agency, filling a position that had been held on an acting basis by Dan Elwell. The last permanent administrator, Michael Huerta, stepped down at the end of his five-year term in early 2018.

Meanwhile, the House and Senate approved by voice vote a waiver to allow Elwell to return to his previous position of deputy administrator, even though both Elwell and Dickson are former military officers.

Most recently senior v-p of flight operations for Delta, Dickson had become known within aviation circles, particularly for his involvement in NextGen initiatives. "NBAA has had a close working relationship with Steve for many years, and we're confident he's the right man for the job," NBAA president and CEO Ed Bolen said. "Having a permanent administrator at the FAA is key to ensuring the continued advancement of important work being done on aviation-system modernization, equipment certification, workforce development, safety, and other top priorities."

"The industry would benefit from his vast knowledge and experience with aviation at all levels," said National Air Transportation Association v-p of regulatory affairs John McGraw.

Helicopter Association International president and CEO Matt Zuccaro praised Dickson's "comprehensive understanding of the national air transportation system." National Air Traffic Controllers Association president Paul Rinaldi added that his organization would continue "our great working relationship with him. For nearly a decade, I have had the pleasure of working with Administrator Dickson, as we have served as members on the FAA's Management Advisory Committee.."

Airlines for America president and CEO Nicholas Calio reiterated, "He has the vision, knowledge, and experience to lead the FAA at this crucial time."

These sentiments have been echoed by numerous other organizations, and they all agree that he is stepping in at a critical time for an embattled agency that has been under intense scrutiny in wake of the 737 Max crashes. During his confirmation hearing, Dickson was closely questioned by lawmakers about his commitment to safety.

Stephen Dickson was confirmed as the new FAA administrator.

However, during the confirmation process, his nomination became shrouded in controversy after a complaint came to light alleging that Delta had retaliated after a whistleblower expressed safety concerns. The events detailed in the complaint occurred while Dickson was in senior management at the airline. However, Dickson was not specifically named as a party to the complaint.

Several Democrats expressed concerns, including the leading Democrat on the Senate Commerce Committee, which had jurisdiction over the nomination.

As a result, the Commerce Committee narrowly approved the nomination along party lines. "It is clear to me he is not the right person for the safety culture that we need today at the FAA," ranking member Maria Cantwell (D-Washington) said. "It is distressing to me that Mr. Dickson advanced out of committee on just a party-line vote...I believe that we should have found consensus on a nominee for the FAA, given all of the concerns the public has about flying safety."

These concerns further necessitated a procedural vote to prevent a filibuster and ultimately led to the final 52-40 vote approving the nomination.

But despite the Democratic opposition, Republicans on Capitol Hill reiterated support for Dickson. "Mr. Dickson was chosen to lead the FAA because of his experience, impressive qualifications, and commitment to ensure that safety is the agency's top priority. I look forward to working with Mr. Dickson and expect his leadership will provide direction for the FAA at this crucial time," said Commerce Committee Chairman Roger Wicker (R-Mississippi).

Elwell, meanwhile, also continued to capture industry support, even as he has faced the fire of Congress for the activities surrounding the Max. General Aviation Manufacturers Association president and CEO Pete Bunce, who welcomed the confirmation of Dickson, added, "GAMA also strongly endorses Congress passing a waiver to ensure Dan Elwell continues to serve as FAA deputy administrator. Mr. Elwell has proven to be a very effective manager and leader at the FAA and will provide important continuity and support as Mr. Dickson takes over as administrator."

Calio expressed similar sentiments, saying "Mr. Elwell has done an outstanding job as acting administrator" and Graves praised him "for his stalwart leadership and professionalism during very difficult circumstances." ■

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EHang demonstrated the capability of its two-seat EHang Model 216 in early April. The company holds orders for more than 1,000 of the aircraft for various operations.

EHang selects Guangzhou as site for its autonomous eVTOL pilot program

by Charles Alcock

Chinese eVTOL aircraft developer EHang has chosen its home town Guangzhou as the location for its first "urban air mobility pilot city." The company, which is already working with the Civil Aviation Administration of China (CAAC) to develop a framework for regulating autonomously operated aircraft, will work with Guangzhou government officials to develop a command-and-control center from which operations can be managed.

Under the plans announced in August, privately owned EHang will support the southern Chinese city to develop ground infrastructure to support urban air mobility flights, including the design of safety regulations and market entry thresholds. The announcement did not say whether competing eVTOL aircraft developers will be allowed to have input on these decisions.

Under its Autonomous Air Vehicle (AAV) program, EHang is developing the single-seat Model 184 and two-seat Model 216.

EHang will use the pilot program to test flight routes and locations for so-called vertiports before launching commercial operations. The company has been conducting trial operations carrying light freight with DHL and retailer Yonghui.

No Certification Timeline

According to the company, it is pursuing eventual type certification initially with Chinese and European aviation authorities in accordance with the Specific Operational Risk Approach established by the Joint Authorities for Rulemaking on Unmanned Systems (JARUS). It has not published an anticipated timeline for type certification, but its Austrian development and manufacturing partner FACC said it can be ready to begin series production next year.

"We are very excited about exploring the various meaningful ways in which AAVs can solve some of the stressors our congested cities face," said EHang founder, chairman, and CEO Hu Huazhi. "We are in conversations with other cities, not just in China, to develop safe, efficient, and affordable autonomous air transportation."

The EHang 216 is projected to be able to fly just 22 miles at a speed of up to 81 mph and at a maximum altitude of just under 10,000 feet. According to Edward Xu, the company's chief strategy officer, it already has orders for more than 1,000 aircraft from a variety of customers for applications such as tourism, transportation, and medical logistics (such as transporting organs for transplant).

EHang first presented the 184 prototype at the 2016 Consumer Electronics Show in the U.S. In November 2018, the larger 216 joined the flight-test program and this appears to be the main focus of the company's efforts to get an aircraft into commercial service. In the same month, EHang announced a partnership with Austrian aerospace group FACC, which will provide support with research and development, the regulatory/certification process, and production. FACC is owned by government-backed Aviation Industries of China. The partners intend to open a flight-test center in Austria.

In January, CAAC announced that EHang is one of five Chinese companies assisting in the development of "Guidance on UAV Airworthiness Certification Based on Operational Risk." This is intended to be complete by year-end, creating a regulatory framework for aircraft including those carrying passengers. EHang is providing flight-test data to the CAAC in support of this work. FACC also is in discussion with European and Austrian authorities about type certification of the aircraft and the regulation of passenger flights.

EHang has not disclosed which companies are supplying key systems, such as motors, batteries, avionics, and flight controls. It said composite materials for the airframe are sourced in China.

The plan for operations is that passengers would select their destination via an onboard tablet device. The AAV would generate the pre-set flight plan autonomously via a high-speed telecommunications connection to an EHang command and control center that would handle flight dispatch, monitoring, control, "pre-warning," and "cluster management" of the aircraft. ■

Chinese developer EHang plans to open a command and control center for autonomous eVTOL flights in Guangzhou, China. It is partnering with government officials on the project.

Chabrian to retire from WAI

Peggy Chabrian, who founded and steered Women In Aviation International (WAI) into an organization that has 14,000 members and has facilitated the award of $12.5 million in scholarships, is planning to retire as president and CEO in April 2020.

Chabrian announced her impending departure during EAA AirVenture in July, saying, "The organization is in an excellent place with record accomplishments in all areas including membership numbers, scholarship awards, and a solid financial position. It has been a pleasure to have established the WAI annual conferences 30 years ago, to create the organization 25 years ago, and to serve as its president since its inception in 1994."

Peggy Chabrian founded and steered Women In Aviation International (WAI)

With a vision of gathering women in the industry, Chabrian first held the WAI conference in 1990 in Prescott, Arizona. That gathering led to the formation of the formal organization that this year marked the record membership. Its membership spans the gamut of the industry, from pilots and astronauts to maintenance technicians, airport technicians, and flight attendants, among many others.

The conference, meanwhile, this year celebrated its 30th anniversary in Long Beach, California with 4,500 attendees and 174 exhibitors. During the event, $948,000 in scholarships were awarded.

WAI chairman Marci Veronie called Chabrian "a trailblazing pioneer and an industry leader" and NBAA president and Ed Bolen added: "For 30 years, Dr. Chabrian has been a source of inspiration to women in aviation and a tireless advocate for educational initiatives." **K.L.**

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Clean energy start-up ZeroAvia started flight testing its hydrogen fuel powertrain system on a Piper M350 piston single, but it plans to offer the technology to regional aircraft operators by 2022.

Hydrogen power studied as alternative to conventional or battery-powered motors

by Charles Alcock

Clean technology start-up ZeroAvia has announced plans to provide a hydrogen-powered electric powertrain as an alternative to both conventional aircraft engines and battery-based electric motors. Initially, it is looking to power fixed-wing aircraft with 10 to 20 seats and operating up to 500 miles. Operators would lease the equipment on a power-by-the-hour basis.

The California-based company reported that it has been flight-testing its system on a modified Piper M350 piston single since early 2019. It expects to start supplying the technology to aircraft manufacturers and operators in 2022.

ZeroAvia claims that flight-hour costs for its hydrogen-based powertrain will run around half of those of conventional turbine aircraft, taking account of lower fuel and maintenance costs, as well as better powertrain efficiency. The company also argues that hydrogen fuel will help the air transport industry resolve its environmental sustainability challenges.

"With land transport rapidly decarbonizing, fast-growing air transport is quickly becoming the leading emission source, so we must find ways to make aviation more sustainable," said ZeroAvia founder and CEO Val Miftakhov. "Using hydrogen produced from local renewable energy is the most practical way to enable zero-emission aircraft of commercially meaningful size on traditional 300- to 500-mile regional missions."

ZeroAvia proposes a complete replacement for conventional aircraft powertrains. That would include fuel tanks to store liquid hydrogen, a fuel cell system to produce electricity from hydrogen and oxygen, and electric motors to drive propellers. Integrating suitable fuel tanks into the architecture of existing airframes stands as one of the engineering challenges it faces.

Initially, the company aims to generate power in the range of 600 to 800 kWh, enough, it said, to power aircraft such as the Dornier 328, Twin Otter 400, and Pilatus PC-12, all of which now use conventional engines such as Pratt & Whitney Canada's PT6 family.

In the longer term, Miftakhov said the technology could advance to deliver high enough power ratings to drive turbofans. The company continues to study ways to integrate its equipment with propellers made by MT-Propellers or any other propellers with an electric governor.

ZeroAvia is conducting flight testing under an FAA experimental research and development certificate. The company claims the tests have so far validated the powerplant's key components and their integration with the M350's existing engine, as well as fuel economy and maximum power delivery targets. As of August 14, the company had conducted around 10 test flights out of a planned 50 by year-end.

ZeroAvia plans to lease its powertrain to aircraft operators and provide fuel and maintenance under a power-by-the-hour business model. Miftakhov told **AIN** that his company intends to partner with liquid hydrogen suppliers and maintenance providers to create the necessary infrastructure.

Miftakhov cited an increase in the supply of liquid hydrogen as a by-product of renewable energy operations such as large solar energy and wind farms. He claimed that the approach already delivers clean fuel at prices fixed on 25-year contracts—offering aircraft operators an alternative to the volatility of jet fuel pricing.

ZeroAvia claims it has held initial discussions with several undisclosed regional airline operators about adopting its alternative powertrain. Miftakhov maintained that the switch from conventional engines could radically change the operating economics of short-haul routes in a way that would ensure the viability of commercial services between small airports.

The ZeroAvia leadership team includes engineers and executives from companies such as automotive groups Tesla and BMW, artificial intelligence specialist Nvidia, eVTOL aircraft pioneer Zee Aero, industrial gas supplier Air Liquide, and investment group SystemIQ. Miftakhov previously founded electric vehicle infrastructure company eMotorWerks and served as its CEO. His new company has just started a funding round to raise about $10 million in fresh investment for the program. ■

@ LABACE 2019

Octans joins growing ranks of Brazil OEMs

Brazil has the world's second-largest civil aviation fleet, but only two original equipment manufacturers (OEMs)—Embraer and Helibras, the Airbus Helicopters local subsidiary. Last month's LABACE 2019 offered the promise of adding three more OEMs, taking the total from two to five.

Boeing Brasil Commercial will be born fully grown, through Boeing's upcoming purchase of Embraer's regional aircraft business. Kopter's local distributor, Gualter, said the Swiss startup is scouting sites for a factory in Brazil. Lastly, Octans Aircraft, which has delivered more than 240 experimental aircraft since 2002, is moving into the production of certified aircraft with its five-passenger Cygnus, unveiled at the show.

Octans, which had operated under the name INPAER, moved to the upstate São Paulo city of São José da Boa Vista, and new partners have invested more than $20 million in the migration to certified aircraft, looking at both the Brazilian and export markets, and eventually other models besides the Cygnus.

Octans president Milton Roberto Perreira told **AIN** about the company's plans and the Brazilian market's peculiarities. While the U.S., Canadian, and Australian markets each have about 13 percent experimental aircraft, Brazil's uncertified fleet is at 26 percent, twice as large. "It's easier to produce uncertified aircraft," Perreira said. The Cygnus is being developed to meet ANAC and FAA Part 23 requirements and will start the path to certification in 2020 in line with ANAC's iBR2020 program of support for small aircraft certification.

"Brazil doesn't have a certified manufacturer in this segment, and all aircraft in this category are imported, Perreira said. "Brazil has the fifth-largest territory and fifth-largest population of any country, and if income were in line with the developed world we'd have a fleet of 120,000 aircraft. The country has an aviation tradition and has earned respect." More than 20 engineers worked on the development of the Cygnus project and will work on future Octans models.

The five-passenger Cygnus has a metallic structure, high cantilevered wing, fixed tricycle landing gear, day/night VFR and IFR capabilities, and is powered by a 300-hp Lycoming IO-540 engine with a Hartzell three-blade metal propeller. Air conditioning and leather seats are part of the interior designed by Studio Marcelo Teixeira. **R.P.**

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Innovation, engagement remain key for Flightdocs

by Jerry Siebenmark

There are a few things Rick Heine insists Flightdocs never strays from as the aviation software provider's growth trajectory and headcount keep climbing. One is never letting the phones at its Bonita Springs, Florida office ring more than twice. "That's a top priority and it's still instilled in every new employee," Heine, Flightdocs founder and CEO, told **AIN**.

Another is employee engagement with customers—including Heine and the company's other senior leaders. "If a customer calls me at three o'clock on a Sunday morning, I'm picking up the phone," added Heine, who routinely gives out his cell phone number to customers.

> **"I just saw, as the new technology emerged, the opportunity to get in the business and to be able to get some momentum"**
>
> – Rick Heine, Flightdocs founder and CEO

Wavering from either one of those suggests complacency, which is the greatest threat the privately held company faces today. "My biggest challenge is to make sure we never lose that edge," he explained.

That edge is the reason why Flightdocs is where it is today. It grew out of a small, New Mexico firm offering paper-based maintenance tracking services to fewer than a handful of clients. Heine acquired Flightdocs in 2003, and today he has 100 employees and about 1,000 clients with rotorcraft and fixed-wing fleets that include Fortune 500 corporate flight departments, charter and fractional aircraft providers, air ambulance operators, government agencies, and regional airlines.

"We were the first fully cloud-based maintenance-tracking company," Heine said. As dependence on the Internet grew and its functionality as a business tool expanded, "I just saw, as the new technology emerged, the opportunity to get in the business and to be able to get some momentum," he added.

Heine knows a little something about aircraft maintenance. After high school, he began training as an airframe and powerplant mechanic around the time of airline deregulation. "I was told I'd be lucky if I get 10 bucks [an hour] working third shift on a tarmac in Anchorage, Alaska," he said. "At the time, I just couldn't afford to be an aircraft mechanic." So Heine went off and did other things—noting he'd completed his airframe training and was just beginning powerplant training when he left—such as painting houses. Later, he started a financial services statement processing technology company whose first big client was Citibank. It was after he sold that business that he discovered what would become Flightdocs.

Calculated Growth

In the early years, Flightdocs took a calculated approach to growth, selling to a couple of customers at a time. Heine wanted to make sure that "everything was perfect" for Flightdocs's new customers, and that it listened and responded carefully to each of their needs. All the while, he was tweaking and improving its mainstay maintenance tracking product. "We incrementally got the beachhead."

Its maintenance tracking software enables owners and operators to track and manage the maintenance and airworthiness of their aircraft as well as regulatory compliance, including airworthiness directives. In the years since, it has added inventory management, flight scheduling and crew management software as well as an encrypted, real-time messaging platform called FD Connect that enables communication between flight crews, maintainers, schedulers, and dispatchers via the web and iPhone and iPad apps.

At this year's NBAA-BACE, to be held from October 22 to 24 in Las Vegas, it will announce the worldwide roll-out of what it calls Flightdocs Operations. Instead of providing and supporting separate software modules, Flightdocs Operations combines them into a package for corporate flight departments and provides a platform for other services to tie into, such as catering, hotel reservations and ordering aircraft parts. "It really becomes the world's first flight department management system," he said of Flightdocs Operations. "Ultimately you'll be able to do everything on Flightdocs; everything from scheduling a flight, doing maintenance, ordering food for your people on board, to getting them a hotel room, or making sure parts are delivered on time, or immediately."

But the innovation won't stop there. Heine believes innovation is important to a long path forward for the company. It's why nearly a third of Flightdocs's staff are developers who are working on existing and new projects. Equally important to its longevity is a continued focus on its founding values of listening to and being hyper-responsive to its customers

"I want to know that [customers] respect us and we respect them," Heine said. "Everything comes after them. I'm vigilant on that. We're so locked in that complacency ain't getting through the system." ■

FLIGHTDOCS

Flightdocs CEO Rick Heine, left, with president Greg Heine and Bonita Springs (Florida) Mayor Peter Simmons at the grand opening of the company's technology center in August 2018.

Sikorsky patents technology to prevent counterfeiting of aircraft parts

The U.S. Patent and Trademark Office (USPTO) recently awarded Sikorsky Aircraft a patent (No. US10286719B2) for new anti-counterfeiting technology. The newly patented technology both prevents some counterfeiting and allows identification of counterfeit parts. Sikorsky originally filed for the patent on November 4, 2015.

The newly patented invention adds a "radiation impacting feature on or within the part" during the manufacturing process. The feature is not specific to any one material and can be made of a fluorescent, phosphorescent, emissive, or other material that can serve as a unique signature.

Because of the singularity of radiation signatures, the impacting feature can identify if a part is legitimate. Counterfeiters will be unable to exactly mimic the radiation signature.

Existing anti-counterfeiting technologies use other forms of radiation, 3D security holograms, and RFID to verify products in a similar manner. Sikorsky's parent corporation Lockheed Martin already holds patents in several of these areas. The new patent, however, is one of the first that is intended to prevent duplication of the parts in the first place.

Many counterfeiters use scanning technology involving some form of radiation to gather an accurate image of a part they want to counterfeit. The feature described in the new patent can be configured to distort or disrupt this scanning radiation. The resulting image is therefore too fuzzy to accurately duplicate the part.

Sikorsky was not able to comment on the deployment of the patented technology due to "market exclusivity implications." The company also did not elaborate on how the technology might impact legitimate parts duplication under the FAA Parts Manufacturer Approval regulations and processes (FAA Part 21 regulations). **K.W.R.**

Tamarack obtains financing during bankruptcy reorg

Active winglet developer Tamarack Aerospace Group has received U.S. Bankruptcy Court approval for $1.95 million in debtor-in-possession financing, the Sandpoint, Idaho company announced last month. "This financing from friendly investors is now the only debt secured by our IP [intellectual property] and is an important step in our reorganization, which allows us to continue serving our expanding fleet," Tamarack president Jacob Klinginsmith said.

The "friendly investors" includes a group of customers who have purchased Tamarack's Atlas active winglet system, vendors, and other stakeholders "who are committed to Tamarack's future," the company added. In June, Tamarack filed for Chapter 11 bankruptcy reorganization, citing FAA and EASA airworthiness directives that effectively grounded Atlas-equipped Cessna CitationJets as the primary cause.

Those groundings have since been lifted, with the FAA and EASA having agreed that previously-issued Tamarack service bulletins were all that was necessary to comply with the ADs. "We're excited to be back on track with our sales and installation process," Klinginsmith said. "We have several installations scheduled or in process now, and we're seeing strong interest. It's going to be a good second half of the year." **J.S.**

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New organization champions E-aviation

by Curt Epstein

With a mission to promote awareness and the early adoption of hybrid and electric aircraft, along with the development of infrastructure at airports to support them, the Eco-Aviation Foundation International, a 501 C3 non-profit organization, launched recently with a kick-off event at the Museum of Flying at California's Santa Monica Airport. With dozens of companies currently working on such aircraft, many view their eventual acceptance as the biggest shift in the industry since the introduction of the jet engine.

"Twenty years from now, there will be very few, if any, petroleum-engined aircraft," Scott Burgess, the organization's president, told the audience at the event. "In our lifetime, we will see the end of them." He pointed out that major OEMs such as Boeing and Airbus have targeted between 2035 and 2045 as the timeframe for when they expect their fleets to have transitioned to hybrid propulsion, if not fully electric powerplants.

