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Flight testing of Boom Supersonic's XB-1 demonstrator will begin this year in the supersonic corridor stretching across the Mojave Desert in California. New rules issued by the FAA will enable these flight tests at speeds above Mach 1.

FAA final rule clears path for civil supersonic flight testing

by Kerry Lynch

The FAA took another step toward facilitating the development of civil supersonic aircraft with the release of a final rule on January 6 that clarifies procedures for obtaining special flight authorizations for flight testing beyond Mach 1.

Adopted largely as proposed in June 2019, the final rule outlines the information needed for applications of special flight authorization and designates the FAA program office that will process those applications. It also creates a more "user-friendly" format, the agency said. The rule further recognizes that supersonic flight testing could be used to gather noise data.

However, the rule does not lift the ban on supersonic flight over land. Nor does it represent a policy change; instead, the rule streamlines and simplifies access to the various information necessary for special flight authorizations.

The FAA did revise language in the final rule involving the environmental review process. It had originally proposed language to clarify information necessary for the FAA to make a National Environmental Policy Act (NEPA) determination. However, after receiving comments, the agency found the language actually generated confusion.

"The proposed language providing more detail about what an applicant could

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INSIDE this issue

FEATURE

Flight testing Dassault's new SmartThrottle

Important Events Note

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

Aviation International News

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DASSAULT AVIATION

As We Go To Press

JEFFRIES: BIZJET DELIVERIES TO RISE MARGINALLY IN 2021

While overall sentiment is up in Jeffries Equity Research's 10th biannual business jet survey, the newly released report calls for 3.7 percent growth for new jet deliveries this year, down from its midyear 2020 prediction for a 6 percent increase. Based on responses from 102 business jet brokers globally, the survey's sentiment index climbed by 1.7 points, to 6.6 on a 10-point scale, compared with 4.9 in June and 5.7 rating a year ago. The survey did note an expected silver lining from the pandemic: continued elevated interest in business aircraft flying. In fact, 45 percent of those surveyed believe interest in fractional and charter will climb post-Covid. However, in the near-term they expect sales transactions to drop by 11 percent and residual values to sink 14 percent thanks to the pandemic's global macro-economic impact.

SIGNATURE MOVES INTO NEW BATON ROUGE FBO COMPLEX

Signature Flight Support has moved its FBO at Louisiana's Baton Rouge Metropolitan Airport/Ryan Field next door to a newly-renovated terminal and hangar complex that previously housed a corporate flight department. As part of its purchase of Landmark Aviation in 2016, Signature inherited a 1960s-era facility at the airport, and it purchased the adjacent, larger location last year. After two months of renovations, the new FBO consists of a 15,000-sq-ft hangar (50 percent larger than the previous hangar) that can accommodate aircraft up to a Gulfstream G650, as well as a 5,000-sq-ft adjoining terminal with a 12-seat conference room, pilot lounge with showers, and offices.

ACS OFFERS 2021 PREDICTIONS FOR CHARTER INDUSTRY

A rising number of insolvencies within the aircraft charter industry and an increase in private jet bookings among business travelers will be among the developments this year, according to global broker Air Charter Service (ACS). "We are already seeing a reduction in marketing spends from these [charter] companies who often portray the results of heavy marketing investment, as well as loss-leading pricing, as illustrations of the success of their business model to generate new investment," said ACS group private jets director Andy Christie. "Without the new customers generated through these strategies, the rate of growth will slow and, for some, that will mean serious cash flow issues, which may lead to insolvency." ACS also expects private jet travel bookings this year to return to 2019 levels through a combination of increased business travel—85 percent of 2019 levels—and leisure travel.

DASSAULT CONSOLIDATES MRO SALES OPERATIONS

Dassault Aviation has consolidated its MRO sales operations into a single organization for customers in Europe, the Middle East, Africa, and Asia-Pacific. Led by Thierry Salaün, the new organization brings together the MRO sales operations of Dassault Falcon Service (DFS), TAG Maintenance Services (TMS), and the Falcon segment of ExecuJet MRO Services, the latter two of which Dassault acquired in 2019. According to Dassault, the consolidation will enable operators to choose from a wider range of C-check venues, such as DFS Le Bourget and Bordeaux-Mérignac; TMS Geneva and Farnborough; and ExecuJet in Dubai, Lanseria, and Kuala Lumpur. Further, the consolidation allows Dassault to provide operators more information on the availability of modifications and cabin, avionics, and other upgrades across its MRO footprint.