"You're not going to snap your fingers and it's gone," Burgess told **AIN**. "You have a good 20-year phase-in schedule, and the small planes will come first, based upon limitations in battery density."

The irony of the launch event's taking place at the embattled airport, which community leaders have lobbied to close for more than a decade, wasn't lost on many attendees. Indeed the city at the time had just commenced the shortening of the runway from 5,000 feet to 3,500 feet, lopping off 750 feet of tarmac at each end, a project that concluded in August.

All along, the major problems cited with the airport were the noise and air pollution. "Every neighborhood near every airport complains about the same thing," said Burgess, a Santa Monica resident for more than three decades, adding that given a hybrid aircraft's reduced emissions, and their complete elimination with electric aircraft, along with the quiet electric motors, the technology has now arrived that would render those arguments null. In the hopes of many in the local aviation community, that could perhaps be enough to stay the executioner's ax, which hangs over SMO and is slated to drop at the end of 2028.

"Our view that the opportunity to become a pioneer, to consider the possibilities, is combined around two factors," said Bye Aerospace founder and CEO George Bye, one of the keynote speakers at the July event. "One is the environmental benefit, the CO_2 and the noise; the other is the disruptive ability to change the equation about the cost of flying."

Industry's Next Generation

In addition to being a hobby or a profession, general aviation is also the conduit through which the next generation of airline pilots is produced, Bye noted. A former Air Force pilot, he said that the military is no longer the robust pipeline of pilots it once was, so civil aviation is now carrying the load of producing the vast numbers of pilots required by the airlines. With that, he pointed out that the average age of the legacy training aircraft fleet is 50 years, and the cost to fly and maintain those aircraft is a great burden that gets passed along to the student pilots.

As his company's eFlyer2 electric training aircraft is currently undergoing FAA certification, he said the current operating cost per flight hour is $3. The company expects the in-service costs for the aircraft to be approximately $23 per flight hour, or less than one quarter the cost for a conventionally powered training aircraft such as a Cessna 172. Bye sees a potential market for as many as 66,000 training aircraft to meet anticipated pilot training demands as well as to replace older, near-obsolete aircraft.

He told the audience the eFlyer2 is currently in its certification configuration, and he expects certification within the next 18 months. A larger eFlyer4 is planned for the on-demand air-taxi/private pilot segments. With far fewer moving parts in the engine, the aircraft promises drastically reduced maintenance costs over its conventionally powered brethren as well.

Those reduced operating costs would help make flight training and on-demand aviation more affordable, and perhaps even spur a resurgence in local recreational flying clubs. One of the near-term goals of the Eco Aviation Foundation is to establish a flight training circuit in California between Compton/Woodley Airport (which already has a pair of based Pipistrel Alpha Electros awaiting training approval), Santa Monica, and San Gabriel Valley Airport.

Los Angeles-based Ampaire is aiming at a different market and is taking a different approach for its first aircraft. The hybrid-electric EEL is a retrofit of the unique push/pull Cessna 337 Skymaster. One of its conventional engines has been replaced with an electric powerplant, while the other was upgraded with a new, more fuel-efficient engine from partner Continental Aerospace Technologies. According to the company, which recently opened its order book for the aircraft, the EEL is currently the largest aircraft to fly using electric propulsion. Even as a hybrid it promises to more than halve fuel burn, emissions and maintenance costs.

"A little over 100 years ago we had the dawn of powered flight; it gave us the ability to fly," Ampaire CEO and co-founder Kevin Noertker told the audience. "Halfway between then and now we had the second revolution with the dawn of the jet age that enabled us to fly longer distances with more passengers and more payload, really connecting the world. Now we're entering the third revolution in aviation, and again it's driven by new opportunities in propulsion technologies that transform the economics of aviation, and this revolution will be electric."

He sees the six-seat EEL receiving FAA STC approval by the end of 2021. The aircraft, which will have a useful range of 200 miles, is targeted to the regional airlines, and later this year, one will be flying proving runs on commercial island-hopping routes used by Hawaii-based Mokulele Airlines.

Given such potential on the horizon, the foundation will also work to educate communities about the benefits of electric and hybrid aircraft in terms of noise and pollution reduction as well as lowered operation costs for students and recreational pilots. Burgess noted he was approached at the event by representatives from several airports seeking information on how to prepare for their arrival.

Toward that end, the organization is currently working on a manual for airport sponsors looking to embrace electric- and hybrid-powered aircraft, which will describe their function and their unique infrastructure needs, with a planned release by the end of the year. It is also lobbying manufacturers to identify and adopt one standard recharging technology so airports wishing to attract these aircraft can quickly and confidently move ahead with installing the required hardwired charging stations. The foundation will also advocate for more widespread adoption of solar energy collection at airports to help power those charging stations.

Burgess also plans for the foundation to provide scholarships to help attract a new generation of technicians to work on these next-generation aircraft. "There's a whole new layer of technology that is going to require training," he told the audience. "Before you certify the aircraft, you have to certify how the mechanics are going to be trained and provide oversight, because right now there's nothing about electric motors and these types of batteries in the curriculum." ■

CURT EPSTEIN

Eco-Aviation Foundation president Scott Burgess (left) fields questions from the audience at the foundation launch reception at the Museum of Flying in Santa Monica. Keynote speakers at the event were Kevin Noertker (center), co-founder and CEO of hybrid-powered aircraft remanufacturer Ampaire, and electric aircraft manufacturer Bye Aerospace's CEO George Bye. The two companies have actual aircraft, which they hope to bring to market soon.

Helo operator: city reneged on FBO deal

Less than two weeks after reaching a settlement agreement in federal court, the town of Norwood, Massachusetts, has apparently reneged on the signed and official accord acknowledging that Boston Executive Helicopters (BEH) has "satisfied all minimum standards" for the "prompt issuance" of an FBO permit for Norwood Airport.

According to BEH's attorney, early last month the Norwood Airport Commission (NAC) declined to approve BEH's request for an FBO permit, citing an alleged deficiency in insurance coverage. This is despite the city stipulating in the July 30 agreement that "all minimum standards and additional requirements for the issuance of an FBO permit by the NAC to BEH have been met."

Another issue that might threaten the viability of the agreement is that three NAC members didn't personally sign it. The agreement shows that an attorney signed as a representative of two members, but BEH questioned his authority to do that. A third member who wasn't available to sign the agreement at the time is believed to have no intention of signing. "Without their actual signature[s], I do not accept the agreement," said BEH president Christopher Donovan. **G.G.**

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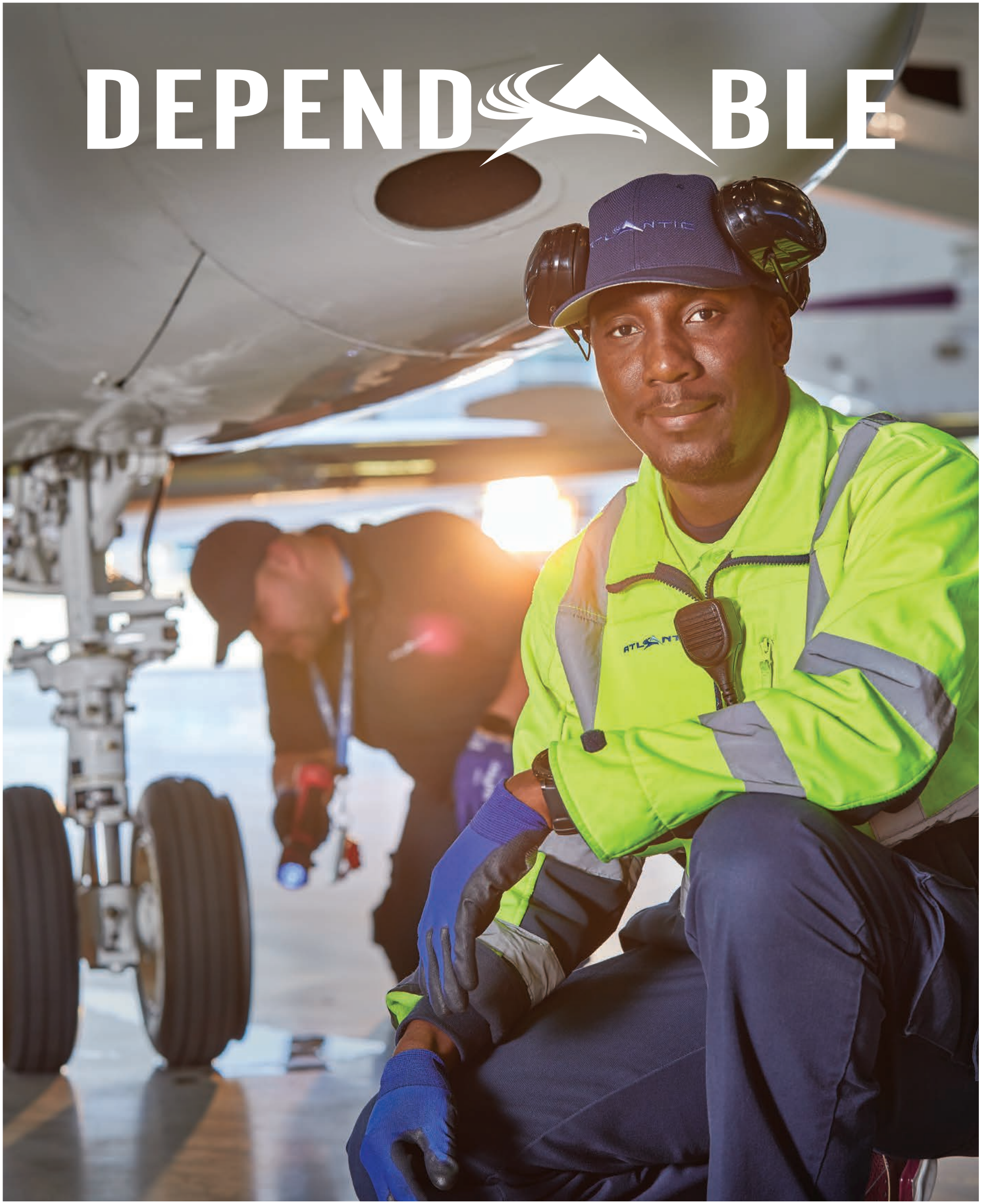

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› continued from page 1

Legislators on GA

or too bureaucratic. In 2016, the Government Accountability Office estimated that the aviation trust fund had lost between $1 billion and $2 billion "or more" in tax revenue, and fuel vendors have overpaid by as much as $230 million in tax revenue as a result of the then decade-old fuel-fraud law.

While the aviation system has lost revenue, efforts to reverse the law had been difficult, since it created a windfall for the highway trust fund. The National Air Transportation Association (NATA), which has worked for years behind the scenes to convince lawmakers to reverse the law, praised the language in the Plane Act to lift the tax. "[It] would undo an ill-founded policy that has taken money away from the aviation system for over a decade," said NATA president Gary Dempsey. "This legislation will enable NATA's members to keep fuel prices competitive, and ensure the tax revenue from jet fuel sales supports aviation system users."

Infrastructure Investment

Along with fuel fraud, an entire section of the bill is named "Forward-Looking Investment in General Aviation, Hangars, and Tarmacs Act" and dedicated to expanding and protecting resources for general aviation airports. This can be particularly difficult for smaller facilities without the means or understanding of how to access funding.

Provisions in this section would establish a five-year public-private partnership pilot program to attract private sector investment to general aviation airports; reduce local match requirements for certain non-primary airport projects; ensure that carryover funds designed for non-primary airports are dedicated for that use; designate qualified general aviation airports and develop other general aviation airports as disaster relief airports; and increase availability of funding for automated weather observing systems (AWOS).

The provisions were particularly welcomed by the National Association of State Aviation Officials (NASAO), which represents state agencies that rely on federal funding support of their local projects. "Our members were especially encouraged to see continued reform made to the Non-Primary Entitlement (NPE) program. By easing the financial onus on states and requiring NPE funds to stay in the category, investment in general aviation airports is prioritized and protected," said Shelly Simi, president and CEO of NASAO.

Simi further stressed the importance of supporting the general aviation industry. "The general aviation industry, supporting 1.1 million jobs and generating an economic output of $219 billion in the U.S., is critical to the economic health of the nation," she added.

"Our nation relies on a network of more than 5,000 airports that support critical services, agriculture, and economic activity in communities across the country," agreed Selena Shilad, executive director of the Alliance for Aviation Across America, saying the Plane Act "would support our aviation infrastructure and future aviators."

Pilot Protections

Paramount in the Plane Act are the numerous protections aimed at the pilot. This is the third in a series of comprehensive bills that Inhofe has authored on pilots since he faced his own entanglement with the FAA after landing on a closed runway in Texas in October 2010.

As such, the Plane Act's first title is named "Fairness to Pilots," with sections that would address the ability to appeal to federal district court, the NTSB authority to review an airman medical certificate denial, the ability for an airman to voluntarily surrender a medical certificate, the ability to reapply for a certificate without an unnecessary wait period, and an extension of FAA designee due process protections, among other aspects.

In addition, the legislation would address rulemaking by requiring the FAA to consider the number of certificate holders and small businesses affected by or requesting the proposed rulemaking, requiring a timely notice on each petition filed in the rulemaking process. Further, FAA designees would be afforded civil liability protections provided to FAA employees.

Other sections are designed to improve repair station protections, including the restoration of the ability of a repair station to voluntarily surrender certificates. It also extends the FAA's ability to keep out bad actors.

Another area of the bill includes a number of provisions designed to foster the development of air traffic controllers, including the ability for the FAA's academy to remain open in times of a government shutdown.

Unsurprisingly, the bill immediately gained support from a spectrum of aviation organizations, 13 of which wrote a letter saying the bill "sets the stage for the future of general aviation by empowering the voices of pilots, investing in airport infrastructure, and ensuring more opportunities for a trained aviation workforce."

Aircraft Owners and Pilots Association president Mark Baker praised the senators for introducing the Plane Act. "Sen. Inhofe has been a longtime supporter of general aviation and we thank him and Senator King for their relentless work."

The path forward for the Plane Act is yet unclear, particularly since there will not be a catch-all FAA reauthorization bill in the offing for several more years. But Inhofe over the years has been a skilled politician, able to shepherd narrowly focused bills even without over-arching must-pass legislation as a vehicle.

His doggedness spans decades, particularly on general aviation issues; in the early 1990s, he spearheaded a procedural maneuver that broke the logjam against product liability reform legislation and cleared the way for the hallmark General Aviation Revitalization Act of 1994. ■

FAA certification in hand, Gulfstream delivers first G600

by Chad Trautvetter

Gulfstream Aerospace has delivered the first G600—to an unidentified U.S. customer—from its Savannah, Georgia headquarters, the company announced on August 8. This milestone comes a little more than a month after the fly-by-wire twinjet earned both U.S. FAA type and production certification.

"We always strive to exceed our customers' expectations, and our first G600 delivery is a prime example of that," said Gulfstream president Mark Burns. "Our team enabled this technologically advanced aircraft to move from certified to delivered in a short period of time. The G600...continues the emergence of a new generation of Gulfstream aircraft that started with the G500 in 2018. We have only just begun."

The G600, which received FAA approval on June 28, is entering service after a design and test program that included flying nearly 100,000 hours in the company's labs and more than 3,200 flight hours. With a range of 6,500 nm, it can fly nonstop from Paris to Los Angeles or Hong Kong at an average speed of Mach 0.90. To date, the G600 has broken more than 10 city-pair speed records. ■

The first Gulfstream G600 was delivered to an unidentified U.S.-based customer in early August. Gulfstream's new large-cabin twinjet has a range of 6,500 nm and can fly nonstop from Paris to Los Angeles or Hong Kong at an average speed of Mach 0.90.

Nexa: UAM investment could reach $318B

Over the next 20 years, as much as $318 billion could be invested to transform urban air mobility in 74 cities around the world, according to a new study published August 16 by Nexa Advisors and the Vertical Flight Society. The "Urban Air Mobility—Economics and Global Markets" study promises a detailed analysis of infrastructure needs and opportunities in major metropolitan areas and forecasts a projected growth path for each location in the period 2020 to 2040.

According to the study, the potential for developing urban air mobility in each metropolitan area is defined by what Nexa calls its "DNA," which the company defines as "a complex blend of current transportation issues, congestion, population density, existing transportation infrastructure, regulation, business aviation, gross domestic product, local politics, per capita income, and a host of other issues." The study uses these factors to determine the likelihood of any given city being either an early or late adopter of electric-powered vertical takeoff and landing (eVTOL) aircraft.

According to Nexa's managing partner Michael Dyment, the report is intended to guide prospective investors in urban air mobility as where capital can be put to most effective use. "The report is also a first attempt to identify the cost of UAM infrastructure: $32 billion for all 74 cities by 2040," he explained. "This is very affordable as potential revenues generated from this infrastructure will be in excess of $244 billion."

The anticipated $318 billion value of the urban air mobility market includes infrastructure (vertiports and ATM), but also aircraft that Nexa sees being operated in the following five segments: airport shuttle services, on-demand air taxi, emergency services, business aviation, and regional point-to-point charters (of up to 250 miles).

In the first instance, Nexa sees existing helicopter services being best placed to capitalize on rising demand for urban air mobility. The report predicts that Vancouver, Miami, Singapore, and a dozen other cities will accelerate investment in new approaches to urban air mobility from 2020. The report also addresses the potential to start testing urban air traffic management systems and the potential for new battery and hydrogen fuel cell technology to propel eVTOL growth. **C.A.**

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ROYAL AIR FORCE

A Typhoon of No. XI Squadron RAF (foreground) intercepted this Russian Tu-134 "Crusty" on August 6.

RAF Typhoons intercept Russian aircraft over Baltic

by David Donald

During the first half of August Eurofighter Typhoons intercepted a number of Russian aircraft, including five in two days. The intercepts took place in international airspace over the Baltic Sea, but close to the airspaces of Estonia and Lithuania. Russian aircraft often fly close to the coast as they transit to Kaliningrad, a Russian enclave that lies on the Baltic coast between Poland and Lithuania. An Ilyushin Il-76 transport had been intercepted on July 31.

On August 5, Typhoons launched from Amari in Estonia initially to intercept, identify, and shadow an Antonov An-26 "Curl" medium transport. While airborne, the fighters were then tasked with intercepting three further aircraft, a Tupolev Tu-142 "Bear-F" long-range maritime patroller and two Sukhoi Su-27 fighters. On August 9, RAF Typhoons from Amari intercepted another Tu-142, accompanied by two Su-30SM fighters, while Typhoons based at Lossiemouth in Scotland intercepted another pair of Tu-142s

Regarding the August 5 mission, a Typhoon pilot from No. XI Squadron reported that: "We were scrambled to intercept a Russian An-26 aircraft routing west close to Estonian airspace. Once complete with this task, a second task was initiated to intercept a group of contacts operating to the south close to Lithuanian airspace. These aircraft transiting the Baltic region were not on a recognized flight plan or communicating with air traffic control. In the end, the intercept was uneventful and conducted in a professional manner throughout."

On the following day, Typhoons were launched again, this time to investigate a Tupolev Tu-134 "Crusty." The modified airliner was one of the aircraft that was adapted with an extended nose housing radar and onboard systems as Tu-134BSh and Tu-134UBL versions to train Tu-22M and Tu-160 bomber crews. Some of these aircraft have been de-modified and are used as passenger transports, but retain the long nose. The aircraft encountered bore Russian naval aviation titles.

The latest scrambles brought the number of aircraft intercepted by No. XI Squadron to 19 since it took over the Baltic extended Air Policing (eAP) role on May 3 to 19. The RAF's mission is known as Operation Azotize. For the previous eight months, German Typhoons had held responsibility for the Amari detachment.

The Amari operation was begun in May 2014 in the light of increasing tensions with Russia and the need for NATO to increase its Baltic Air Policing commitments, which began in 2004 with rotational deployments of interceptors from NATO air forces to Siauliai air base in Lithuania. During 2014/15 fighters were also deployed to Malbork in Poland. The Siauliai detachment is currently manned by Spanish EF-18 Hornets and Hungarian JAS 39C Gripens.

RAF participation began with Tornado F.Mk 3s in 2004, while Typhoons made their first deployment to Siauliai in 2014, and to Amari in 2015. ■

For weekly defense news from our worldwide team of contributors, go to ainonline.com/subscribe and sign up for AIN's Defense Perspective eNewsletter, compiled by David Donald.

First Apaches arrive in India

On July 27 an Antonov An-124 heavylifter of Antonov Airlines arrived at Hindon Air Force Station (AFS) from Phoenix-Mesa Gateway Airport carrying the first four Boeing AH-64E(I) Apache Guardian attack helicopters for the Indian Air Force. A second batch of four was expected in early August. According to Boeing, the deliveries are being made ahead of schedule.

Following reassembly and air test, the eight AH-64s are due to move to Pathankot AFS in Punjab, where the Indian Air Force expects to formally induct the type into service this month. The operating unit is expected to be No. 125 "Gladiators" Squadron, which previously operated Mil Mi-35 "Hind" gunships. The remaining 14 AH-64s from the initial Indian order will be delivered in 2020. A second squadron is expected to form at Jorhat AFS in Assam, which currently hosts An-32 transports and Mi-17 helicopters.

India became the 14th customer for the Apache when it signed for 22 AH-64E(I)s in September 2015, also buying 15 CH-47F(I) Chinooks at the same time. The first of the CH-47s arrived in India by sea in February. The Defence Ministry approved the procurement of six more Apaches in 2017, with these aircraft intended for service with the Indian Army.

INDIAN AIR FORCE

The first AH-64E(I) was handed over to the Indian Air Force at Mesa on May 10.

The Air Force's first AH-64E(I) flew at Boeing's Mesa, Arizona plant in July 2018 and Indian pilots and technicians began training in the U.S. that year. The first helicopter was formally handed over to the IAF in a ceremony at Mesa on May 10, 2019.

In March 2018 Tata Boeing Aerospace—a joint venture between the two industrial giants—opened a new facility in Hyderabad to build Apache fuselages, which are shipped to the final assembly line at Mesa. The first fuselage was delivered in June the same year. TBA is now the sole source for AH-64 fuselages, and also supplies other components for the program. **D.D.**

Unmanned KAL MD500 flies

Korean Air (KAL) successfully conducted the first flight of its unmanned MD500 light helicopter, known as the KUS-VH, on July 30. The flight lasted for around 30 minutes at the Korea Aerospace Research Institute's aviation center, which is located in Goheung, South Jeolla Province, South Korea. Part of the inaugural flight test also saw the execution of a remote engine start, and tethered hover flight tests to validate the flight control systems.

KOREAN AIR

The KUS-VH is seen during its July 30 first flight at Korean Air's Aerospace Research Institute aviation center.

First shown publicly at the 2015 ADEX show, the KUS-VH has an endurance of six hours and payload of 440 kg (970 pounds). KAL said development will continue until 2021 and will continue to expand the helicopter's flight range and operational altitude. The goal is to develop the KUS-VH into an unmanned attack platform.

"We also expect to extend this technology to other helicopters, including the UH-1H and UH-60, as well as to fixed-wing fighters such as the F-5," said Jong-koo Kang, director of Korean Air's Aerospace Research Institute in a statement. He added that the system will also be made available for export and made to fit the clients' requirements. KAL said sensors such as electro-optics, search and rescue packages, and Automatic Identification System (AIS) can be installed on the helicopter, depending on its intended mission.

Known as Korean Air Lines until 1984, the national flag-carrier's Aerospace Division manufactured the MD500 under license from 1976 to 1988, but the type is now being phased out for newer helicopters such as the KAI KUH-1 Surion for combat utility and scout missions. KAL took a number of surplus MD500s from the Korean armed forces and started on the KUS-VH program in 2014. In late 2012 Boeing had demonstrated its own Unmanned Little Bird MD500 variant in Korea. **C.C.**

Russia's ministry of defense recently released video of what is thought to be the first flight of Sukhoi's S-70 Okhotnik (hunter) unmanned combat air vehicle (UCAV). To see the video and learn more, go to: ainonline.com/russias70flightvideo.

Sustainable Aviation Fuel (SAF)
The Expert Panel

Alternative fuels are slowly but surely working their way into fuel supplies worldwide and many of the turbine-powered aircraft that will fly to Las Vegas for NBAA-BACE will burn some amount of sustainable aviation fuel.

AIN's forum will bring together a panel of industry experts to explain how this fuel is gaining ground, why it is good for engines and the environment, and how you can help move the needle on the use of sustainable aviation fuel in the aircraft that you operate.

Wednesday, October 23, 2019 | 12:00 pm
NBAA Annual Convention | Las Vegas, NV

Moderated by
Matt Thurber,
Editor-in-Chief
of AIN

Charles Etter
Environmental and Regulatory
Affairs, Technical Fellow
Gulfstream Aerospace Corporation

Steve Csonka
Executive Director
Commercial Aviation Alternative
Fuels Initiative (CAAFI)

Keith R. Sawyer
Manager of
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Product Support Survey

Last year's leaders hold their positions in the avionics and cabin electronics categories

Garmin held the lead in the 2019 AIN Avionics Product Support Survey's Flight Deck Avionics segment, clocking an Overall Average rating by **AIN** readers of 8.5, followed in second place by Honeywell's BendixKing division in a tie with Collins Aerospace and Universal Avionics at 7.9, with Honeywell in third place at 7.8.

In the Cabin Electronics segment, Satcom Direct maintained its first-place position from last year with an 8.4, followed closely by Gogo Business Aviation at 8.3. Gulfstream's Cabin Management product line took third place at 7.9, with Collins Aerospace and Honeywell tied for fourth at 7.8, followed by Lufthansa Technik at 7.4.

Survey Rules and Methodology

As with AIN Publications' previous annual Product Support Surveys, the objective this year was to obtain from the users of business jets, pressurized turboprop airplanes, and turbine-powered helicopters statistically valid information about the product support provided by flight deck avionics and cabin electronics manufacturers over the last year and to report this information to our readers. The goal is to encourage continuous improvement in avionics product support throughout the industry.

This survey was conducted via a dedicated website, created by **AIN** from the ground up to provide improved ease of use and to encourage greater reader participation. **AIN** emailed qualified readers a link to the survey website and also sent a postcard invitation with login credentials to the survey website.

The survey website was open from May 1 to June 7. Respondents were asked to rate the avionics products they use. Respondents were also asked to rate, on a scale from 1 to 10, the quality of service they received during the previous 12 months in the following categories:

- **Parts Availability**–in stock versus back order, shipping time.
- **Cost of Parts**–value for price paid.
- **AOG Response**–speed, accuracy, cost.
- **Warranty Fulfillment**–ease of paperwork, extent of coverage.
- **Technical Manuals**–ease of use, formats available, timeliness of updating.
- **Technical Reps**–response time, knowledge, effectiveness.
- **Overall Product Reliability**–how the product's reliability and quality stack up against the competition.

Respondents were also asked to recognize individuals who have provided them with exceptional product support and service.

The 2019 AIN Product Support Survey results for avionics are published in this issue. The results for aircraft appeared in teh August issue. Engines will be featured next month. ■

FLIGHT DECK AVIONICS

GARMIN

The Results

Garmin's product support efforts consistently put the avionics manufacturer at the top in the AIN Avionics Product Support Survey. **AIN** readers gave Garmin an 8.5 Overall Average, up 0.1 from last year's first-place finish. Garmin earned top category scores for Parts Availability (8.8), Cost of Parts (7.8), AOG Response (8.4), Technical Manuals (8.3), Technical Reps (8.4), and Overall Product Reliability (8.9).

The Improvements

Garmin's product support efforts start with training and supporting the pilots who fly with its products in their aircraft and extend to the technicians who install and service Garmin avionics in the field.

To help pilots solve problems, Garmin launched weekend shifts of its U.S. pilot operations team, from 7 a.m. to 7 p.m. U.S. central time, so pilots can get their questions answered seven days a week.

To bolster its support for the technical side, Garmin added a new field service team just for avionics sold "over-the-counter" and not part of its certified product installation policy, according to Lee Moore, director of avionics product support.

Other "infrastructure and organizational" improvements include creating additional web-based self-service options, improving aviation services management, and expediting returns processing. "We automated our customer feedback connection to our engineering department for faster and more accurate response to product issues in the field," Moore said.

Training options at Garmin have grown, and recently added elearning classes include Garmin Aviation Weather Radar 2.0, G5000 Essentials 2.0, and G5000 Essentials 2.0 Plus. New in-person classes have been added for G3X Touch installation and pilot training and weather radar. Pilots have also accessed training for the GFC500 and GFC600 autopilots and weather radar via webinars.

Garmin provides training for dealers, aircraft manufacturers, and technicians and created a class on Garmin Retrofit Autopilot, G5 Installation, and Maintenance. A new video series offers training on database update procedures and processes, TXi system maintenance, and wiring fundamentals. At its regional dealer maintenance training events, Garmin holds classes on new products and system hardware and software upgrades.

2019 Average Ratings of Cockpit Avionics and Cabin Electronics

	2019 Overall Average	2018 Overall Average	Ratings Change from 2018 to 2019	Parts Availability	Cost of Parts	AOG Response	Warranty Fulfillment	Technical Manuals	Technical Reps	Overall Product Reliability
Flight Deck Avionics										
Garmin	**8.5**	**8.4**	0.1	**8.8**	**7.8**	**8.4**	8.5	**8.3**	**8.4**	**8.9**
BendixKing by Honeywell	7.9	7.5	0.4	8.1	6.2	8.1	**8.6**	8.1	8.1	8.6
Collins Aerospace (formerly Rockwell Collins)	7.9	8.0	-0.1	8.1	6.7	7.7	**8.6**	7.8	8.0	8.5
Universal Avionics	7.9	7.9	0.0	7.6	6.1	7.9	**8.6**	8.1	**8.4**	8.6
Honeywell	7.8	7.9	-0.1	8.0	6.4	8.0	8.4	7.9	8.0	8.2
Cabin Electronics										
SD (Satcom Direct)	**8.4**	**8.2**	0.2	8.0	7.3	8.6	**8.7**	**8.5**	**9.0**	**8.6**
Gogo Business Aviation	8.3	**8.2**	0.1	**8.7**	**8.1**	8.3	8.4	7.8	8.5	8.2
Gulfstream Cabin Management	7.9	7.9	0.0	8.2	6.4	**8.7**	8.5	6.9	8.8	7.8
Honeywell	7.8	7.6	0.2	7.8	6.7	7.9	8.3	7.8	7.9	8.1
Collins Aerospace (formerly Rockwell Collins)	7.8	7.3	0.5	7.9	7.2	7.6	8.5	7.2	7.9	8.1
Lufthansa Technik	7.4	7.4	0.0	8.0	5.7	7.8	8.4	6.9	7.8	7.6

*Companies listed in order of their 2019 overall average. Ties are listed alphabetically. Bold indicated highest number in each category

BENDIXKING AND HONEYWELL

(Includes Flight Deck Avionics and Cabin Electronics)

The Results

In the Flight Deck Avionics segment, Honeywell's BendixKing division received a large bump in its Overall Average rating for 2019, up 0.4 to 7.9 and tied for second place with Collins Aerospace and Universal Avionics and also up from last year's fourth place. BendixKing's top category rating was Warranty Fulfillment (8.6).

For Cabin Electronics, Honeywell tied with Collins Aerospace with a 7.8 rating and fourth place.

The Improvements

Honeywell has expanded the ranks of its field service engineers (FSEs) and customer support managers (CSMs) to improve local support and resolution of issues at first contact. FSEs and CSMs held more than 50 events globally for Honeywell customers, along with visiting them in their facilities, for a total outreach to more than 4,000 operators. Customers can find the right contact using Honeywell's Direct Access app or its MyAerospace website.

"Our mission is to create a personalized and effective customer support experience by actively listening to our customers," said Paco Perez, director of customer support. "We utilize feedback from our operator conferences, customer visits, surveys, technical support and order management teams to create robust and innovative customer-centric solutions."

Other Honeywell support efforts include a 24/7 AOG team, with representatives based globally, and the Spares and Exchange Pool locations in Europe, Asia, and North and South America.

To drive enhancements in its flight management system (FMS) products, Honeywell created an FMS users forum to solicit feedback and ideas for future product roadmaps.

The company continues to add content to its Pilot Gateway website and app, which provides free access to relevant technical publications, hot topics, and training videos.

"Our customers come first," said Perez, "whether someone has questions about their account, needs a part, or requires technical assistance, our global teams are ready to assist."

COLLINS AEROSPACE

(Includes Flight Deck Avionics and Cabin Electronics)

The Results

Collins Aerospace, the new name for the company following its purchase by United Technologies late last year, tied for second place this year in the Flight Deck Avionics segment, with a 7.9 ranking, along with BendixKing and Universal Avionics. Collins Aerospace received a top category ranking for Warranty Fulfillment (8.6).

In the Cabin Electronics segment **AIN** readers ranked Collins Aerospace in fourth place (7.8), tied with Honeywell.

The Improvements

Collins Aerospace's product support efforts combine customer satisfaction and next-issue avoidance with consistent customer feedback from surveys, advisory boards, and customer interactions, the company explained, "to drive support strategies for both quick issue identification and creating a low effort experience."

Collins Aerospace takes the customer feedback and adds data analytics to speed up response to customer issues. This process, according to the company, enables "Collins... to gain visibility into customer issues that may not be reflected in more traditional measures."

Customers can access a self-help library if they wish to resolve problems on their own, but they also can contact local customer support engineers based globally or Collins Aerospace's 24/7 Avionics Customer Support Center. These resources are also available for Collins dealers.

UNIVERSAL AVIONICS

The Results

Universal Avionics, which is now owned by Elbit Systems, tied for second place this year with BendixKing and Collins Aerospace, maintaining the same 7.9 rating and ranking it received last year.

In the categories, Universal received high ratings for Warranty Fulfillment (8.6) and Technical Reps (8.4).

The Improvements

Recent Universal Avionics product support efforts include new European offices, training for upcoming new products, new support functional roles, and changes for the extended warranty program.

In Europe, operations are now consolidated under Universal Avionics Systems International (UA International), including activities of ASI Aerospace & Innovation. UA International will serve French OEM customers as well as the European airline, business aviation, and helicopter aftermarket.

The new Universal Avionics ClearVision SkyLens

Universal Avionics flight management systems

head-wearable and SkyVis helmet-mounted head-up displays will be supported by the company's UA technical and field support team. The team is undergoing technical and on-the-job training with Universal enhanced flight vision system (EFVS) engineers, including training on the FalconEye EFVS head-up display. UA Field Support has partnered with UA International to provide 24/7 first-tier for FalconEye database users, including functions such as database downloads, download requirements training, and other technical or administrative issues.

The UA Technical and Field Support team now has a new position, technical support specialist, whose job is to help solve database and equipment problems, freeing up experts who can spend their time on more complex issues.

Universal has appointed a new customer training manager, Amanda Grizzard, to help support the company's growing product line. This will include technical and operational training.

Several new options are now available in Universal's FlightAssure extended warranty program. Designed for business aviation operators, the flat-rate Essential and Premier programs last for three years and have a fully transferable, fixed-price contract. Coverage includes removal and refit by a Universal authorized dealer.

The FlightAssure Premier program adds unlimited no-fault-found coverage, counter-to-counter shipments, extended troubleshooting, technical publications, and FMS software upgrade discounts.

Fleet operators can buy per flight hour with the FlightAssure Fleet program, which covers repair, replacement, and overhaul services and products.

CABIN ELECTRONICS

SATCOM DIRECT

The Results

Satcom Direct (SD) again ranked in first place for the Cabin Electronics segment, with an 8.4 Overall Average, up 0.2 from last year's 8.2 tie with Gogo. The strongest categories for SD this year were Warranty Fulfillment (8.7), Technical Manuals (8.5), Technical Reps (9.0, the highest of any of this segment's category rankings), and Overall Product Reliability (8.6).

The Improvements

Satcom Direct works closely with customers and because of its efforts to provide secure communications, it is positioned to deliver proactive support, "predicting and addressing issues before passengers are even affected," the company said.

During the past year, Satcom Direct has enhanced these capabilities. Operators who fly aircraft equipped with the Satcom Direct Router, for example, often will see problems fixed before they even know about them and without having to download logs or notify Satcom Direct.

The company has invested heavily in its Network Operations Center in Melbourne, Florida, with new "support toolsets for machine learning and artificial intelligence, which help us not only identify when a customer is experiencing an outage, but are also smart enough to highlight a degraded user experience." Even if the primary connectivity service isn't working, Satcom Direct can determine a root cause for customers subscribing to the SD Xperience suite of services.

SD Hub

In addition to offering network and cybersecurity training for customers, Satcom Direct's support team members all undergo constant training, and many are also pilots, so they understand airborne connectivity issues.

GOGO BUSINESS AVIATION

The Results

Gogo Business Aviation ranked second place in this year's Avionics Product Support Survey, with an 8.3 Overall Average, up 0.1 from last year's first-place tie with Satcom Direct. The company received top category ratings for Parts Availability (8.7) and Cost of Parts (8.1).

The Improvements

In October 2018, Gogo introduced its new Dash flight connectivity monitoring toolkit, and now more than 2,000 customers are using Dash, resulting in a 25 percent reduction in trouble tickets. Dash allows customers to see more information about their Gogo system, with real-time data available for onboard health and performance.

Gogo Avance L3

With the deployment of Gogo's high-speed Avance air-to-ground network and airborne hardware, Gogo technicians are able to proactively detect problems before the customer notices that there is an issue, according to Gogo. The percentage of these proactive cases has grown to 20 percent of the total. Technicians are now resolving 98 percent of all technical issues remotely, due to a combination of the Avance system and also improvements that Gogo has made to the technical support team and product support systems.

As a result of continuous investments in placing field support personnel near aircraft manufacturers and Gogo dealers, Gogo's overall trouble ticket rate has declined further, to 3.6 percent. For installations, Gogo's activation rate has reached 94 percent within 24 hours, "a best-in-class activation rate," according to the company.

GULFSTREAM CABIN MANAGEMENT

The Results

Gulfstream's in-house developed Gulfstream Cabin Management System (GCMS) ranked in third place this year with a 7.9 Overall Average and a top category ranking of 8.7 for AOG Response.

The Improvements

Gulfstream has simplified the preset-creation process for its GCMS, and these are stored and ready for the next flight. Presets include lighting, media, temperature, and window shades. GCMS touchscreens can also be used to monitor passenger electronic device use, when the aircraft is equipped with a Satcom Direct Router. This can include which airborne connectivity system is being used, a coverage map for each type of system, and blocking of devices.

Gulfstream's second-generation GCMS hardware is gaining more widespread adoption, the company said, "which provides significant improvements in system responsiveness and reliability." The cabin controls now allow passengers to access a greater range of levels for lighting sources in their seating areas.

Newer Gulfstream models offer optional forward or aft galleys, and the galley and vestibule touchscreen controls can accommodate both configurations.

LUFTHANSA TECHNIK

The Results

Lufthansa Technik received the same 7.4 Overall Average as last year, putting it in fifth place.

The Improvements

Earlier this year, Lufthansa Technik celebrated the 1,000th installation of its nice HD cabin management and in-flight entertainment system on Airbus, Boeing, Bombardier, and Embraer business jets. Lufthansa Technik is developing the fourth-generation nice HD system, and this will offer new personalization and customization features.

Above & Beyond

Survey respondents identified ndividuals who have provided them with exceptional product support and service.

Individual	Manufactuer	Location	
Paul Jones	BendixKing by Honeywell	Phoenix	He goes the extra mile in sorting out and solving problems on the company's legacy equipment.
Joe Dominguez	Collins Aerospace	Cedar Rapids, Iowa	A guru when it comes To Collins Pro Line 21 advanced.
Creighton Scarpone	Garmin	Olathe, Kansas	He goes above and beyond to support the NXi and Active Traffic install in my Mustang.
Jazmin Meza	Honeywell	Mexicali	Whenever we have a problem, she is really responsive and takes care of us really quickly. She also monitors until the problem is fixed. She is a really good hard worker.

Automatic landing tested in Diamond DA42

by Matt Thurber

A team of researchers at the Technical University of Munich (TUM) and project partners have successfully landed a modified Diamond DA42 automatically and for the most part without human intervention using a vision-assisted navigation system to align the airplane with the runway centerline.

Unlike autoland systems in air transport aircraft, which have been in use for decades, the TUM "C2Land" automatic landing system combines navigation inputs with vision-assisted navigation to fly the airplane to the airport then position the airplane precisely on the runway. An advantage of vision-assisted navigation is that it can work on any runway that the airplane is capable of using; there is no need for ground-based navigation facilities such as the instrument landing system that is needed for air transport autoland, which in any case is available only at a limited number of runways.

Automatic landing is necessary, according to Martin Kügler, research associate at the TUM Chair of Flight System Dynamics, because of the incipient development of automated cargo and urban air mobility eVTOL aircraft. Fly-by-wire (FBW) flight controls are becoming more widespread in airliners and business jets, and, he said, "Thus, in our opinion, it's only a question of time until 'advanced autopilots' or even full FBW systems become attractive for general aviation aircraft. We want to showcase how that could work and what the benefits are."

C2Land could help recover the airplane in case of an incapacitated pilot. Other possible applications include helping a pilot land if for some reason a manual landing isn't preferred or when weather conditions are below instrument approach minimums.

For the C2Land project, TUM added a FBW flight control system to the DA42, connected via clutch-equipped electromechanical actuators to the airplane's mechanical controls. The FBW system is connected to ailerons, elevator, rudder, and nosewheel steering, and it also incorporates an autothrottle. A full set of conventional controls for the safety pilot in the left seat is available.

TUM has been working on the autoland program since 2013, focusing on the development of the FBW flight controls and autoland capability.

Technical University of Braunschweig is a partner on the program and developed the navigation system, which includes the vision-assisted navigation. This system employs a visible-light camera and an infrared camera connected to "image-processing software that lets the system determine where the aircraft is relative to the runway based on the camera data it receives."

Vision-assisted navigation helped land a Diamond DA42 automatically, as part of a research project at the Technical University of Munich.

The DA42 made its first autolanding on November 30, 2016, but without the vision-assisted navigation, using GPS-based augmentation (GBAS). Later, satellite-based augmentation (SBAS) was added.

The concept of vision-assisted navigation was to enable future certification of C2Land, Kügler explained, as TUM believes that an autoland system based on GBAS/SBAS isn't certifiable for IFR approaches to the typical 200-foot decision height.