IATA URGES ADOPTION OF TRAVELER VACCINE CERTIFICATES

In an open letter to European Commission president Ursula von der Leyen, IATA director-general Alexandre de Juniac called on all branches of the European Union to support the idea of a common digital European Covid-19 vaccination certificate that would allow individuals to travel freely within Europe without Covid-19 testing. The proposal, advocated by Greek prime minister Kyriakos Mitsotakis, would result in a "renewed freedom of movement, beginning with those who are vaccinated," said IATA. De Juniac has railed consistently about the effects of quarantine requirements on air traffic and called on governments to replace them with testing regimes. During IATA's most recent briefing on the effect of the pandemic on the airline industry, he characterized the near-term outlook for his membership as "bleak" due to governments' failure to heed IATA's recommendations and coordinate a plan to restore connectivity.

FAA OPENS MX, PILOT WORKFORCE DEVELOPMENT GRANTS

The FAA is soliciting applications for maintenance and pilot workforce development grants. Aircraft Pilots Workforce Development Grants between $25,000 and $500,000 are available for programs that expand the pilot workforce and educate students to become pilots, aerospace engineers, or unmanned systems operators. Similar Aviation Maintenance Technical Workers Workforce Development Grants are available for programs that prepare an inclusive base of aviation maintenance technicians. These programs were created by the FAA Reauthorization Act of 2018.

NBAA lauds IRS final rule for no managed-flight tax

by Chad Trautvetter

NBAA is praising issuance of a pre-publication final rule by the U.S. Internal Revenue Service (IRS) that clearly exempts owners who conduct flights on their own aircraft with a management company's assistance from paying the 7.5 percent federal excise tax (FET) for commercial flights. The Tax Cuts and Jobs Act (TCJA) passed in 2017 included language specifying this exemption, but now the IRS's final rule, which was pending publication in the Federal Register, will codify it.

"NBAA and its Tax Committee—led by chair John Hoover, a partner with the law firm of Holland & Knight—championed industry efforts to work with the Department of the Treasury and IRS on regulations that correctly implement the TCJA management company provision," NBAA said. "That effort has now resulted in a final rule from the IRS that represents the successful conclusion of the NBAA-led campaign to prevent the improper and retroactive application of FET to management companies and aircraft owners."

In its final rule, the IRS adopted several significant changes suggested by NBAA, such as the exemption for common business aircraft ownership structures, including owner trust arrangements used to register thousands of business aircraft for regulatory compliance purposes. The rule also eliminates a complicated allocation method that would have been required when owners take flights on a substitute aircraft and also clarifies that aircraft owners qualify for the FET exemption regardless of whether flights on their own aircraft are conducted under FAR Part 91 or 135.

"We applaud the IRS and the Department of the Treasury for their longstanding dedication to this regulatory project, which fully implements a key provision of the Tax Cuts and Jobs Act," said NBAA president and CEO Ed Bolen. "This victory is the result of concerted efforts by NBAA and the business aviation community to achieve clear and equitable application of federal excise tax for thousands of aircraft owners and management companies." ■

Honda Aircraft making wings in new facility

With the opening of its new wing production and service parts facility in Greensboro, North Carolina, Honda Aircraft will be able to manufacture HondaJet wings concurrently and thus improve manufacturing efficiency. The new facility encloses 83,100 sq ft and houses a main wing assembly hangar, service parts warehouse, paint booth, and offices. Groundbreaking for the new facility was held on July 30, 2019, and it was finished in September 2020.

Located at the Honda Aircraft campus at Piedmont Triad International Airport in Greensboro, the facility represents an additional $24.3 million investment, part of a total of more than $245 million the company has invested at Greensboro. "Honda is a mobility technology company and our newest facility further increases efficiency of assembly," said Honda Aircraft president and CEO Michimasa Fujino. "It also will house more service parts to support the rapidly-growing HondaJet fleet." That fleet now numbers more than 170 airplanes that have collectively logged more than 63,000 hours.

The HondaJet wing is designed for reduced aerodynamic drag and high structural rigidity, with exterior skins machined from solid aluminum alloy.

"Since entering the market five years ago," Fujino said, "the HondaJet has received a tremendous response from customers. This facility will enable us to continue to provide our growing global customer base with the highest level of customer support." **M.T.**

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NATA launching SMS pilot for charters, repair stations

by Kerry Lynch

The National Air Transportation Association (NATA) is launching a Voluntary SMS Implementation Project (VSIP) to assess the application of safety management systems across the diverse Part 135 charter operator and Part 145 repair station communities.