On May 21, the first autoland with vision-assisted navigation was accomplished in Wiener-Neustadt, Germany. The FBW system does not yet automatically lower the landing gear and flaps, although it does output a signal to indicate when the test pilot should do so. TUM would prefer that the landing gear and flaps switch positions correspond to the condition of the landing gear and flaps, instead of allowing the FBW to lower these devices without the switches also moving to the correct position.

After the flight, safety pilot Thomas Wimmer said, "The cameras already recognize the runway at a great distance from the airport. The system then guides the aircraft through the landing approach on a completely automatic basis and lands it precisely on the runway's centerline."

The autoland system does not automatically apply brakes, although it does keep the DA42 aligned with the runway centerline. TUM is planning to add autobrakes. ■

ICAO caps NAT region datalink altitude

A recently issued ICAO North Atlantic Systems Planning Group NAT OPS Bulletin revises the North Atlantic datalink mandate, putting an upper limit of FL410 on operations in the North Atlantic Track (NAT) region starting Jan. 30, 2020. Datalink (generally FANS-1/A equipment) is now required from FL350 to FL390 in the NAT region, and until this bulletin (revision 4) was released and became effective on July 9, there was no cap on the altitude.

Starting Jan. 30, 2020, the datalink mandate changes to FL290 to FL410 in the NAT region, and this is good news for operators of certain airplanes.

For older airframes, Gulfstream's GIV and GV, Bombardier Globals, and the Citation X, for example, are able to climb above FL410 before reaching NAT airspace, unless the outside temperature is abnormally warmer than typical. And an airplane that can achieve that performance can dispense with having expensive FANS equipment installed. If an operator doesn't have to install FANS, this could extend the lifespan of older and less valuable airframes.

Of course, these aircraft still require ADS-B Out by midnight Dec. 31, 2019. But ADS-B Out provides an additional benefit for North Atlantic operations, in that Aireon's space-based ADS-B network running on Iridium's Next satellite network will allow controllers to track such aircraft, even if they aren't FANS-equipped. **M.T.**

News Update

Avionics Sales Soar 14% in 1H

Business and general aviation aircraft electronics sales climbed 14 percent year-over-year, to just more than $1.5 billion, in the first six months, according to the Aircraft Electronics Association (AEA). Forward-fit avionics installations jumped 26.9 percent, to nearly $712.554 million, while retrofit sales increased by 4 percent, to almost $794.340 million.

"Avionics sales for general and business aviation have now seen an increase in year-over-year sales for 10 straight quarters," said AEA president and CEO Mike Adamson.

According to the companies that separated their total sales figures between North America (U.S. and Canada) and other international markets, AEA said 74.9 percent of the first-half sales volume occurred in the former, while the remainder was in the latter.

The reported data is based on net sales price and includes all components and accessories in flight deck, cabin, software upgrades, portables, certified, and noncertified aircraft electronics; all hardware; batteries; and chargeable product upgrades from the participating manufacturers.

Garmin Pilot Integrated with FltPlan

Garmin has added new capabilities to its Pilot EFB application with the integration of FltPlan.com, following Garmin's purchase of the flight-planning company last year. Garmin Pilot users can now access FltPlan's electronic Advance Passenger Information System (eAPIS) and Predeparture Clearances (PDC) services.

The eAPIS and PDC services require paying for premium services at FltPlan. Users can obtain PDCs 20 to 30 minutes before departure on Apple iPads running Garmin Pilot, then view routing, confirm, and activate the flight plan in Garmin Pilot. The app can also be used to enter and upload crew and passenger manifests to U.S. Customs and Border Protection.

New Android Version of WingX Released

WingX Version 3 for Android is now available for devices running Android 5.0 or higher. The new version adds a number of features that have been available on the Apple iOS version of WingX. These include an improved moving map with regional selection for downloads and overlays of terminal area charts, helicopter routes, Gulf Coast and Grand Canyon VFR charts, and VFR Flyaway planning charts on the moving map. Route planning is improved with specific point and route summary information. And Bluetooth connection has been upgraded along with new hardware specs for connecting ADS-B In receivers. WingX Version 3 is a free upgrade, and the app is free for CFIs and retired military aviators. In addition to Apple iOS and Android devices, WingX also runs on Amazon's Fire tablet.

UNDERSTAND 5G FOR BUSINESS AVIATION: SEPARATE FACT FROM FICTION

Join us for lunch on October 22nd at NBAA in Las Vegas to hear from a distinguished panel of experts who will discuss the latest technological advancement for connectivity in aviation – 5G. They'll help you cut through the noise in the market to better understand what a true 5G network is, and what it will mean for anyone traveling on a private aircraft.

GAIN A DEEPER UNDERSTANDING ABOUT

- What elements are required, end-to-end, for a network to be truly 5G
- Steps you can take to ensure your aircraft is ready for 5G when it launches
- Why network redundancy is critical
- Some of the capabilities that 5G will enable now and in the future
- And...answers to any other questions you would like to ask the panel

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OCT 22, 2019

12:00 - 1:30 pm
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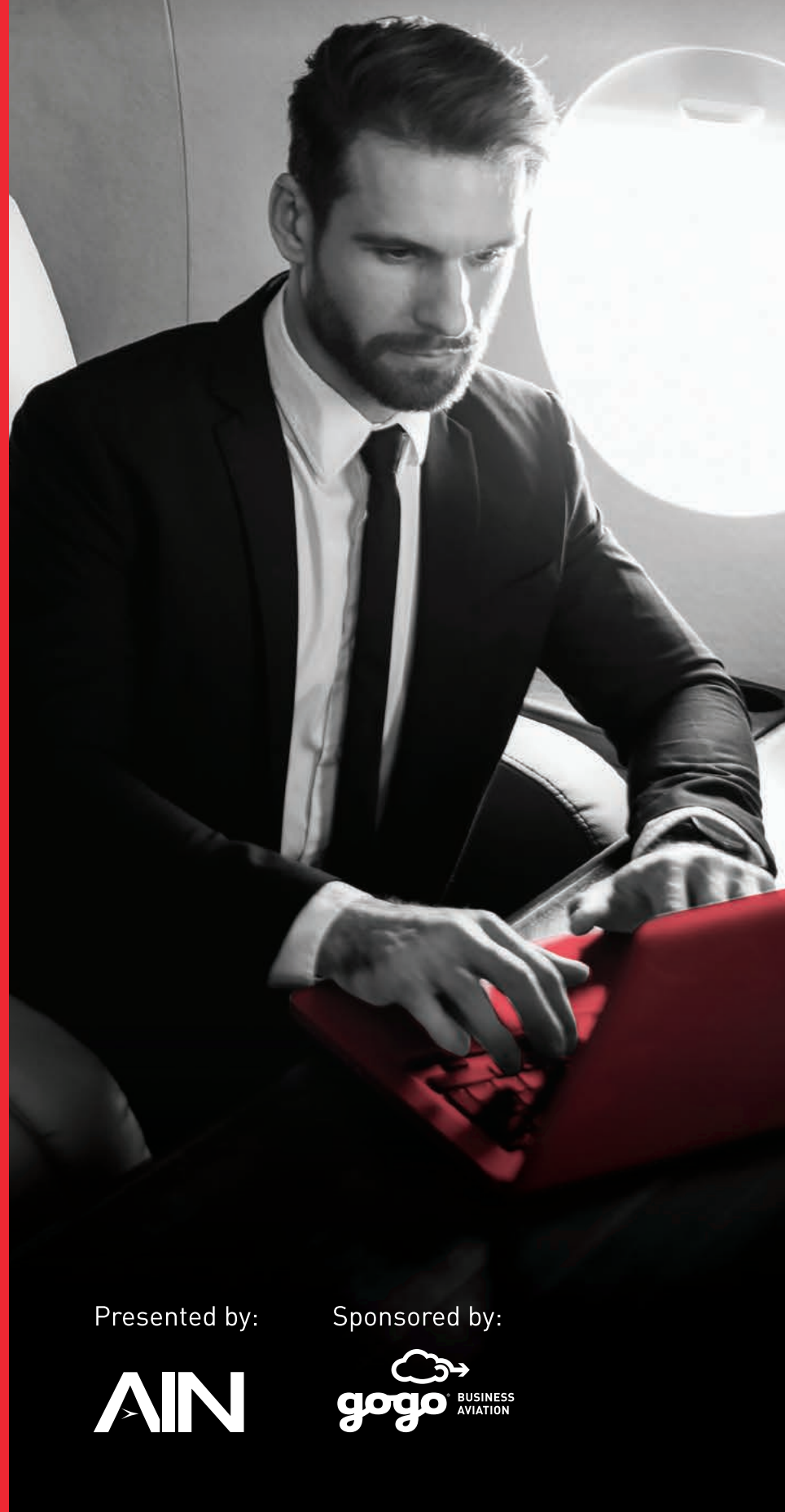

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DAVID McINTOSH

OEMs report mixed earnings but see brighter year-end

by Mark Huber

Airbus, Leonardo, and Bell see signs of hope for the months ahead, the companies reported recently. Though Airbus Helicopters reported marginally higher year-over-year deliveries in the first half, the company still saw declines in revenues, earnings, and orders, parent company Airbus Group announced in late July. First-half revenues at the helicopter division fell 1 percent from a year ago, to €2.371 billion ($2.643 billion).

Meanwhile, Airbus Helicopters' earnings in the first six months slid by 7 percent from first-half 2018, to €125 million, reflecting a less favorable delivery mix that was partially offset by an increased contribution from services, it said.

Textron CEO Scott Donnelly

The company delivered 143 helicopters in the first six months, up from 141 in the same period last year, while new orders dropped to 123 units, down 20 from a year ago.

Despite the 14 percent decrease in orders during this period, Airbus's backlog stands at 7,276 aircraft as of June 30. Helicopter orders logged in the second quarter include 23 NH90 military helicopters for Spain and 11 H145 twins.

Driven by its defense and helicopter sectors, Leonardo posted solid order gains in the first half of 2019. New orders for the period amounted to €6.145 billion, an increase of 34 percent from the year-ago period, while backlog increased 11.4 percent to €36.321 billion.

Revenues increased by 7 percent to €5.962 billion, while EBIT (earnings before interest and taxes) surged by 92.5 percent to €462 million. Net income more than tripled to €349 million. Group net debt also increased to €4.098 billion, compared with €3.474 billion from the first half of 2019.

Leonardo CEO Alessandro Profumo said the first-half results are "in line with expectations and we have achieved a strong commercial performance in both domestic and international markets."

Bell saw its revenue and profit slip on lower military volume and slightly fewer commercial helicopter deliveries in the second quarter of 2019, parent company Textron reported in mid-July.

The Fort Worth, Texas-based manufacturer delivered 53 commercial helicopters in the three-month period—four fewer than in the year-ago quarter—partly contributing to a 7 percent decline in revenue, to $771 million, and a $14 million drop in profit.

Textron CEO Scott Donnelly said he expects improvement in commercial helicopters in the third quarter as manufacturing increases to meet demand. "Despite the lower commercial deliveries in the quarter, we expect to see a ramp in deliveries in the second half of the year supported by continued strong order activity and increased production rates," he explained.

"The demand is there. The orders are there. It's been a matter of getting production up and delivering at a higher rate, and that's where we are now," Donnelly said.

Backlog at the end of the second quarter was $6 billion, down slightly from $6.3 billion at the end of March, but up $500 million from second-quarter 2018. ■

Fessenden resigns from CHC Heli

Long-time CHC CEO Karl Fessenden resigned, effective August 2, to accept a position outside the oil-and-gas industry. He will be replaced on an interim basis by Dave Balevic, CHC senior v-p for engineering and operations.

CHC

Karl Fessenden saw CHC through its bankruptcy reorganization.

CHC's board has initiated a search for Fessenden's successor. "This was a difficult decision that I reached after much reflection," said Fessenden. "It has been a privilege working shoulder-to-shoulder with the best team in the business...CHC is in a strong position both financially and competitively in the marketplace, and the course to a bright future is set by continuing to execute our strategy."

Fessenden oversaw the bankruptcy reorganization and recapitalization of CHC in May 2016 following the April 29, 2016 crash of a company Airbus Helicopters H225 that killed 13 after the main rotor separated from the aircraft in flight. The accident led to a worldwide grounding of the fleet, a redesign of key elements of the helicopter's main gearbox, and large multimillion-dollar payouts from Airbus to operators.

Subsequent to CHC's reorganization, other offshore operators also filed for bankruptcy including PHI and Bristow Group. During CHC's reorganization, it slashed its helicopter fleet from 220 to 137. **M.H.**

News Update

DOT IG Investigating 'Doors Off' Helitours

The Department of Transportation Inspector General (IG) is auditing FAA oversight of the helitour industry at the request of New York's two U.S. senators. The request was triggered by the fatal "doors off" Liberty Helicopters air tour crash in March 2018. The IG will investigate if tourists are permitted to fly with the helicopter doors off on commercial flights, how the safety restraint system used during the Liberty Helicopters crash received its original approval from FAA, and how the FAA reviewed, tested, and approved the supplemental restraint system. Additionally, the IG will examine the FAA's role in ensuring that helicopters in use today meet modern safety standards. During the accident investigation, the NTSB discovered that the FAA had not evaluated the passenger harness system used on the accident helicopter and the FAA subsequently placed new restrictions for the restraint systems on doors-off flights that included requirements that operators obtain an FAA letter of authorization (LOA) for the restraint systems used and that those restraints "can be quickly released by a passenger with minimal difficulty and without impeding egress from the aircraft in an emergency."

Leonardo TH-119 Gets IFR OK

Leonardo's proposed U.S. Navy training helicopter, the TH-119, has received IFR supplemental type certification from the FAA. The TH-119 is equipped with Genesys Aerosystems avionics and a Pratt & Whitney Canada PT6B engine. It is based on the AW119 civil helicopter and features an adjustable observer seat that provides a full view of the cockpit, reinforced skids with removable shoes, and has the ability for "hot" pressure refueling without shutting the engine down. The Navy is expected to award a contract next year to replace its aging fleet of Bell TH-57s. Bell and Airbus are also competing for the contract. If the Navy selects the helicopter, up to 130 TH-119s would be built at Leonardo's FAA Part 21 production facility in Philadelphia.

Robinson Helicopter Adds New MRO Facility

Robinson Helicopter has opened a new standalone 37,000-sq-ft MRO facility in Torrance, California. To maximize efficiency, Robinson organized the new space around the flow of parts at the facility. In addition to the steady flow of repair and overhauled parts, Robinson performs helicopter repairs and overhauls in-house. The new facility is set up to efficiently tear-down, clean, and inspect components, engines, and complete aircraft. Robinson said the demand for quick repair of parts and component overhauls increases each year as the in-service fleet of more than 12,000 helicopters grows.

Era profits on asset sales, as offshore ops merge

by Mark Huber

Merger fever is coming to the offshore helicopter oil patch, as companies appear to be looking toward consolidation as a survival strategy. Meanwhile, the financial red tide continues, with companies using asset disposal as the chief means to improve financial performance. Helicopter services company Era Group announced in late July that it posted $4.9 million in net income for the second quarter, but the positive results were assisted from a one-time $10.9 million gain from the disposal of its 50 percent share in helicopter aftermarket component manufacturer Dart.

The improved results come after Era posted a net loss of $5.9 million in the first quarter and $10.4 million in the year-ago quarter. Nevertheless, there are hints that the commercial situation is improving for Era, which has extensive operations in the U.S. Gulf of Mexico.

Second-quarter revenues increased to $55.5 million, a $4.2 million jump from the first quarter due to higher aircraft utilization rates and revenues from new dry leasing and emergency services contracts, but operating expenses increased by $2.1 million, the company said. Era recently signed new multi-year contracts with Gulf of Mexico deepwater customers Anadarko and Exxon Mobil and has 14 medium and heavy helicopters supporting those contracts.

It also announced a new emergency response contract in Suriname, supporting oil and gas operations there, and a contract with a commercial space company in the U.S. to support two full-time medium helicopters and two additional medium helicopters during manned missions.

As of June 30, the company had $88 million in cash, $124 million in additional available revolving credit, and $81 million in unfunded capital commitments largely in form of orders for Leonardo helicopters—three AW189s (with 10 options) and five AW169s. Deliveries of the AW189s are scheduled to begin next year. Era said it "may terminate" those commitments.

Era announced its results days after the *Wall Street Journal* reported that privately held competitor CHC is continuing to accrue large operating losses amounting to $257 million in the last two years. CHC CEO Karl Fessenden also resigned in late July (*see facing page*), and on July 31 CHC announced that it had retained super law firm Paul, Weiss "to explore merger and acquisition opportunities across the space." Candidates for merger could include Era or competitors PHI and Bristow Group; the latter two filed for bankruptcy protection earlier this year.

Earlier this year Era CEO Chris Bradshaw said the offshore helicopter industry was "not sustainable" in its current form and called for consolidation. ■

EAA AirVenture 2019

Group urges more safety training

A marked upshift in the U.S. fatal helicopter rate in recent months has prompted at least one member of the U.S. Helicopter Safety Team (USHST) to advocate for incorporating the safety tools generated by the organization into initial and recurrent helicopter pilot training. Embry-Riddle associate professor Scott Burgess, a former U.S. Army helicopter pilot and current rotorcraft CFI, told a forum audience last month at EAA Airventure, "We in the industry have to do our part to educate those who come behind us. We have to implement these things [safety tools] in training early on. It is important for flight schools in particular."

MARK HUBER

Embry-Riddle associate professor and USHST member Scott Burgess.

Burgess said this will require a cultural shift when it comes to primary helicopter flight training as currently conducted. "We find ourselves so restricted timewise in the training room that we just cover what is required by the FAA," he said, but clearly more is required. "Ab initio training is where we create that mindset for the new pilot that safety is important and [the pilot] needs to pay attention to this. Showing… statistics is a hell of a lot better than showing…a pool of blood."

Safety tools that are easily integrated into a training program get students "chewing on that steak" and make it more likely that they will "carry that lesson forward," Burgess said. He added that it is also important to incorporate safety tools into recurrent training for experienced, older pilots who need to be told to "use these resources" and given "more guided instruction."

Ultimately, Burgess said that peer performance groups like the USHST can "put a bandage on a lot of things but we are not going to plug the whole dam." In the wake of a rash of fatal accidents in the last 12 months, the organization's goal of reducing fatal accidents from 0.76 to 0.61 per 100,000 flight hours seems largely illusory. After dropping to a rate of 0.54 in 2016, the fatal accident rate rose to 0.72 last year and is poised to go even higher in 2019.

But Burgess said that is not dissuading the organization from developing additional safety tools and safety enhancements based on its analysis of accident data. "Helicopter safety enhancements are the actions behind pursuing a higher safety rate, " he said. "We just need to keep our heads down and keep plugging." **M.H.**

EAA AirVenture 2019

UAM landing challenges

The urban air mobility (UAM) industry needs to exercise caution with regard to building associated infrastructure, particularly rooftop helipads/vertiports. That was the message from heliport consultant and pilot Rex Alexander during the CAFE Foundation's UAM seminar at AirVenture last month. "Airspace is attached to the environment, and how you design it has a great impact on aircraft performance. Infrastructure should not try to kill you if you blink," he said.

"We typically test aircraft at an airport in a pristine environment with lots of room. A lot of the work I do is up on buildings, and that is a whole different environment with a lot of other considerations to determine what is going to be safe. Once you go on a roof, all bets are off," due to shear and other wind anomalies that greet aircraft flying in urban canyons, he noted. "Some aircraft handle better than others. How much performance do you have to have before you overtax the aircraft? I've seen bad infrastructure do this more often than not because bad infrastructure forced the pilot to ask more from his aircraft than it was capable of providing."

Alexander looked at 30 buildings in downtown Los Angeles to determine which would be suitable for passenger eVTOL aircraft operations such as Uber Elevate. "Most were not," he said. Elevated pads for those aircraft face the same challenges that have vexed helicopter operations for years including local-induced turbulence and a goulash of updrafts, downdrafts, and tailwinds that can send windsocks into simultaneous different directions at the same helipad. Even if these helipads can be operated without draconian wind speed restrictions, the ride quality to and from there is so poor as to make them commercially useless. "You don't want passengers getting off your aircraft with a Sic-Sac every time, because if that happens they are not going to come back," he cautioned.

Elevated landing sites for planned eVTOL operations pose the same challeges as heliports.

Building elevated helipads that provide for airflow under the pad can mitigate some of the problem when on the building, but building owners typically don't want their architectural masterpieces defaced with what amounts to a large "top hat" that is not aesthetically pleasing, Alexander acknowledged, noting, "'Aesthetically pleasing' is another term for what's really dangerous in the aviation world."

Still, operating from rooftops with all-electric aircraft can provide increased safety compared with turbine-powered helicopters, Alexander said, as electric aircraft do not have the same power lag. However, unlike today's helicopters, the design and physical space requirements of the various 175 and growing eVTOL designs may make constructing standard-size vertiport surfaces problematic, Alexander said. "The challenge is, what do we design to today? Infrastructure can be a huge help or a huge hindrance." **M.H.**

EAA AirVenture 2019

Vahana eVTOL demonstrator offers glimpse of the future

by Mark Huber

The single-seat Vahana eVTOL demonstrator was on display at Airbus's booth at EAA AirVenture in July, generating excitement about the innovative UAM market.

It was a sign of the times at this year's EAA AirVenture. For the first time, the Airbus booth near the flight line did not exclusively feature one the company's sleek production helicopters on static display, but rather the second prototype of its tandem tilt-wing Vahana eVTOL. A single-seat urban air mobility demonstrator, the futuristic vehicle features eight 45-kW electric motors. It drew more foot traffic than any of the company's helicopters ever did.

Despite the excitement, Amanda Simpson, Airbus Americas vice president for research and technology, cautions that it will be some time before such vehicles are commercially viable or economically sustainable in a way that appeals to a mass market.

"There are limitations as to what we can do with batteries," she said. "If you took the best battery today and made it five times more efficient and you wanted to make an [all electric] airliner the size of an [Airbus] A320 [passenger jet], it would weigh six times as much as the aircraft of today without even putting any passengers or cargo on board. The [UAM prototype] vehicles that are out there have a range of about 30 miles. Getting more than 30 minutes to an hour out of a vehicle the size [of the Vahana] is very challenging today. And the battery technology is going to have to come along much further if we are going to have 100 percent electric vehicles." She added that Airbus is continuing its exploration into improved battery technology.

However, battery capacity is only part of the problem, Simpson said. "The challenge isn't the energy density as it goes to weight and volume, but also the charging challenge. There's only so much energy you can pump into these things over a given period of time. You have to be able to recharge these vehicles when they land. Does that mean swapping out batteries or plugging it in? Where is that energy coming from? How many times can you recharge a battery before you can't get the maximum utilization out of it? It's very easy to measure fuel left in a tank, not so much to determine how many megawatt-hours are left in your battery."

Simpson, like others within the aircraft industry, thinks the first generation of UAMs will have to be hybrids. "I don't see any other way around it. Remember when [electric car maker] Tesla first proposed battery swap-out stations and replacing entire vehicle battery packs in like three minutes so you didn't have to wait for 25 minutes or 40 minutes for a charge? It didn't work out. What the hybrid offers is efficiency, either for boost or distributed power."

Aside from the battery issue, there is also one of commercial viability. Simpson doesn't think that urban air-taxi models, which assume passenger per seat mile costs will be on par with those of the family car, are particularly realistic. Then there is the not inconsequential matter of public acceptance as it relates to autonomous air vehicles to transport passengers. The Vahana is designed to be operated autonomously without a pilot in the aircraft or any accessible flight controls in the cabin. A single touchscreen is used to conduct passenger safety briefings and to confirm a passenger's destination and if he or she is ready for takeoff. Simpson says some potential passengers who have visited the aircraft this week at Airventure find that disconcerting. "People are reluctant to get in vehicles without visible flight controls. It's a leap," she said.

There are other safety-related issues as well. Simpson points out that Airbus and a handful of other companies exploring the UAM market have solid aircraft building experience over several decades but that most of the market entrants do not. "It's only a matter of time before a company new to building aircraft has an accident and then it will raise the bar for everyone else. Here at Oshkosh, in part, we celebrate the Golden Age of aviation. However, when you look back at that age, we killed a lot of people. But there was such enthusiasm that it continued, and the fallout was that it took a long time before people were willing to get on airplanes as part of a scheduled service."

Still, Simpson thinks UAMs have market appeal, but perhaps not in the way currently envisioned. Personally, she thinks that UAMs will take hold in the Asia-Pacific region first, where population densities are higher, regulatory barriers are lower, and governments are often unfettered by the need for democratic debate on public policy. That is not to say that the vehicles will not find a market in the U.S., but initially she thinks that could be more rural than urban, with UAM vehicles proving their worth and safety for medevac and human organ transport and the delivery of expedited goods to ground shipping hubs, before being deployed in more populous areas.

Meanwhile, the lessons from more than 100 test flight hours of the Vahana are being evaluated by Airbus's new urban air mobility unit in Germany. "The aircraft itself was never the objective," Simpson said, but rather a vehicle to learning and evaluating the technology. "The question is how to demonstrate the capabilities of the aircraft and how do we work with EASA or the FAA to develop regulations to govern these? How do you work with the cities and the urban infrastructure to provide landing places? How do you develop an app for your phone that will allow you to call and schedule service and the whole infrastructure behind that?"

The answers to those questions will shape Airbus's decisions when it comes to urban air mobility. A larger Airbus UAM demo vehicle, the four-passenger CityAirbus, began its flight test campaign in May. ■

Eduardo Dominguez-Puerta, head of Airbus's Urban Air Mobility division, talked with ***AIN*** *about the challenges and opportunities facing those trying to bring eVTOL aircraft to market (ainonline.com/VahanaInterview.)*

Witness: AW139 was spinning before fatal Bahamas crash

Additional factual information emerged in late July on the July 4 AW139 accident that killed American coal billionaire Chris Cline and six others during a night flight in the Bahamas. According to the NTSB's preliminary report, an eyewitness saw a running light pattern that suggests the helicopter was spinning on its vertical axis just before it hit the water. According to the report, the witness saw the helicopter depart and climb to an altitude of 40 to 50 feet agl, "then shortly thereafter, he noted blue and white lights spinning to the left at a rate of about one to two seconds between rotations while descending." He estimated that the helicopter "rotated to the left three to four times" before he heard the sound of impact.

At 2:05 a.m., the caretaker of Cline's Bahamas estate unsuccessfully attempted to locate the crash wreckage with a private boat. The helicopter was reported overdue by the FAA at 3:21 p.m, and the wreckage was later found about an hour later by local residents approximately 1.2 nm from the departure point, inverted, in 16 feet of water.

According to the NTSB preliminary, the helicopter was found with the "tailboom separated from the aft fuselage and was recovered in multiple pieces. All five main rotor blades were separated but recovered. The tail rotor assembly, which was also separated, was subsequently recovered. All four tail rotor blades were separated, and one tail rotor blade was not recovered." The helicopter was equipped with a flight recorder, EGPWS, and "several additional components capable of storing non-volatile memory, which were retained for evaluation and data download."

Cline's helicopter dispatched from Palm Beach International Airport (KPBI) at 12:57 a.m. local time and landed on a concrete pad on Big Grand Cay, five nm south of the Walker's Cay Airport (MYAW), between 1:30 a.m. and 1:45 a.m. local. The helicopter then hot-loaded the passengers, two of whom were being evacuated for medical treatment, for a flight to Fort Lauderdale International airport (FLL). IFR flight plans were filed and activated in both directions. Weather at the time was reported as VFR with a 2,500-foot broken ceiling and visibility of 10 miles.

The Air Accident Investigation Department (AAID) of the Bahamas requested delegation of the accident investigation to the NTSB. **M.H.**

Part 135s partner with SWA, CAE on pilot pipeline

by Curt Epstein

Through a formal training agreement, Part 135 operators Jet Linx and XOJet will position themselves in the pipeline between newly-certified pilots and Southwest Airlines. Participants in the Destination 225 program will remain with the Part 135 companies for a minimum of three years before receiving preferential consideration with the airline.

Acknowledging the migration of business aviation pilots to the airlines, aircraft management provider and jet card provider Jet Linx has taken an "if you can't beat them, join them" approach. The company recently announced a formal pilot pipeline agreement with Southwest Airlines, flight-training provider CAE, and other stakeholders, such as fellow Part 135 operator XOJet. Other partners include Bell Murray Aviation, U.S. Aviation, iAero Group's Swift Air, Arizona State University, Southeastern Oklahoma State University, University of Nebraska, and the University of Oklahoma.

Called Destination 225° (for the southwest heading on a compass rose), the program will take trainee pilots through their FAA certification and then funnel them into Jet Linx's and XOJet's programs, where they will gain a minimum three years of cockpit experience. After that, they will receive preferential positioning in Southwest's hiring queue if they desire. During the journey, they will receive mentorship from the airline.

"The program represents a career lifecycle solution for pilots, facilitating entry into the aviation industry and providing opportunities for pilots to elevate and extend their careers," said Jet Linx president and CEO Jamie Walker, adding it is open to collegiate aviation institutions, the military, and other smaller aviation companies. "Participating Destination 225° organizations will be able to offer their most talented pilots the opportunity to move from one organization to the next without having to leave the program."

Path to the Airlines

Like most in business aviation, Jet Linx has experienced churn among its pilot ranks, with a 30 percent attrition rate. "The large majority of that attrition is going toward the airlines," Walker told **AIN**. "So rather than leave it to the pilots to figure that career path out, we want to help them with that. If they do have a desire past [Part] 135 and they want to go towards [Part] 121, we actually want to partner with an organization like Southwest, which can make a clearly identified path for them."

Jet Linx expects to receive the first pilots from the program by next year, but in the meantime, the aircraft management provider has made it immediately available to its current staff. "They could obviously leave today for any of the major airlines should they get recruited," Walker said. "Now we're just offering them a clear path to Southwest to take that step and help them with that transition."

Walker noted that, unlike other smaller operators, his company has not yet encountered any significant problems in filling its flight-deck seats, and he believes participation in this program could help attract pilot talent. "This is definitely a preventive step to ensure that our clients and our company don't experience the difficulty of the pilot shortage in the future," he said. "We're taking steps like this to ensure that we don't feel that shortage by differentiating ourselves from the other Part 135 operators in the industry."

"We're proud to partner with Jet Linx in this comprehensive pilot development mission designed to make a pathway to becoming a Southwest pilot an attainable goal for passionate, qualified individuals," said Alan Kasher, the airline's v-p of flight operations. "Pilots in the Destination 225° pathways will receive training customized to Southwest from our partners and will be held to the competitive hiring requirements for future first officer positions."

According to Walker, the organizations will work to establish a degree of commonality in their training where possible. An additional part of the program will be an ab-initio training program that CAE will administer in cooperation with Argus International. CAE will screen, assess and train candidates selected by the airline. As an alternative to the Part 135 pathway, which allows pilots to earn their experience in the cockpits of modern business jets, newly-minted aviators can also earn their ATP rating by accumulating 1,500 hours as a flight instructor at CAE's Phoenix facility. Over the next decade, CAE expects to train more than 700 new professional pilots as part of the program.

There will be no forced movement through the pipeline, and Walker expects some Destination 225° participants who pass through private aviation might decide that airlines aren't to their liking and return. Likewise, pilots who age out of the airlines will be welcomed at the Part 135 carriers through the program. ■

ALPA: single-pilot ops a risk not worth taking

by Gordon Gilbert

Part 121 of the FARs require a minimum of two pilots in the cockpit during commercial operations, and if the Air Line Pilots Association continues to have anything to say about that, those requirements will never ever be changed to allow single-pilot operations. To bolster its position, ALPA recently published a white paper titled "The Dangers of Single-Pilot Operations."

"Those promoting single-pilot operations argue that reducing crew size will lead to cost savings," the document says. "However, the current body of evidence and experience, including more than a decade of study by NASA and the FAA, shows that the safety risks and challenges associated with single-pilot operations far outweigh its potential benefits."

The paper does not identify any specific entities that are pushing for a change in Part 121 to allow single-pilot airline operations, but it says "efforts have been proposed to research or introduce single-pilot or remote-controlled operations to the air transportation system." It continues, "This concept is not only premature, but it would divert resources that could be directed...to further improve the efficiency of aircraft and infrastructure."

Nor does the paper comment on the fact that under Parts 91 and 135, several large and small turbine airplane models are FAA approved for single-pilot flights, and these approvals are expanding as new designs enter the market. NBAA says it "encourages best safety practices across the board for single- and multi-pilot business aircraft operations, noting that each embraces unique characteristics that require tailored safety solutions, including tools such as duty and flight limits, augmented crews and risk-mitigation checklists."

ALPA concedes that reducing the size of cockpit crews would save airlines and air transport operators money on salaries, benefits, and other expenses, but it contends that some, if not most, of those savings would be offset by costs associated with reduced-crew and single-pilot operations. "These costs include outfitting or retrofitting aircraft with the necessary automation, sensor, and communications systems; ground infrastructure costs; salaries and benefits for remote ground-based pilots... and certification costs."

Pilot Incapacitation

Pilot incapacitation is one of ALPA's chief concerns about single-pilot operations. The white paper refers to published FAA data that reported that over a 10-year period there were 32 occurrences of pilot incapacitation in Part 135 operations resulting in 32 fatalities, all of which the NTSB attributed to single-pilot operations. Under Part 121 operations, incidences of incapacitation never led to a single fatality because the second pilot took over flying duties.

Although this data is from events that occurred 30 to 40 years ago (between January 1980 and July 1989), the association also pointed to more recent data revealing a similar situation. According to the Australian Transport Safety Bureau, from 2010 to 2015, there were 23 pilot incapacitation occurrences per year on average in Australia, 75 percent of them happening in high-capacity air transport operations. With multi-pilot crews, incapacitation had "minimal effect on the flight." But for single-pilot general aviation operations, incapacitation often meant returning to the departure airport or crashing.

"Even as there are discussions about aviation in 2050 and beyond, it is clear the high-performance innovation needed to enable such an operation is currently beyond our reach," concluded ALPA.

"Even in the modern technological age, there is no safe substitute for having at least two human pilots in the cockpit of large passenger and cargo transport aircraft." ■

Rolls Trent 1000 improving but some problems persist

by Cathy Buyck

Rolls-Royce managed to further reduce the average original equipment loss per large engine sold to £1.3 million ($1.58 million), though the UK engine manufacturer continues to struggle to overcome the premature blade deterioration on Trent 1000s that power a part of the Boeing 787 fleet.

"We are pleased with the progress we are making on managing and fixing all of these issues, but reality is that we still have got a lot of hard work to do before it is out of the way," said Rolls-Royce CEO Warren East. Speaking during the company's first-half results presentation with analysts early last month, East conceded the Trent 1000 blade issue continues to cause "a number of our customers significant disruption." The good news, he added, is that the disruption has lessened considerably in the past 12 months, and the number of aircraft on ground (AOGs) today equates to about half the total of a year ago.

While Rolls considers the reduction of AOGs encouraging, the decline hasn't kept pace with Rolls-Royce's original plans, mainly owing to the reduced life expectancy of blades in the high-pressure turbine (HPT) of the Trent 1000 TEN, the latest variant of the engine. The issue came to light in April and prompted EASA to issue an airworthiness directive mandating an engine inspection regime. Inspections to date have shown faster HPT blade deterioration than the manufacturer expected, and some blades need replacement a couple of hundred cycles before reaching the reduced life limit of 1,000 cycles. "Let's be clear, [even] a life limit of 1,000 cycles is completely unacceptable for a typical customer," East acknowledged. The company anticipates that the problem has affected about a third of the TEN engines, and it expects that the projected number of resulting AOGs will prove "much smaller" than those caused by the intermediate-pressure compressor (IPC) blade deterioration of Trent 1000 Package B/C disruption.

However, the HPT blade replacement has added to the workload of Roll-Royce's repair and overhaul facilities—which it expanded to deal with the Package C and B blade issue—and that might affect the pace of the overall AOG recovery on the Trent 1000. "It may take a bit longer for the Package C and B fleets to return to a single-digit AOG," East warned. "It is possible we get there by the end of the year, but it is also very possible that the polluting effect of the TEN will cause a longer delay."

Rolls has been installing the new modified and certified IPC blade designs in the overhaul of all Package C engines since early this year, and a redesign for the Trent 1000 TEN and Pack B IPC blades has begun. East said he expects that the new IPC blade for the Trent 1000 TEN to become available for installation before the end of the year. The Pack B blade will follow "soon after that."

Rolls-Royce delivered 257 large engines—239 installed and 18 spares—in the first half of the year and shipped a further 14 engines to airframers, up from a total 259 shipped units in the first six months of last year and 209 in the first half of 2017. It continued to make progress reducing large original equipment (OE) engine average unit losses, down by £200,000 year-on-year to £1.3 million. Original equipment engine losses in the first half of 2017 averaged £1.7 million. The Trent XWB mainly drove the average loss reduction, though cost-reduction activities across Rolls-Royce's four big engine programs contributed to the improvement. The company also scaled back the launch discounts on the Trent XWB that powers the Airbus A350, East noted. More than 280 XWB-powered Airbus A350s operate with 27 airlines around the world, representing 11 percent of Rolls-Royce's in-service fleet. East anticipates the program will break even by the end of 2020.

Regarding the Trent 7000, East confirmed that shipments are now running smoothly after some hiccups late last year and questions arose about at which rates it would manage to deliver the sole powerplant for the Airbus A330neo. "Rates improved in the first quarter and sustained in the second quarter," he insisted.

The company delivered and invoiced 54 Trent 7000s in the first half, whereas deliveries of the Trent 700 fell to seven units, down from 41 engines in the first half of 2018. ■

Kremlin to invest $3 billion in 35-tonne turbofan for Il-96, CR929

The Kremlin has agreed to provide $3 billion for research and development on the Aviadvigatel PD-35, the largest turbofan ever conceived in Russia, according to Alexander Inozemtsev, head of the Perm-based design house that oversees the project. Although news of the allocation had surfaced earlier, Inozemtsev's confirmation during a recent press tour of the design house marked the first official acknowledgment of the funding. According to him, the PD-35 and its smaller sibling, the PD-14, will keep Aviadvigatel's 3,000-strong team of engineers and technicians busy for many years.

The 35-tonne-thrust (77,160-pound) turbofan stands as a candidate to power the CR929 next-generation widebody jetliner developed by CRAIC, a joint venture between China's Comac and Russia's United Aircraft Corporation (UAC). Although the manufacturer has yet to launch an engine selection process, it has already signaled its intent to invite bids from Rolls-Royce and GE, as well as possibly China's CJ-2000. Schedules call for the CR929 to enter flight tests in 2025 and revenue service in 2027.

A twin-engine version of the Ilyushin Il-96-400M will become the first application for the PD-35, Inozemtsev confirmed. Under the Kremlin's orders, UAC will launch production of the four-engine machine seating 380 to 415 passengers with existing PS-90A1 engines, having ditched Aviadvigatel's proposal to supply the improved PS-90A3M. According to Inozemtsev, the twin-engine derivative will fly in 2025 and acquire certification two years later. Specifications call for the airplane to have a gross weight of 270 tonnes (595,240 pounds) and transport a 41-tonne payload 5,134 nm.

The baseline PD-35 will serve as the foundation for a family of engines with a thrust ranging from 25 to 50 tonnes. If the program proves a success, "Russia will not depend on anybody in long-range aviation and high-end industrial turbines," Inozemtsev said.

Meanwhile, another proposal calls for a de-rated derivative of the baseline PD-35 to power the An-124 Ruslan. Current plans call for combustor trials to begin next year, completion of the first gas-generator in mid-2021, and the first engine to test in 2023.

Conceived as an up-scaled PD-14, from which it takes 16 key technologies, the PD-35 would feature fan blades made of composite materials as opposed to the hollow titanium blades on its predecessor. Another "must-have" technology involves the 3D printing of composite parts, using carbon-plastic thread and resin from local suppliers. According to Aviadvigatel, it has already employed 3D printing for engine parts in the nacelle and thrust reverser, for example, using metals produced from additive technologies on the PD-14. When applied to composites, 3D printing will achieve a huge leap forward. The Aviadvigatel and its industrial partners have already manufactured a number of prototypes and are perfecting technology for a production specimen, first for application on the PD-14 by 2022 and then on the PD-35. **V.K.**

News Update

Air France Signs for A220s

Air France has signed a memorandum of understanding covering a firm order of 60 Airbus A220-300s, options on 30 and purchase rights on another 30, the airline announced on July 30. The A220s will gradually replace the French carrier's Airbus A318s and A319s, of which it now has 18 and 33 units, respectively. Air France's medium-haul fleet—excluding regional aircraft—consists of only Airbus aircraft; in addition to the A318 and A319s, it also flies 20 A321s and 43 A320s. In contrast, its Dutch sibling KLM and the group's low-cost carrier, Transavia, both deploy a Boeing 737 fleet on their medium-haul services, though no Maxes.

Schedules call for Air France to take delivery of its first Wi-Fi-enabled A220 in September 2021.

Air France's fleet transformation will also see the retirement of its 10 A380s by 2022. Air France-KLM said it would study the replacement of the A380s by new-generation long-haul aircraft.

Avianca Brasil Goes Dark

The proverbial light at the end of the tunnel went out for Avianca Brasil as Brazilian civil aviation agency ANAC redistributed its prized slots at São Paulo's Congonhas Airport on July 31 and a majority of appeals judges voted to liquidate the carrier, in bankruptcy protection since December. Even the name is gone, as Colombia's Avianca did not renew the license.

ANAC announced distribution of the 41 daily slots used by Avianca Brasil at Congonhas, awarding 15 to number-three carrier Azul, 12 to MAP Linhas Aéreas, and 14 to Passaredo, the last two being regional airlines that will have to prove their ability to use the slots. Two Flex, which operates Brazil's largest Caravan fleet, also received 14 new slots—using the auxiliary runway due to the type of aircraft they operate—subject to approval by airspace control's Center for Air Navigation Management.

Airbus Starts A220 Assembly in U.S.