Expected to kick off shortly with an organizational meeting next week, the project comes as the FAA has stated plans to issue regulations next year that would mandate Part 135 and 145 operators to implement SMS. The agency is widely anticipated to use regulations already in place for Part 121 carriers (FAR Part 5) as a basis for the new regulations.

A key question, however, is whether such requirements can roll over successfully to the range of operations involved in Parts 135 and 145, especially in areas such as training and data collection and assessment.

VSIP would delve into that question and point to future SMS requirements that could apply across a gamut of charter operators and repair stations. "This project is intended to identify SMS requirements appropriate for the various size, scope, and complexity of operators that comprise the Part 135/145 community," NATA said in a letter explaining VSIP. "Additionally, the VSIP will allow for collection of implementation lessons learned and best practices that NATA will share with the FAA to aid in the rulemaking effort and development of inspector training and oversight guidance."

Ten businesses of varying sizes and locations have committed to participate in the project, organizers said. The participants have a range of experience with SMS, some having a level of knowledge of certain safety programs already in place and others completely new to the program. They will incorporate an SMS program based on one already successfully in place with Jet Linx.

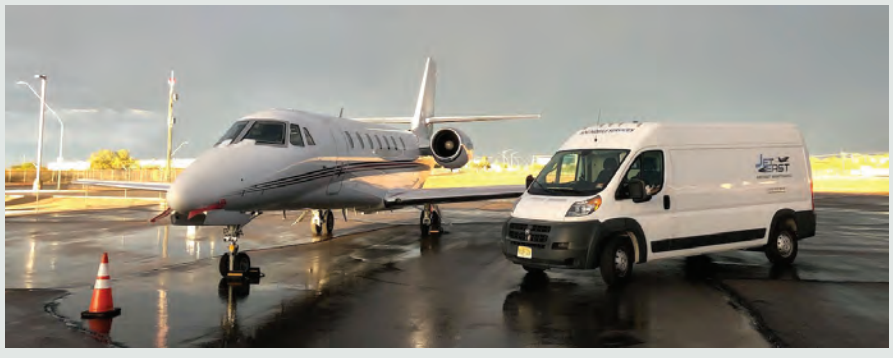
The project will include implementation assistance and mentoring, as well as onsite visits that will help gather information on what does and does not work for various operators. VSIP is intended to consider resource constraints, limited safety data collection capabilities, and other limitations involved with implementing SMS. The research will explore effects even on the smallest of operations, including single-pilot organizations.

A key element will involve looking at practical means for safety reporting for smaller operators and whether such reporting could interface with programs such as the Aviation Safety Action Program and the Voluntary Disclosure Reporting Program. It would further consider the possible aggregation of such programs.

The project also will gather data on efficiencies and other benefits SMS brings to operators. Information gathered would be shared with the FAA, which is working with NATA on the project. Part 5 emphasizes "scalability" in the SMS programs, but NATA instead hopes to concentrate on a "conditions-based approach."

Overall, the goal would be to bring the operators together after a sustained period to share ideas on what works best with the SMS for them, similar to an approach taken with Part 121.

VSIP is among a number of initiatives NATA has undertaken as it strives to raise awareness and prepare charter operators for the looming requirements. It also has worked with the Transportation Safety Institute to develop a week-long course on SMS and has developed an air transportation safety manager certification program. ■



Gama Aviation Group CEO Marwan Khalek called his company's acquisition of Jet East Aviation "strategically important."

Gama Aviation acquires Jet East MRO

Global business aviation services provider Gama Aviation has acquired Jet East Aviation from East Coast Aviation in a $7.7 million cash deal that will significantly expand Gama's existing U.S. MRO operations. The deal—which includes an additional $1 million in deferred cash payable over two years and assumption of $3.2 million in Jet East debt—creates an MRO operation in the U.S. with 400 employees, more than 90 AOG technicians positioned across the country, coverage of 65 business aviation airports, and more than 10 line stations and heavy scheduled maintenance facilities.

"We believe this combination brings in an enhanced offering to our customers," Gama Aviation Group CEO Marwan Khalek told **AIN**. "We're combining two great companies with great brands and good customer loyalty and consolidating them into one, making access to the market for our customers easier. We're giving them a bigger range of services. There's some things we do that Jet East didn't and vice-versa, so that's now available to all of our customers. They don't have to have two touchpoints to procure [maintenance services], it's one [and] we can support them across more regions in the country."