Airbus has begun manufacturing the A220 at its U.S. assembly site in Mobile, Alabama, the company announced on August 5. Airbus announced plans for the addition of A220 manufacturing in Mobile in October 2017, when it confirmed its intention to buy the then-Bombardier C Series program. Construction began in January on the main A220 flowline hangar and other support buildings at the Mobile Aeroplex at Brookley, adjacent to where Airbus builds A320s for the U.S. market. The company said it will produce the first few aircraft within some current A320 family buildings and newly built support hangars. It plans to deliver the first U.S.-made A220—an A220-300 destined for Delta Air Lines—during next year's third quarter. The European manufacturer expects the facility will produce between 40 and 50 A220s per year by the middle of the next decade.

Airbus warns of tariffs, Brexit amid ACF 'challenge'

by Gregory Polek

Airbus warned of continuing global trade tensions and potential Brexit-related supply chain and logistical disruptions in its commercial airplanes division as the U.S. amplifies tariff threats and the UK prepares to leave the EU by the end of October. Speaking during the company's first-half 2019 earnings call on Wednesday morning, Airbus CEO Guillaume Faury also highlighted the continued "challenges" associated with production of the Airbus Cabin Flex (ACF) version of the A321neo, deliveries of which have proved slower than anticipated due to what the Airbus boss called the "complexities" of the design.

Faury raised an alarm about a so-called no-deal Brexit despite Airbus's early preparations for a UK exit from the EU in March, by which time former UK prime minister Theresa May had hoped to have reached a deal for an orderly departure. Now, new UK prime minister Boris Johnson promises to leave the EU by October 31, raising the likelihood of an abrupt and disorderly Brexit.

The Airbus CEO reported that although Airbus has stockpiled a month's worth of parts inventory from a majority of its suppliers, logistics involving parts transfer remains a worry. "We are preparing again," said Faury. "It is not fully bulletproof...but with the no-deal Brexit being more likely we see far more willingness by governments to prepare for this scenario, which basically means for us the inability to move parts. For the other risks or problems with Brexit we think we have done the appropriate preparation with the supply chain, but the most risky part is the logistics basically."

Nevertheless, Faury added the eventuality would not affect Airbus's 2019 financial guidance but rather presents a risk for 2020.

As for the tariff threats leveled by the Trump administration over recent World Trade Organization findings that certain elements of EU support for Airbus commercial aircraft programs contravened subsidy rules, Airbus CFO Dominik Asam explained that the manufacturer "of course" has collected all needed data about the ultimate destination of each aircraft and how that might affect deliveries. He added, however, that the company's "key focus" centers on an effort to avert the situation. "We are doing everything we can to make sure the aircraft that we can deliver to our U.S. customers are there," he noted.

Asam added that because the customers pay the tariffs, they would determine whether or not they ultimately take deliveries of the airplanes. Given no one yet knows the extent of the tariffs, he said, he cannot predict the ultimate effect on Airbus. "We don't want to speculate on what our customers will do under such a scenario," explained Asam. "There is also [a question of the factory in Mobile, Alabama]; to Mobile we send kits...and from there we deliver to U.S. customers...so everything is still in the making and hard to predict."

While Airbus believes the trade tensions won't become a financial issue until next year, the A321neo ACF presents a more immediate concern, as the company maintains it intends to meet a delivery goal of 880 to 890 airplanes in 2019. Last week A321neo ACF customer JetBlue expressed "disappointment" in resulting delivery delays that forced the New York-based airline to adjust its schedules in 2020 to reflect 2 percent lower capacity growth than originally planned. Speaking during the airline's second-quarter earnings call with securities analysts, JetBlue CFO Steve Priest reported that of 13 A321neos expected to arrive this year, the airline would take just six. For 2020, a revised schedule now calls for delivery of 14 A321neos rather than 15, leaving JetBlue with seven fewer of the model at the end of 2020 than projected during last October's Investor Day.

First delivered to Turkish Airlines about a year ago, the A321neo ACF encompasses modifications including a new rear section and a modification in which designers removed the door located forward of the wing and introduced new overwing emergency exits in the center section. Airbus plans to make the ACF configuration standard for all A321neos some time next year.

Airbus CEO Guillaume Faury

"There's a lot happening and we are making progress," insisted Faury about the ACF. "It has been a very successful program from a commercial standpoint, and the initial ramp-up of the ACF proved to be more difficult than what we anticipated. So it's the speed at ramping up the ACF is slower than what we had in the plan, and this is what we had to adjust. The complexity comes from the complexity of the plane itself. And you know that we had our issues in 2018 that took a lot of energy [and] focus to solve the consequences of the engine crisis we had in the beginning and middle of last year. Therefore, overall we have lost time in preparing for ACF." ■

Airbus eyes Toulouse for further A321 production

Airbus considers its factory in Toulouse the "frontrunning" location for the addition of A321neo manufacturing capacity, as the European airframer continues to study where it should boost production of its largest narrowbody by 2022.

The deliberations come as the A321 continues to gain share in the overall A320 family backlog—it now accounts for 40 percent of all A320s on order—and Airbus considers what to do with manufacturing space that will open with the end of A380 production in Toulouse in 2021. An Airbus spokesman told **AIN** last month that the company plans to render a decision by the end of this year.

Airbus now builds most of its A321s in Hamburg, Germany, while the plant in Mobile, Alabama, accounts for a less significant portion for the U.S. market. However, Hamburg produces all so-called heads of version A321s, including those for New York-based JetBlue, which has expressed disappointment in delivery delays resulting from challenges associated with the production of the ACF (Airbus Cabin Flex) version. First delivered to Turkish Airlines about a year ago, the A321neo ACF encompasses modifications including a new rear section and a modification in which designers removed the door located forward of the wing and introduced new overwing emergency exits in the center section. Airbus plans to make the Cabin Flex configuration standard for all A321neos sometime next year.

"Airbus regularly reviews its industrial setup, to ensure building aircraft in the most efficient and competitive way," said Airbus COO Michael Schoellhorn. "Following the strong market response for the A321, we target more production flexibility, supporting Hamburg, which currently takes the strain of the A321 and ACF ramp up. We see a need to adapt our assembly capacity to reflect our richer A321 mix within the A320 family from 2022 onwards."

Airbus's Hamburg factory now builds the majority of A321s.

Planning to raise overall A320-family rates from 60 to 63 per month by 2021, Airbus must also consider the additional complexity involved in manufacturing the A321LR—particularly the A321neoXLR, which the company launched with orders for 249 copies during June's Paris Air Show.

"The A321's commercial success is leading to a higher share of A321 production," said the Airbus spokesman. "On top of that A321LR versions represent higher workload per aircraft and more complexity...this is not about increasing rates; it is primarily about generating more flexibility and efficiency within Airbus's current industrial system."

Airbus insists that political considerations will not play into the decision, but the choice will rather wholly hinge on investment cost, lead times, so-called working arrangements, and other commercial considerations.

The spokesman added that although Airbus's plant in Tianjin, China, could potentially absorb some further capacity in the mid-term, once A380 production ends Toulouse makes the best sense in the short term. Mobile, meanwhile, carries "some room to maneuver," he added. **G.P.**

BBA To Sell Ontic to Private Equity Firm

BBA Aviation plans to sell its Ontic unit for $1.37 billion to CVC Capital Partners' CVC Fund VII, the London-based global aviation support and aftermarket services provider announced. The sale of Ontic, a manufacturer of OEM-licensed parts for legacy aircraft, will allow BBA to enhance and invest in its Signature Flight Support business, the company added. "While maintaining a strong balance sheet, we also expect to return between $750 million and $850 million to shareholders and will evaluate how best to structure this return after consultation with our shareholders," said BBA CEO Mark Johnstone.

Acquired by BBA in February 2006 for $67 million, Ontic "has grown successfully" by way of acquisition of parts manufacturing licenses and organic growth, Johnstone explained. "It now supports more than 39,000 legacy aircraft through its portfolio of over 165 licenses for more than 7,000 parts and over 1,200 customers worldwide," he added.

The deal is expected to close in the fourth quarter, following shareholder and regulatory approvals. "Ontic is a growing, highly resilient business and a leading player in what we believe to be a very attractive market," said James Mahoney, senior managing director of Luxembourg-based CVC Capital. "We see multiple opportunities to develop the business further and look forward to working closely with Ontic's excellent management team to take the company to the next level."

Banyan Completes First HondaJet APMG Upgrade

Fort Lauderdale, Florida-based aviation services provider Banyan Air Service has completed its first Advanced Performance Modification Group (APMG) package upgrade on a HondaJet. It reduces the light twinjet's takeoff field length by 443 feet to 3,491 feet, increases forward baggage capacity by 200 pounds, and boosts the mtow to 10,700 pounds.

The package includes a horizontal stabilizer extension, removal of the vortex generators on the tail and winglets, and the elimination of the mid-aileron fences. Upgrades to the Garmin G3000 avionics software enhance situational awareness and safety, through increased connectivity with Flight Stream 510 compatibility, electronic checklist, and advanced integrated takeoff and landing (TOLD) calculations.

In addition to the APMG modifications, the company's MRO team provides a range of services including inspections, structural modifications, engine work, and avionics installations for Wi-Fi and high-speed data, as well as repairs to its G3000 cockpit suite.

SkyWest Adds Mx Base with ACI Jet Hangar Lease

ACI Jet will lease a 17,000-sq-ft hangar at San Luis Obispo County Regional Airport (SBP) to SkyWest Airlines for a maintenance base that's expected to create more than 40 new jobs, the central California FBO operator, MRO provider, charter operator, and aircraft management firm announced. The hangar, which ACI acquired and renovated, was previously an American Airlines maintenance hangar.

Housing up to five regional aircraft simultaneously, the hangar will support overnight maintenance of SkyWest's fleet of nearly 500 regional jets. It is expected to be operational this month.

"ACI has been built by Californians committed to California and this is a great example of how we work to best serve the communities we support," said ACI Jet CEO William Borgsmiller.

Borgsmiller explained that his company is working with community colleges in the area to develop an aviation maintenance program to serve as a pipeline for SkyWest and others at SBP, as well as ACI Jet, which recently was named an authorized service facility for Bombardier Business Aircraft.

West Star Aviation OK'd for Sovereign Winglet Installs

West Star Aviation has received approval to install Winglet Technologies' Transitional winglets on the Cessna Sovereign. The authorization applies to the company's Grand Junction, Colorado facility, one of its four full-service Textron-approved service centers, which has already installed sets on two aircraft.

The company is also moving to add Sovereign winglet capability at its East Alton, Illinois flagship facility.

Members of Banyan Air Service's MRO crew pose by the HondaJet that they recently upgraded with the manufacturer's Advanced Performance Modification Group package. Among the benefits: shortened takeoff distance, and increased mtow.

DAS Offers Warranty Option for Challenger 300/350 Inlet

Dallas Aeronautical Services (DAS) has launched an inlet acoustic and structural inlet overhaul lifetime warranty program for the Bombardier Challenger 300/350, the Texas-based Part 145 repair station announced. The non-transferable warranty covers acoustic panel and inlet structure assembly and functionality for the life of the in-service airplane. It "is the direct result of the quality of our comprehensive inlet repair, field-tested longevity, and post-repair performance lifespan," DAS v-p of sales and marketing Elias da Silva said.

Overhaul components covered by the warranty include wire mesh and perforated skin, including corrosion; bonded assembly to include the core and skin, as well as corrosion; outer skins and erosion on the graphite surface at fastener location; and the mount/attach ring, corrosion included. "Our OEM spec inlet repair is comprehensive, thorough, and continually recognized by Challenger 300 and 350 owners and operators," da Silva added. "Lifetime coverage of both inlet acoustic panel and structure repairs is the next logical step to support our clients."

DAS will also continue to offer the existing transferable 36-month warranty for Challenger 300/350 inlet acoustic and structural inlet overhaul.

Ruag Unveils Europe CPDLC Kit for Legacy 600/650

An affordable solution for controller-pilot datalink communications (CPDLC) over the Aeronautical Telecommunications Network (ATN) in Eurocontrol airspace has been developed for the Embraer Legacy 600/650 by Ruag MRO International, the Switzerland-based company announced.

"Our ATN-assisted modification package is purpose-designed to be straightforward and economical, requiring downtime of five days for implementation," said Ruag head of sales for business jets Christian Karl. "We believe this is a significant step towards making CPDLC technology accessible to a broad scope of Embraer Legacy operators, also in the Eurocontrol area."

The solution is available as a kit and includes approved data and required equipment. But the kit does require Embraer's Service Bulletin for future air navigation system (FANS) CPDLC. CPDLC reduces the requirement for voice messaging while improving the accuracy of communications, as well as offers optimum aircraft routing and other cumulative advantages for flight operations above FL285. "Installing this mod is similar to having a second SIM card on your mobile phone for receiving text messages in Europe," Karl added.

Ruag's business aircraft engineering and MRO unit at Munich-Oberpfaffenhofen, Germany, performs the kit install.

StandardAero Completes Learjet 45 Cockpit Upgrade

StandardAero has completed its first installation of a Honeywell Primus Elite cockpit in a U.S.-registered Bombardier Learjet 45, the Scottsdale, Arizona-based MRO provider announced. Work was performed at StandardAero's MRO facility in Augusta, Georgia, and the installation was one of the first to use JetCity's FAA-approved STC.

Primus Elite improves functionality and overall situational awareness in the cockpit with the addition of charts, maps, and safety enhancements. Installation included removing CRT screens from the Learjet 45 that tend to get hot and replacing them with Primus Elite's LCDs, which have improved visibility and are more reliable.

FAA AC Guides on Continuous Airworthiness Mx Programs

The FAA has issued a draft advisory circular (AC 120-MPTP) containing guidelines, recommendations and suggested means of compliance with a continuous airworthiness maintenance program (Camp). Under Camp, maintenance training, supervision, and activities must be tailored to the user's specific operation. Information in this draft AC includes "regulatory expectations" regarding the implementation of the program.

Camp authorization is a requirement for all Part 121 aircraft, as well as Part 135 aircraft that are type certificated for 10 or more passenger seats. It is an option for other Part 135 certificate holders and Part 91K fractional ownership operations. However, the FAA expects those who join the program voluntarily to follow all Camp requirements.

Arrow Aviation Obtains China CAAC Mx Approval

Helicopter MRO provider Arrow Aviation has been approved as a Part 145 maintenance organization by the Civil Aviation Administration of China (CAAC), the Broussard, Louisiana company announced. CAAC certification adds to its maintenance approvals from the FAA, EASA, Korea's

Ministry of Land, Infrastructure, and Transport, and Brazil's ANAC.

Operating from an 80,000-sq-ft facility, Arrow specializes in helicopter maintenance and completions for commercial, offshore, corporate, and emergency medical services operators.

Yingling Begins Excel/XLS G5000 Installs

Yingling Aviation has launched a Garmin G5000 retrofit program for Cessna Citation Excel and XLS jets, the Wichita-based FBO and MRO announced. "This new STC from Garmin is what the market has been asking for," Yingling avionics department manager Stuart Ashenden said. "It obviously meets the needs and desires of NextGen operators. We are already taking firm reservations and scheduling installations three months in advance."

The new program follows FAA approval of the G5000 Excel/XLS STC by Garmin, for which Yingling is an authorized facility.

A recent expansion of Yingling's facilities at Wichita Eisenhower National Airport (ICT) added four service hangars that include an upgraded paint hangar and additional space for interior and avionics work.

"These additions have not only allowed us to provide MRO services to the growing base of Citation and King Air customers we have acquired since adding this segment a few years ago," Yingling v-p of business development Jerry Pickett added, "but they also give us plenty of capacity to provide rapid and efficient response to Excel and XLS operators who desire to upgrade to Garmin G5000 avionics."

The most visible improvement in Blackhawk Aerospace's newly certified XP67A upgrade for the King Air 300 is the replacement of the four-blade Hartzell propellers with five-blade versions. Under the cowlings, the company swapped out the stock PT6A-60A engines with new uprated PT6A-67As.

Blackhawk Earns STC for King Air 300 Engine Upgrade

Blackhawk Aerospace has received an STC from the FAA for its XP67A engine upgrade for the Beechcraft King Air 300, the company announced at EAA AirVenture in July. The authorization, which applies to both the 14,000- and 12,500-pound gross weight versions of the turboprop twin, replaces the standard 1,050-shp Pratt & Whitney Canada PT6A-60A engines and four-blade Hartzell metal propellers with factory-new 1,200-shp PT6A-67A engines and Hartzell five-blade propellers.

Blackhawk's engineering team was awarded the STC nine months after the first test flight. During testing, the upgrade delivered maximum cruise speeds as high as 343 ktas and an initial rate to climb of up to 4,000 fpm, slashing the climb time to FL350 by more than half over the stock King Air 300. ■

ARSA backs AeroBearings ruling, questions reasoning

by Kerry Lynch

Finding the NTSB did not follow its own precedents, the U.S. Court of Appeals for the District of Columbia overturned a certificate revocation of the Kornitzky Group, which was known as AeroBearings and specialized in the maintenance of jet engine bearings. While the ruling favored the company, the Aeronautical Repair Station Association fears it might have been for the wrong reason.

The NTSB had revoked Kornitzky's repair station certificate in 2018, backing an emergency order imposed by the FAA. That revocation stemmed from two primary allegations: the company had violated aviation safety regulations by repairing bearings without the necessary technical data and Kornitzky had intentionally falsified maintenance records by recording only the engine bearing inspections without indicating the disassembly and repair work. The FAA had said the company was required to disclose any maintenance affecting the airworthiness of the bearings but had only mentioned "overhauled" in certain return-to-service forms.

In a recent decision, the appeals court upheld that the company performed maintenance without the appropriate technical data but set aside the charge of intentional falsification. "The Board departed from its own precedents when considering whether Kornitzky Group had acted with the requisite knowledge," the appeals court said.

Founded by the late Michael Kornitzky and Zev Galel in 2010, the company originally received FAA certification in 2011. In 2016, the FAA had received two complaints about technical data that Kornitzky used, prompting a review by the FAA's Engine Certification Office. The office determined the company's data was not specific enough to support the bearing repair work.

A year later, the company was notified that the FAA had incorrectly issued one of the company's ratings surrounding bearing maintenance and that it had 10 days to submit to a reinspection or face suspension. After the follow-up inspection, the FAA determined that the company had exceeded the scope of work permitted by the OEM and issued an emergency certificate revocation, alleging the violation of several maintenance regulations involving intentional falsification and lack of requisite data.

An NTSB administrative law judge subsequently found that Kornitzky had violated maintenance regulations because it was unable to produce the required technical data. But the Safety Board judge also rejected the intentional-falsification claim, saying the statements on the required forms were not false when examined alone. The NTSB's administrative law judge decided the appropriate sanction was certificate suspension pending compliance rather than a permanent revocation.

Subsequent appeals to the NTSB resulted in the Board affirming the conclusion that Kornitzky had violated the maintenance regulations surrounding the necessary technical data. But in a reversal, the NTSB then backed the FAA's intentional-falsification claim.

"The [NTSB] found that Kornitzky Group's selective disclosure of information rendered the [return-to-service] Form 8130-3s false because the company had excluded other information in a way that gave an incomplete and misleading impression of the work it had performed. The Board further found that the company acted with knowledge of that falsity," according to the appeals court, noting the NTSB then decided this warranted certificate revocation.

Kornitzky then turned to the U.S. appeals court, arguing that the NTSB acted arbitrarily and capriciously in finding violations of the FAA's maintenance and intentional-falsification regulations. However, the appeals court determined that the NTSB correctly concluded Kornitzy "made a materially false representation by referencing some but not all of its work affecting the bearings' airworthiness."

But the NTSB failed to adequately address whether the company acted knowingly, the appeals court added. "Under its own precedent, the Board was required to find that Galel, Kornitzky Group's owner and sole principal, correctly understood the Form 8130-3 requirements but still instructed his company to provide a false response," the appeals court said. "Galel's subjective knowledge, however, was not addressed by the administrative law judge and the Board did not make the required factual finding...In short, the Board identified no evidence that Galel had intentionally disregarded the Form 8130-3 instruction."

ARSA Response

ARSA, fearing the NTSB decision could affect other maintenance providers, had filed an amicus brief disputing that the company intentionally falsified information. "During the original proceedings, the inspector agreed there was no false or incorrect information on any of the forms; the entries were simply incomplete" ARSA had argued, adding, "A maintenance release is a certification that the work performed was accomplished correctly; it is not a complete maintenance record."

ARSA executive director Sarah MacLeod reiterated that belief in response to the appeals court decision. "In this case, the court may have come to the correct conclusion but for the wrong reason. There was no falsification by omission because the FAA Form 8130-3 is the maintenance release portion of a maintenance record," MacLeod said. "The agency has stated in numerous guidance documents that a single word is enough to describe the work performed."

MacLeod added that a maintenance release "does not, and never has, contained the details that the court seemed to think were necessary." Since a repair station is the only maintenance provider that has to provide a "maintenance release," the regulations involving maintenance recordkeeping, CFR 43.9, explains that the return-to-service form is different from a complete maintenance record. "Those nuances got lost in the court case and thus an ignorant decision was rendered that requires the agency to make clear which certificate holder has what responsibilities for creation and retention of maintenance records." ■

FBO PROFILE: Naples Aviation

NAPLES AIRPORT AUTHORITY

Naples Aviation is the sole full-service FBO at Naples Airport and handles more than 110,000 general aviation aircraft each year.