The merged organization will be called Jet East, a Gama Aviation company. Leading it as CEO is Stephen Maiden, who joined Jet East in March 2020 after 13 years at Constant Aviation. "Though [the deal] benefits our customers, I truly believe the greatest impact is on our people. In many ways we each had amazing talent, amazing people," Maiden told **AIN**. "Both of us independently built very successful organizations in a similar manner but in a unique way where we didn't overlap really relatively anywhere in the United States."

He added that, as a result, the acquisition is complementary and gives employees the infrastructure to move around the U.S., as well as advance their careers within a company that will be stable and has deeper resources. "And that's going to translate into happy employees and they're going to drive amazing service to our customers," Maiden said.

Gama Aviation entered the U.S. as an aircraft management company in 2008 through the acquisition of PrivatAir. In 2012 and 2013 it laid the groundwork for adding maintenance operations primarily in AOG and line maintenance, which it began in earnest in 2014, Khalek said. Of late, Gama has become interested in expanding its base maintenance capabilities, he added. Also, with a larger footprint comes greater convenience for the operators that use Gama's services, especially fleet operators.

"The convenience for our customers of knowing that they don't have to run multi-relationships with a few companies in the Northeast, and some in the Southeast...we can support them across the whole country both for their AOG, line support, and heavy maintenance needs," he said. **J.S.**

News Briefs

GIP Set To Acquire Signature Aviation in $4.6B Bid

Signature Aviation could soon be under new ownership with news that the UK-based company has accepted a cash deal worth more than $4.63 billion from Global Infrastructure Partners (GIP). On January 11, Signature announced to shareholders that its board of directors had reached an agreement with GIP, which currently manages $71 billion in assets. Included in the sale are Signature's FBO chain and its Epic Fuels subsidiary, as well as the company's engine repair business that it has been attempting to unload. The deal is subject to legal review and the approval of at least 75 percent of Signature's shareholders.

F/List To Develop Cabin Features for Aerion's AS2

Aerion has selected F/List to supply interior components for the AS2 supersonic business jet. F/List already has provided Aerion with expertise in interior engineering, certification support, materials and process, and finishes. Under the expanded agreement, F/List will work with Aerion to develop an "innovative, ultra-luxury cabin experience" to include cabinets, liners, hard floorings, and baggage liners. According to F/List, it has developed an in-house interiors "future lab" incubator to test its emerging technologies and concepts.

Fiat Chrysler Backs Archer's eVTOL Aircraft

Fiat Chrysler Automobiles (FCA) is partnering with eVTOL developer Archer to provide composite materials and engineering support for the four-passenger aircraft due to be unveiled this year. California-based Archer, which was launched in May, plans to start volume production of its unnamed aircraft by 2023 and begin commercial operations in 2024. This year, it expects to begin flight testing a full-scale prototype of the all-electric fixed-wing aircraft, which is expected to fly up to 60 miles at speeds of 150 mph.

Elliott Expands MRO Footprint with Acquisition

MRO provider Elliott Aviation has expanded into the southeastern U.S. with the acquisition of Atlanta-based The Maintenance Group, adding a fourth location and expanding its airframe service capabilities. Those additional airframe service capabilities include the Gulfstream III through G550, as well as the G100/150 and G200/280; Dassault Falcon 50/50EX and 2000; and Bombardier Challenger 350 and 600/601/650. Operating from a 40,000-sq-ft facility at DeKalb-Peachtree Airport, The Maintenance Group can perform major airframe inspections, structural repairs and modifications, wing corrosion repair, DAR import/export airworthiness approvals, STC installation and certification projects, and pre-purchase inspections.

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U.S. fatal bizav accidents plummet 50% in 2020

by Gordon Gilbert

Reduced flying in the year of the pandemic also saw significantly fewer fatal accidents involving U.S.-registered business jets and turboprops. According to preliminary figures compiled by **AIN**, business turbine airplanes experienced eight fatal accidents last year versus 16 in 2019—a 50 percent decrease. What's more, fatalities from last year's mishaps plunged more than 72 percent, from 77 passengers and crew killed in 2019 accidents to 21 last year. However, non-fatal accidents increased 34.8 percent year-over-year, from 23 in 2019 to 31 in 2020.

Twenty-four people died in five accidents involving N-numbered business jets in 2019 compared to four in one accident last year. All six fatal accidents for both periods occurred under Part 91. The single fatal crash last year was the February 8 in-flight breakup of a Cessna Citation 501 in which the two pilots and two passengers died during an IFR Part 91 personal flight in day IMC. This accident remains under investigation.