Facility aims to exceed expectations

Year-round warm weather, white sandy beaches, and sophisticated dining, shopping, and culture, along with the recent U.S. tax law changes, have attracted high-net-worth individuals—and their private jets—to the Southwest Florida city of Naples. "Naples still has that small-town charm but provides plenty of amenities and allows high-net-worth individuals to remain low profile," said Naples Airport Authority executive director Chris Rozansky. "And the recent tax changes are also driving a population shift from high-tax states to lower-tax ones like Florida."

Naples Aviation, the sole full-service FBO operated by the airport authority at Naples Airport, is benefitting from this population shift, with year-to-date aircraft traffic surging by more than 10 percent, according to FBO manager Mike Hushek. In 2018, the general aviation-only airport averaged more than 9,000 operations per month and totaled 110,000 for the year; this year, it is averaging 10,000 per month and had logged 90,000 through the end of July.

As for most Florida destinations, the peak season in Naples is from Thanksgiving to Easter, though Rozansky said it "seems to be extending through the Fourth of July." But its absolute peak day is December 26, when the airport can see 500 movements, with upwards of 150 aircraft—mostly business jets—parked on the ramp overnight.

To handle this amount of traffic during peak season, Naples Aviation—known as Naples Airport Authority before the facility was rebranded late last year—scales up to more than 60 employees during the winter months. All staff members receive both Avfuel and NATA Safety 1st training.

It is also well equipped to accommodate the influx of general and business aircraft during these peaks, with 10 aircraft refueling trucks (eight dedicated to jet-A), six 28.5-volt GPUs, two 60-KVA ground-power units, air start and air conditioning cart, and Lektro 8850 tugs.

The Avfuel-branded facility also has a 200,000-gallon fuel farm, helping to ensure it doesn't run low on fuel on the busiest of days. Besides its large fleet of fueling trucks, Naples Aviation also has two avgas self-serve tanks available. It offers volume fuel uplift discounts, AvFuel Contract fuel, and AvFuel AvTrip points. The FBO, which specializes in quick turns, is the exclusive fuel provider at the airport.

Naples Aviation's two-story, 19,000-sq-ft general aviation terminal includes a passenger lounge with refreshment bar, business center, conference room, fitness center with showers, crew lounge with snooze room, and flight-planning room. Amenities include eight crew cars, on-site rental cars (Go Rentals year-round; Avis, Hertz, and National during peak season only), and a ramp-side concierge cart for more efficient quick turns. It also offers a full range of aircraft services, 208 T-hangars, and bulk hangar storage.

Additionally, on-site U.S. Customs services are available daily from 10:30 a.m. to 7 p.m., with after-hour services incurring an additional fee. Last year, 1,300 aircraft cleared U.S. Customs at Naples Airport; through the end of July, 1,200 aircraft did so this year, Hushek said.

Notably, Rozansky said, "The airport is 100 percent self-sufficient, and all FBO profits go back into the airport," which celebrated its 50th year operating under the airport authority in July. "Since then, all funds used for the airport's operation, maintenance and improvements have been generated from activities at the airport or from federal and state grants; the airport receives no property tax dollars. The Florida Department of Transportation values the airport's economic impact to the community at more than $440 million annually."

Rozansky and his team are currently updating the airport's master plan, which he said will include an expansion of the general aviation terminal to accommodate future traffic growth. Since this is just in the planning stage, there are not yet any concrete plans detailing how much the facility will be expanded.

Overall, he said, Naples Aviation and the airport itself strives to "provide an exceptional experience exceeding every flight crewmember and visitor's expectations." Naples Airport is minutes from downtown Naples, the Gulf of Mexico, and I-75. **C.T.**

California FBO Changes Ownership, Name

Major changes are coming to Sky Trek Aviation, the lone service provider at California's Modesto City-County Airport. The FBO has changed ownership for the first time in more than three decades, with the business purchased by long-time customers Matt Bosco and Dan Kimmel. They have also changed its name to Modesto Jet Center and have hired John Earl—who spent the last 20 years with San Francisco-area Pacific States Aviation, most recently as director—as its new general manager.

The new ownership plans to refurbish the Avfuel-branded facility's 1,500-sq-ft terminal, which includes a lobby, pilot lounge with snooze room, 10-seat conference room, and staff offices. Mather Aviation, which has had a long-standing relationship with the new owners, will operate the company's Part 145 maintenance and avionics division. The complex offers more than 60,000 sq ft of hangar space and can accommodate aircraft up to a Gulfstream G450.

Signature Makes a Splash in the Caribbean

Signature Flight Support has greatly expanded its FBO network in the Caribbean with the purchase of IAM Jet Centre and its affiliated companies. The BBA Aviation subsidiary will acquire bases at Barbados's Grantley Adams International, Grenada's Maurice Bishop International, Tortola's Terrance B. Lettsome International, and Jamaica's Sangster International airports. IAM, which was founded in 1989, is constructing the first FBO at St. Lucia's Hewanorra International Airport, which will also be included in the deal.

Signature will also take over IAM's VIP suite services in Barbados and Grenada, which will expand its Elite Class program to five airports in the Caribbean and the UK. It provides guests with luxury lounges and expedited transfers to commercial flights, allowing them to bypass the airline terminal entirely.

"Signature Flight Support's purchase of IAM Jet Centre is a valuable addition to our growing network of Caribbean FBOs," said Mark Johnstone, CEO of BBA Aviation and Signature. "IAM has an established reputation for excellence in aviation passenger and ground handling throughout the region, and the addition of their five FBO locations complements our worldwide network, our strategic expansion into additional North American markets, as well as the growth of our Signature Elite Class VIP passenger services division."

The purchase is the largest for Signature in terms of FBO locations since it acquired Landmark Aviation in 2016.

New Hangar Debuts at Dallas Love Field

Business Jet Center (BJC), one of five (soon to be six) FBOs at Dallas Love Field, has completed its newest and largest hangar, which has begun accepting tenant aircraft. The 49,000-sq-ft Hangar M is already fully leased and brings the facility to more than 250,000 sq ft of total aircraft storage space. The $8.5 million project took a year to build, features 28-foot-high doors, and can accommodate the latest ultra-long-range business jets such as the Bombardier Global 7500.

The addition of the new 49,000-sq-ft Hangar M at Business Jet Center's facility at Dallas Love Field, brings the FBO to more than 250,000 sq ft of aircraft storage space to serve private aviation in the Metroplex.

Signature Flight Support has bolstered its Caribbean service network with the addition of the four (soon to be five) FBOs in the region, including at Jamaica's Sangster International Airport at Montego Bay, developed over the past three decades by Barbados-based IAM Jet Centre.

The full-service FBO experienced a record-breaking year in 2018, with continued growth through the first half of this year. Despite the addition of Hangar M, the facility remains near capacity in terms of aircraft occupancy.

Michigan FBO Under New Management

Sanderson Field Municipal Airport (ANJ) in Sault Ste. Marie, Michigan, has a new FBO operator, following the passing of the long-time proprietor of Soo Air. Now known as Great Circle Aviation Services, it is run by brothers Dave and Ted Waite, who also operate an aircraft repair shop at Chippewa County International Airport. They received an initial two-year contract from the city for the lone FBO at ANJ, with an option for an additional two years.

The FBO features an approximately 7,000-sq-ft terminal with a pilot lounge, kitchen, and concierge, along with a 10,000-sq-ft community/aircraft maintenance hangar that can accommodate Cessna Citation-sized aircraft. The Avfuel-branded location offers 24/7 self-serve fueling for jet-A and avgas with assistance from the FBO staff during the business hours of 8 a.m. to 5 p.m.

An artist's rendering shows the planned $20 million Sheltair FBO at Colorado's Rocky Mountain Metropolitan Airport. The company began operations there in January from a temporary facility as the second service provider on the field.

The FBO is situated near the airport's U.S. Customs facility, which with prior notice can provide clearance 24/7. Dave Waite is a maintenance technician who performs aircraft inspection and repairs. He told **AIN** the company is in the process of obtaining its FAA Part 145 repair station approval. He plans to start with avionics install and repair and expand into airframe and powerplant work.

Sheltair Breaks Ground on Colorado FBO

Sheltair broke ground last month on its FBO at Colorado's Rocky Mountain Metropolitan Airport (KBJC). The 21-acre, $20 million facility will include a 10,000-sq-ft terminal featuring a full slate of pilot and passenger amenities, aircraft arrivals canopy, a heated 35,000 sq ft hangar—capable of sheltering the latest big business jets—with 5,000 sq ft of build-to-suit office space, 10 acres of aircraft ramp space, and parking for up to 120 vehicles.

In January, Sheltair opened a temporary facility at the Jefferson County airport, the fourth busiest in the state, which handled 171,994 operations last year, an average of 471 a day. The Colorado FBO represents the Florida-based company's first location outside the U.S. East Coast, and the new complex is expected to be completed in summer 2020.

"We are proud and honored to serve the aviation community and the regional economy that depends on a strong and dynamic KBJC," said company founder, chairman, and CEO Jerry Holland. "When we made the strategic decision to expand our company's presence westward, we quickly realized that Jefferson County would be a welcoming partner because its public and private leadership recognizes the power of general aviation." ■

by David Jack Kenny

PRELIMINARY REPORTS

Pilot Under the Influence, Lacked Credentials

CESSNA 550, JULY 17, 2019, MESQUITE, NEVADA

The pilot of a Cessna Citation that crashed at the Mesquite airport while en route from Pasco, Washington, to Las Vegas Henderson Executive Airport was taken into custody on a charge of operating an aircraft "while under the influence of intoxicating liquor" and transported to the Clark County Correctional Facility after a brief hospital visit. The airplane was largely consumed by a post-crash fire. The reason for the diversion has not yet been released.

FAA records show that the pilot, 41-year-old Ryan Dashiell, had not been certified for single-pilot operations in the C550.

Four Fatalities in B.C. Floatplane Accident

CESSNA 208 CARAVAN 675, JULY 26, 2019, ADDENBROKE ISLAND, BRITISH COLUMBIA, CANADA

The pilot and three passengers were killed and five more passengers were rescued with serious injuries after their Cessna Caravan floatplane struck a hillside on Addenbroke Island en route to a fishing lodge on nearby Calvert Island. Press accounts describe weather in the vicinity as including heavy cloud cover with moderate winds and light rain.

The accident site was near a scheduled B.C. Ferries route, and the Northern Sea Wolf remained on the scene for six hours rendering assistance. Survivors were evacuated by an RCAF Cormorant rescue helicopter; an RCAF Buffalo patrol airplane, three Coast Guard vessels, and a Coast Guard helicopter also responded to the scene.

Nineteen Killed in Crash of Pakistan Army King Air

BEECHCRAFT B300 KING AIR 350I, JULY 30, 2019, MORA KALU, RAWALPINDI, PAKISTAN

A Pakistan Army Aviation Corps King Air 350i crashed into a densely populated section of the garrison city of Rawalpindi during a training flight, claiming the lives of at least 14 people on the ground as well as all five on board. As many as 16 other civilians were reportedly injured, many critically, raising the prospect that the death toll could rise. The accident occurred at about 2 a.m. local time, igniting a fire that quickly spread to several residences. The BBC quoted two witnesses as saying that the airplane's tail was already on fire before impact.

Operational details of the accident flight remain obscure. At press time, the Pakistani military had not released any information on the progress of its investigation.

Retired Race Car Driver, Family Escape Burning Citation

CESSNA 680A, AUG. 15, 2019, ELIZABETHTON, TENNESSEE

Former Nascar driver Dale Earnhardt Jr., his wife, and their 15-month-old daughter escaped uninjured after the right main landing gear of his Citation Latitude collapsed following a bounced landing at the Elizabethton, Tennessee Municipal Airport. Two pilots and the Earnhardts' dog also escaped unharmed from the jet, which was engulfed in flames by the time it slid to a halt. All were briefly hospitalized for examination, then released.

Witnesses said the Citation, registered to Earnhardt's company JR Motorsports, bounced "at least twice" before sliding off the end of the runway, through the airport's perimeter fence, and coming to rest on a highway. Photographs from the scene suggest the weather was clear and dry. The fire consumed both engines, the right wing, and most of the fuselage aft of the cabin door.

FINAL REPORTS

King Air Suffered Fatal Spin

BEECHCRAFT E90, DEC. 4, 2016, SOTILLO DE LAS PALOMAS, TOLEDO, SPAIN

The pilot of the Beechcraft E90 destroyed by an in-flight break-up lacked the type rating required to command that model under Spanish regulations and was operating in forecast icing conditions with an inoperative weather radar, contrary to the airplane's Master Minimum Equipment List. The final report of Spain's Comisión Investigación de Accidentes e Incidentes de Aviación Civil (CIAIAC) also found that several major maintenance operations, including replacement of the right windshield and left fuel tank assembly as well as the airplane's most recent annual inspection, had been conducted by an unauthorized provider. The pilot and all three passengers were killed after the King Air entered an unrecoverable spin and its horizontal stabilizer failed in overload.

The purpose of the flight was to deliver the airplane to Portugal's Cascais airfield so its weather radar could be repaired at a facility specializing in this equipment. After several hours of weather delays, it departed the VFR-only Cuatro Vientos airport at 3:57 p.m. local time. Radar track data showed it climbing steadily at about 1,200 fpm through FL190 toward its assigned altitude of FL210 when it suddenly yawed left and began to descend. Groundspeed decreased from 120 knots to 80 and then 20 as its descent rate increased from 663 fpm to more than 7,000. Radar contact was lost less than one minute after the initial deviation, and ATC received no distress calls. Analysis of the radar data concluded that the airplane entered a fully developed spin that progressed into a flat spin. The consistency of its ground track and climb rate suggested it was flying by autopilot at the time of the upset.

The extent of damage from both ground impact and the resulting fire precluded definitive determination of the cause of the loss of control. However, fragments of both horizontal stabilizers and elevators were found in five separate locations up to 1,520 meters (7/8 mile) from the main wreckage, indicating that they had separated in flight. Examination of the engines and propellers suggested that both were turning at the moment of impact, though the right engine might have been producing more power. Although moderate to severe icing was forecast up to FL 350, with temperatures of -17 to -19 Celsius at FL 180, there was no evidence of the type of foreign object damage indicative of ice ingestion. Investigators could rule out neither momentary stoppage of the left engine due to ice crystals nor a stall triggered by asymmetric deposition of airframe ice.

The airplane's pilot and owner, a 68-year-old Spanish citizen, held a private pilot license with instrument and multiengine piston ratings but had not obtained the type rating required by Spanish regulations. His logbook was destroyed in the accident, so his make-and-model experience could not be determined.

Engine Failure Caused Portuguese Cheyenne Crash

PIPER PA-31T CHEYENNE II, APRIL 17, 2017, CASCAIS-TIRES AIRPORT, PORTUGAL

Portuguese investigators have determined that a loss of power in the left (critical) engine shortly after takeoff caused the pilot to lose control of the Swiss-registered turboprop twin. The pilot, three passengers, and the driver of a delivery truck were killed when the airplane rolled left and crashed into the loading dock of a supermarket less than half a mile (700 meters) from the departure end of Runway 17 of the Cascais-Tires Airport. A post-crash fire consumed much of the wreckage, including the magnesium housings of both engines' reduction and accessory gearboxes, and investigators were unable to pinpoint the cause of the engine failure from the parts that remained.

The final report of the Gabinete de Prevenção e Investigação de Acidentes com Aeronaves e de Acidentes Ferroviários (GPIAAF) concluded that damage signatures on the left engine's power turbine showed that it was spooling down at the moment of impact, while the right engine was producing full power. The GPIAAF also noted that the airplane was operating very close to its maximum gross takeoff weight, making failure of the critical engine especially difficult to manage. Its center of gravity appeared to be within limits, though its exact takeoff weight could not be determined.

Witnesses reported that the Cheyenne began banking left during a slow climb to about 300 feet. The bank steepened and airspeed decayed until the airplane stalled. The 69-year-old pilot, a French national holding a Swiss passport, had a PA-31/42 type rating and about 4,900 hours of flight time. French authorities did not track his make-and-model experience.

Drag Chute Deployment Brought Down Learjet

LEARJET 25, MAY 17, 2017, TOLUDA-LICENCIADO ADOLFO LÓPEZ MATEOS INTERNATIONAL AIRPORT, MEXICO

The accidental deployment of the airplane's drag chute after the pilots successfully managed the inadvertent deployment of the number one engine's thrust reverser during takeoff caused the fatal crash of a Learjet 25 on departure from the Toluda-Licenciado Adolfo López Mateos International Airport, according to Mexican investigators.

The final report of the Comisión Investigadora y Dictaminadora de Accidentes e Incidentes de Aviación (CIDAIA) relied on examination of filaments in the annunciator panel's warning lamps and the indications found on the airplane's thrust gauges to conclude that the thrust reverser deployed after the jet had accelerated through V1. The crew followed the relevant checklist, reducing thrust on engine number one to idle and continuing the takeoff. Footage from the FlyMex hangar's surveillance camera captured the image of the jet flying with the drag chute deployed. It reached a maximum altitude of about 1,000 feet above the ground before losing airspeed, rolling left, and crashing barely one-quarter of a mile (453 meters) from the departure end of Runway 33. Both pilots were killed.

The first officer, in the right seat, was the pilot flying on the positioning leg to the Durango-Guadalupe Victoria Airport. The drag chute deployment handle is located on the right side of the central control pedestal and protected by two security interlocks. In the absence of a flight data recorder, investigators were unable to determine how the drag chute came to be deployed. ■

FSI's recurrent G550 course focuses on rejected takeoffs

by Jerry Siebenmark

FlightSafety International has begun offering an advanced rejected takeoff go/no-go recurrent course for Gulfstream G550 pilots that reviews and reinforces the skills and lessons learned in its initial course. "In addition to gaining proficiency in the go/no-go decision-making process, this invaluable course gives pilots another opportunity to fly their aircraft in the safe environment of a simulator under the high stress and demands of an emergency return to the airport after takeoff," said FlightSafety senior v-p of operations Dann Runik.

Pilots will confront up to 13 scenarios in FlightSafety International's new Advanced Rejected Takeoff Go/No-Go Recurrent course for the Gulfstream G550.

A four-hour simulator session will present pilots with up to 13 new scenarios in which they have to decide whether to continue or abort a takeoff. The course is also designed to help validate an operator's specific takeoff briefings by testing them against a variety of airports, environmental conditions, and weights.

It's currently being offered at FlightSafety's learning center in Savannah, Georgia. Later, it also will be offered at the company's centers in Dallas; Long Beach, California; and Wilmington, Delaware. Similar courses are being developed for the Gulfstream G650 and G280 that are expected to be available later this fall. ■

Pilot dozed off at controls of MedFlight helo

The FAA is investigating an incident in which a Boston MedFlight pilot briefly fell asleep at the controls of a helicopter, believed to be an Airbus H145, while transporting a patient to a Boston hospital from Martha's Vineyard, Massachusetts, on June 24. The pilot, whose identity was not immediately released, overflew the designated helipad before turning around and completing the flight without incident.

"Our investigation determined that fatigue was a factor and we are now working with a fatigue management consultant and a safety consultant to review our policies and procedures so that this isolated incident does not happen again," Boston MedFlight said in a statement. The company operates several twin-turbine helicopters and airplanes.

Although the FAA acknowledged it is investigating the incident, the agency did not provide any additional details, such as how it became aware of the occurrence or if certification action against the pilot is being considered. Meanwhile, the not-for-profit aeromedical company said the pilot is "no longer employed by Boston MedFlight."

Boston MedFlight declined further comment beyond saying, "Throughout our 34-year history as a nonprofit organization providing critical care medical transport to over 75,000 patients in need, the safety of our patients and crews has always been our highest priority." **G.G.**

by James Wynbrandt

LHT Converts Execliner to Utility Use

Known for its VIP airliner cabins, Lufthansa Technik (LHT) reversed the process in June, delivering a former ACJ319 execliner converted into what it calls the world's most modern observation aircraft, for use by the German armed forces in Treaty on Open Skies radiation monitoring missions. All told, LHT made more than 150 modifications to the platform during the 26-month makeover, from minor AD implementation to installing digital infrared sensor and optical camera systems, and structural modifications including adding glass belly panels for cameras and other observation technologies.

The cabin now sports four ergonomic operating stations, and 16 additional seats for staff of the overflown state and partner nations, with maintenance flaps and access doors throughout the cabin allowing immediate access to all systems for inspection. Three STCs were required for the modifications of the aircraft, slated for approval by both civil and military aviation authorities.

Amac, Pininfarina Team on A350-900 Interior Concept

Swiss C&R specialist Amac Aerospace and Italian design firm Pininfarina have introduced a widebody cabin concept for the A350-900 that they said will "make passengers forget" they're on an aircraft—even if it's a customized executive airliner. Drawing on architectural, nautical, and aerial influences, the multifunctional interior space is "conceived around the traveler's desires and able to fulfill all his needs: relaxing, working, dining, entertaining conversations, and holding meetings," with private and working spaces joined in a seamless flow.

A welcoming area includes a wet bar, and a lounge space is sculptured by a flowing band drawing passengers to different environments such as a cocoon-like relaxing area; a dining/meeting space; and a "green space" dedicated to personal, relaxing moments.

Bespoke Helo Interiors in Demand

Demand for bespoke helicopter interiors appears to be in vertical ascent. Airbus Corporate Helicopters reported delivering in May the first of a pair of ACH145 rotorcraft ordered by a longtime customer, primarily for transporting passengers to and from super yachts in the Mediterranean and Caribbean regions. The cabins feature a bespoke version of the ACH Line interior concept designed by London's Harrison Eidsgaard, who also created the yacht-inspired external livery. The second ACH145 is slated for delivery in the fourth quarter. The same customer has on order an ACH160, the company's in-development medium twin, to be outfitted with the ACH Exclusive cabin, which includes a pair of wide, hinged doors and electrically actuated, retractable footsteps.

Meanwhile, ACH has notched its first sale of an ACH160 in Southeast Asia, ordered by a Philippine customer, also to be outfitted with the Exclusive interior.

Designers Create Zen Cabins

A pair of European firms has introduced Zen-themed aircraft interior concepts. London-based haute interior specialist Winch Design introduced for the ACJ neo and BBJ Max airframes its Yoga cabin, an homage to relaxation and meditation inspired by a yoga devotee client. Incorporating sustainable materials, natural fabrics and organic textures, the open floor plan creates a spacious, airborne yoga studio, with full height mirror panels and foot-worn timber flooring. The living space opens into the bathroom, intersected by a large, glass-walled aromatherapy steam shower, allowing natural light to flood the bathroom, which features green onyx walls, carved stone basins, and brass fittings. The aft cabin of the concept interior features a private wellness retreat.

Meanwhile, Swiss business aircraft interiors specialist Yasava unveiled its Zen design concept, calling it the first "zero carbon footprint/CO_2 neutral" aircraft interior, achieved in part by "carefully selecting our suppliers and materials, based on sustainability criteria and carbon footprints" and closely monitoring and auditing the completions process. Incorporating features from its Astral interior design, Zen is further refined to improve space utilization, ergonomics and comfort, and includes new OLED features. Yasava said the Zen aircraft's final net carbon footprint will be "efficiently, transparently and securely sequestered in natural carbon sinks via the [blockchain powered] Oxi-Zen," a carbon trading platform the company is currently developing. ■

Winch Design is developing a yoga inspired cabin for the ACJ neo and BBJ Max. The floorplan allows for a spacious cabin for in-flight yoga practice.

by Gordon Gilbert

Within 6 Months

Oct. 1, 2019

U.S.: Interior Fire Protection

The FAA is proposing to amend certain airworthiness regulations for fire protection of Part 25 aircraft interior compartments. This proposal would convert those flammability regulations from detailed, prescriptive requirements into simpler, performance-based standards. Comments are due on October 1.

Jan. 1, 2020 **4 Months to Deadline**

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. under IFR and where transponders are currently required, and in Taiwan IFR airspace above FL290. Mexico: Requirements are proposed for a start date of Jan. 1, 2020, in Class A, B, C, E above 10,000 feet, and other specified airspace. The requirement could take effect earlier in some airspace over the Gulf of Mexico.

Jan. 1, 2020

Aircraft CO_2 Emissions

The first international standards for carbon dioxide (CO_2) aircraft emissions have been enacted by ICAO and initially apply to large subsonic jets, including business jets, for which the application for a type certificate was submitted on or after Jan. 1, 2020.

Jan. 30, 2020

Datalink Com in North Atlantic

Phase 2 of the North Atlantic datalink mandate began in February 2015, at which time flights within the North Atlantic Tracks between FL350 and FL390 were required to be equipped with FANS-1/A controller- pilot datalink communications and ADS-C. The program expanded to these altitudes in the entire ICAO NAT region on Dec. 7, 2017, and will apply to all flights in this region between FL290 and FL 410 on Jan. 30, 2020.

Within 12 Months

June 7, 2020 **9 Months to Deadline**

Europe: ADS-B Out Mandate

The ADS-B Out retrofit requirement in Europe takes effect June 7, 2020. 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.

Aug. 13, 2020

EASA: Training Requirements

Flight crew training rules for certain helicopter and airplane operations would be updated under a notice of proposed amendment (NPA) from the European Union Aviation Safety Agency. In addition to implementing evidence-based training (EBT), this NPA proposes to improve existing requirements covering commercial operations by airplanes and helicopters, specialized operations, and non-commercial operations with complex aircraft. Comments are due August 13.

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.

Aug. 22, 2020

Australia: Airport Certification

Revised Australian airport certification regulations (CASR Part 139) and an accompanying revised manual of standards (MOS) start on Aug. 22, 2020. There will be a transition period up to two years for registered airports, due to the requirements to develop an airport operations manual. Certified airports are expected to largely be compliant with the new MOS at commencement.

Beyond 12 Months

Feb. 25, 2021 and Jan. 27, 2022

17 Months to Deadline

Canada: ADS-B Out Mandate

The implementation date of Feb. 25, 2021 is proposed for ADS-B use in Canadian Domestic Airspace, initially limited to Class A airspace. The mandate would be expanded to include Class B airspace above 12,500 feet on Jan. 27, 2022. Beyond this date, expansion of ADS-B requirements mandate to other Canadian domestic airspace will be based on an assessment of the safety and efficiency requirements for specific airports.

Jan. 1, 2021

EASA: Cockpit Voice Recorders

Cockpit voice recorders with a recording duration of at least 25 hours will be required on commercial airplanes with an mtow of 60,000 pounds or more manufactured from Jan. 1, 2021. ■

Compiled by Kerry Lynch

ROMAIN TRAPP

DENISE WILSON

ROBBIE IRONS

VALÉRIE GUILLEMET

DANNY ROBAYO

Romain Trapp has been appointed president of *Airbus Helicopters'* U.S. subsidiary, Airbus Helicopters Inc., and head of the North America region for helicopters. He succeeds **Chris Emerson**, who is assuming the role of president of Airbus Defence and Space. Trapp previously served as CFO of Airbus Helicopters Inc. in Grand Prairie, Texas, beginning in 2008. In addition, Airbus Helicopters is realigning its executive committee beginning September 1. **Alain Flourens**, currently executive v-p of industry, will become executive v-p of operations with responsibility for industry and procurement. **Wolfgang Schoder**, currently executive v-p of light helicopters and governmental programs, will take the role of executive v-p of strategy, as well as retain his duties as general manager of Airbus Helicopters Germany. **Matthieu Louvot**, executive v-p of customer support and services, will take over light helicopters and government responsibilities from Schoder in September as executive v-p Airbus Helicopters programs. Beginning in January, Louvot will lead a unified Airbus Helicopters programs. In Louvot's place, **Christoph Zammert**, currently head of program support, will be promoted to executive v-p customer support and services and join the executive committee. **Mathilde Royer**, head of global set-up optimization project, will take the role of digital transformation officer and head of company transformation. Royer also will join the executive committee. Also joining the executive committee is **Bernhard Weigl**, head of aviation safety and quality.

Dave Labrozzi was promoted to vice-chairman at *Global Jet Capital*. Most recently COO, Labrozzi had more than 35 years of aviation finance experience with GE, including 22 in corporate aviation financing. **Stefan Abbruzzese**, meanwhile, joined the aircraft finance provider as chief commercial officer. Abbruzzese brings nearly 30 years of experience in financial services to his new role, including leading the bank loan business at GE Capital and most recently serving as partner and COO at private equity firm L Catterton.

Desert Jet has brought business aviation veteran **Jared Fox** on board as its new CEO, as founder and current CEO **Denise Wilson** transitions to chairman of the parent company, Desert Jet Holdings. Fox, who took the CEO role effective August 1, most recently served as a regional sales manager for Epic Aviation. He also served with TWC Aviation, Corporate Aviation, and American Airports. Wilson founded Desert Jet in 2007. She additionally joined *jetAviva* as sales director for the Citation CJ, CJ1, CJ1+, and M2 markets.

Baker Aviation named **Ray Goyco, Jr**. CEO of a newly formed organization, Baker Aviation Services Group, which will focus on strategic partnerships, contract management, compliance, and Hot-Stop "L" fire containment kit and parts sales. Formerly president and COO of Baker's aviation maintenance organization, Goyco has led Baker's maintenance activities since 2012.

Pegasus Universal Aerospace named **Robbie Irons** CEO, working with founder and chairman **Dr. Reza Mia** as the company pursues investors for its hybrid turboshaft/electric-powered Pegasus One VTOL, branded as the Vertical Business Jet. Irons previously has held senior business development and aircraft sales roles with ExecuJet Aviation at Johannesburg's Lanseria Airport.

Joshua Hebert, founder and CEO of **Magellan Jets**, was named chairman of the Air Charter Safety Foundation (ACSF). Herbert—who founded Magellan in 2008 and has since steered it into a multifaceted business with charter, jet card, and other services—has been vice-chairman for ACSF. He is succeeding former chairman **Michael Graham**, the director of flight operations safety, security, and standardization at Textron Aviation who has been nominated to the NTSB.

The *National Air Transportation Association* (NATA) elected its new board of directors, naming as chairman **Curt Castagna**, president and CEO of *Aeroplex/Aerolease Group*. Castagna, who had been vice-chairman, succeeds outgoing chairman **Jeff Ross**, president and CEO of *Ross Aviation*. **Clive Lowe**, senior v-p of business development for *Atlantic Aviation*, takes over as vice-chair.

Valérie Guillemet was named head of human resources at *Dassault Aviation*, becoming the first female member to sit on the company's executive committee. Guillemet, who joined Dassault Aviation as an aerodynamics engineer in 1988, led the Rafale and Falcon-series systems department, the Rafale production line, and then the Falcon 7X and 8X line before becoming deputy manager in charge of production and most recently Mérignac site manager.

Embraer Executive Jets appointed **Pedro Paiva** director of sales for Western and Southern Europe, based in Amsterdam. Paiva joined Embraer in 2002 and has since led several different customer services teams and has played a role in the creation of the Embraer Executive Jets brand.

Roy Gioconda joined *Traxxall* as v-p of customer success, a newly created role. Gioconda previously served as director of service quality assurance at CAMP Systems, director of maintenance at Guardian Jet and Jet Logistics, and director of quality at FlightWorks.

FlightSafety International promoted **Michael Burger** to manager of its training center in Teterboro, New Jersey, taking over for **Danny Robayo** who recently became v-p. Burger joined FlightSafety in 2004 as an instructor at the Farnborough, UK center and has held a series of positions of increasing responsibility, including assistant manager in Teterboro and EASA head of training. Robayo, meanwhile, joined the Teterboro facility in 1991 and has since held positions of increasing responsibility. FlightSafety also promoted **Ed Koharik** from v-p to senior v-p. A 23-year U.S. Air Force veteran, Koharik joined FlightSafety in 2015 and has also served as general manager, visual systems.

The *National Transportation Safety Board* named **Dana Schulze** director of the Office of Aviation Safety. Schulze had been deputy director of the Office of Aviation Safety since 2012 and also recently had been acting director.

Scott Stoki was promoted to engine overhaul manager for *Duncan Aviation*. Stoki was an engine line team leader at Duncan Aviation's Lincoln, Nebraska facility.

Arizona-based *Cutter Aviation* has promoted HondaJet and Pilatus PC-24-rated captain **Jon Lassak** to chief pilot in its charter and flight management department.

Allianz Global Corporate & Specialty appointed **Tom Fadden** global head of aviation.

Miguel Gallardo joined *Stevens Aerospace and Defense Systems* as a Gulfstream maintenance sales representative. Gallardo brings a background in end-user maintenance and parts sales, and business aviation experience in Latin America, to his new role.

René Changtin joined *Acass* as aircraft sales director–Canada & Eastern U.S. Changtin has a background in engineering, flight testing, customer relationship management, technical sales support, and, most recently, business jet sales and acquisitions. ■

AWARDS and HONORS

The National Aeronautic Association (NAA) is creating a new award, the **Bruce Whitman Trophy**, in honor of the late chairman, president, and CEO of FlightSafety International and noted philanthropist. Whitman, who passed away in October 2018, will be the initial recipient of the trophy established in his name in recognition of his contributions to the aerospace industry. NAA will present the first trophy to Whitman's family and colleagues at the NAA Fall Awards Dinner.

"Bruce will be sorely missed by the thousands he has touched," said NAA chairman Jim Albaugh. "Over the years, he gave generously of his time to promote and remember the sacrifices of our military."

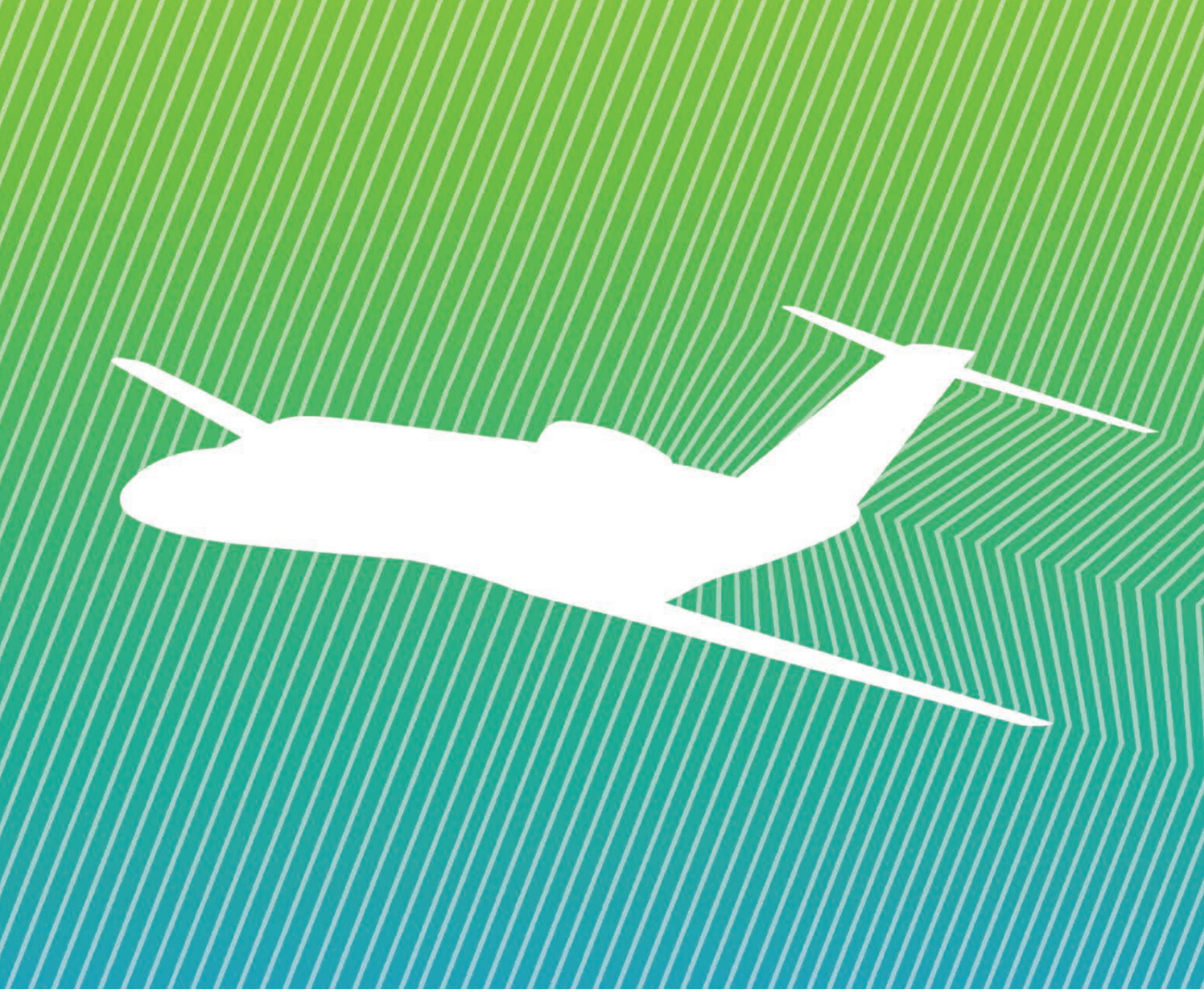
The award will be presented annually to "outstanding individuals who have made significant contributions to aviation or aerospace in the U.S., and who by working with museums and other institutions have promoted an appreciation by students and the broader public of the sacrifices and legacy of members of the military service." ■

FINAL FLIGHT

Mary Nevada-Morgan, who had left a mark for strong customer service during her eight-year tenure with Million Air Dallas, died unexpectedly on June 29 at the age of 35. Born Sept. 17, 1983, in Dallas, she graduated from the University of Dallas with a bachelor's degree in human resources and management.

Nevada-Morgan later joined Million Air and had served as a senior customer service representative/account specialist. In that role, company executives said, she worked with a number of corporate operators, many of whom became "loyal customers (fans)." Her customer service earned her "Above and Beyond" recognition in this year's **AIN** FBO Survey.

The FBO chain said the "entire Million Air family…will truly miss her. She will always be remembered for her joyful heart, love for others, and the spirit that will always be Mary." She is survived by her husband, Christian Morgan, daughter, Jocelyn Nevada-Morgan, and mother, Norma Reyes Nevada. ■



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SEPTEMBER

CITATION JET PILOTS CONVENTION...
September 4-8, Colorado Springs, CO.
Info: citationjetpilots.com.

MEDITERRANEAN BUSINESS AVIATION... September 6,
The Palace Hotel, Sliema, Malta.
Info: aeropodium.com/mba.html.

RTCA SC-216 AERONAUTICAL SYSTEMS SECURITY PLENARY... September 9,-12, 9-23,
rue Paul LaFargue, Saint Denis, France.
Info: email: khofmann@rtca.org;
rtca.org/content/upcoming-committee-meetings.

INTERNATIONAL BRAZIL AIR SHOW... September 11-13,
GRU Airport-São Paulo International Airport,
Guarulhos, São Paulo, Brazil.
Info: +55 11 97664-7750; ibas@sators.com.br;
internationalbrazilairshow.com.br/en/.

MASSACHUSETTS BUSINESS AVIATION ASSOCIATION ANNUAL SCHOLARSHIP GOLF TOURNAMENT...
September 12, The International, Bolton, MA.
Info: massbizav.org.

2019 GWBAA GOLF CLASSIC... September 12,
1757 Golf Club, Dulles, VA.
Info: birdeasepro.com/2019gwbaagolf/.

IS-BAO WORKSHOP: MARRAKECH, MOROCCO...
September 23, Marrakech Menara Airport, Morocco.
Info: mebaa.com.

MEBAA SHOW MOROCCO... September 25-26,
Marrakech Menara Airport, Morocco.
Info: mebaamorocco.aero.

OCTOBER

CHC SAFETY AND QUALITY SUMMIT...
October 1-3, Omni Dallas Hotel, Dallas, Texas.
Info: chcsafetyqualitysummit.com.

REDBIRD MIGRATION FLIGHT TRAINING CONFERENCE...
October 15-17, Wings Over the Rockies Blue Sky
Aviation Gallery, Englewood, CO.
Info: migration.redbirdflight.com.

NBAA TAX REGULATORY & RISK MANAGEMENT...
October 20-21, Las Vegas, NV. Info: nbaa.org.

NBAA-BACE BUSINESS AVIATION CONVENTION & EXHIBITION... October 22-24,
Las Vegas Convention Center, Las Vegas NV.
Info: (202) 783-9000; nbaa.org/events/bace/2019/.

MALTA AVIATION CONFERENCE AND EXPO...
October 30-November 1. Info: mace.aero/.

NOVEMBER

FLIGHT SAFETY FOUNDATION INTERNATIONAL AIR SAFETY SUMMIT... November 4-6, Taipei.
Info: flightsafety.org/events.

BOMBARDIER SAFETY STANDDOWN... November 12-14,
Omni Fort Worth Hotel, Fort Worth, Texas.
Info: safetystanddown.com.

IBERIAN PENINSULA BUSINESS AVIATION CONFERENCE...
November 14, Madrid, Spain. Info: ipbace.com.

DUBAI AIRSHOW... November 17-21,
Airport Expo, Dubai, UAE. Info: +97 1 4286 7755;
dubaiairshow.aero.

AFRICAN AIR EXPO... November 27-29,
King Shaka International Airport, Durban, South Africa.
Info: africanairexpo.com.

DECEMBER

MASSACHUSETTS BUSINESS AVIATION ASSOCIATION SAFETY DAY... December 4,
Marriott Burlington. Info: massbizav.org.

JANUARY 2020

HAI HELI-EXPO... January 27-30,
Anaheim Convention Center, Anaheim, CA. Info: rotor.org.

FEBRUARY 2020

SINGAPORE AIRSHOW... February 11-16,
Changi Exhibition Center, Singapore.
Info: singaporeairshow.com.

MARCH 2020

AIR CHARTER SAFETY SYMPOSIUM... March 3-4,
NTSB Training Center, Ashburn, VA. Info: acsf.aero/symposium/.

INTERNATIONAL WOMEN IN AVIATION CONFERENCE... March 5-7,
Disney's Coronado Springs Resort, Lake Buena Vista, FL.
Info: wai.org/conference.

NBAA INTERNATIONAL OPERATORS CONFERENCE...
March 16-19, Charlotte, North Carolina. Info: https://nbaa.org/events/2020-international-operators-conference/.

AIRCRAFT ELECTRONICS ASSOCIATION INTERNATIONAL CONVENTION AND TRADE SHOW... March 24-27,
Nashville, TN. Info: aea.net.

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