National Transportation Safety Board investigators have completed their investigations into three of the five fatal accidents in 2019. An unidentified electrical system malfunction that led to the pilots losing situational awareness in IMC resulting in a loss of control was determined to be the probable cause for the April 13, 2019 crash of a Rockwell International Sabreliner 65 in which the three occupants died. The twinjet was on a Part 91 personal flight.

The pilot's failure to fully advance the power levers during the takeoff and initial climb led to insufficient airspeed resulting in an excessive angle of attack and a subsequent aerodynamic stall was determined to be the probable cause of a Cessna Citation 550 crash on May 22, 2019. The aircraft was on a Part 91 personal flight and the pilot and his passenger died in the crash.

Two days later, on May 24, 2019, the sole airline transport pilot on a repositioning flight in a Citation 560 was killed when the airplane descended into the Atlantic Ocean. The jet was at 39,000 feet when the pilot became unresponsive to ATC and the airplane continued more than 300 miles past the destination airport before it descended into the sea. Neither the pilot nor the airplane were recovered.

Meanwhile, authorities are reportedly still engaged with investigating the crash of a U.S.-registered Bombardier Challenger that went into an uncontrolled descent and crashed in Mexico on May 5, 2019. The airplane was said to be carrying three crewmembers and 13 passengers, all of whom perished.

Still under investigation also is the March 18, 2019 crash on short final of an Israel Aircraft Industries Westwind 1124 that rolled left and became inverted before hitting terrain. Both pilots were killed. The aircraft was on a Part 91 flight in VMC. Examination of the wreckage revealed the left thrust reverser was open and the right thrust reverser was closed.

Meanwhile, U.S.-registered turboprops suffered seven accidents that resulted in 17 fatalities last year, compared with 11 accidents that killed 53 in 2019. Except for one Part 135 fatal accident in each of the two years, the remainder occurred under Part 91.

But fatal accidents of non-U.S.-registered jets doubled from two in 2019 to four in 2020, with the number of fatalities more than tripling from four in 2019 to 14 last year. Two of the four fatal accidents involved ambulance charter flights. On March 29, 2020, all eight people aboard an air ambulance Philippine-registered IAI Westwind were killed when the twinjet crashed on takeoff. And the copilot died on May 5, 2020, when his Argentine-registered Learjet 35A air ambulance crashed on approach.

On Jan. 23, 2020, a Citation S/II of the South African Civil Aviation Authority conducting a survey flight crashed into the Outeniqua Mountains. The three occupants were killed. On March 13, 2020, a Venezuelan-registered Citation-Jet 525 exited the runway after landing and caught fire, killing both pilots.

Fatalities from non-U.S.-registered turboprops dropped nearly 70 percent year-over-year—30 from seven crashes in 2019 versus 10 from three accidents last year. ■

AIN tables show "incidents" as well as "accidents" to distinguish mishaps based on their degree of severity. Investigators often draw fine distinctions between the two events, but, typically, incidents result in minor or no damage and their investigations are sometimes delegated to local officials.

Accidents are events that range from minor damage to destruction and/or injuries. Also, some incidents ultimately get upgraded to accident status during the investigative process.

Accidents/Incidents Worldwide

(2020 vs. 2019)

U.S.-registered Business Jets and Turboprops

Business jets	Total		Part 91		Part 91K		Part 135		Public/Gov't		Mfr.	
	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019
Total accidents	**14**	**16**	**10**	**11**	**0**	**2**	**4**	**0**	**0**	**0**	**0**	**0**
Nonfatal accidents	13	11	9	9	0	2	4	0	0	0	0	0
Fatal accidents	1	5	1	5	0	0	0	0	0	0	0	0
Fatalities	4	24	4	24	0	0	0	0	0	0	0	0
Incidents	65	66	44	49	0	2	21	15	0	0	0	0

Business turboprops	Total		Part 91		Part 91K		Part 135		Public/Gov't		Mfr.	
	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019
Total accidents	**25**	**23**	**17**	**22**	**0**	**0**	**7**	**1**	**1**	**0**	**0**	**0**
Nonfatal accidents	18	12	11	12	0	0	6	0	1	0	0	0
Fatal accidents	7	11	6	10	0	0	1	1	0	0	0	0
Fatalities	17	53	16	52	0	0	1	1	0	0	0	0
Incidents	46	50	34	44	0	0	10	5	2	0	0	1

All data preliminary. Sources: FAA, NTSB, Aviation Safety Network, AIN research

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

Business jets	Total		Private		Charter		Other*		Unknown	
	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019
Total accidents	**10**	**14**	**3**	**8**	**3**	**3**	**3**	**2**	**1**	**1**
Nonfatal accidents	6	12	2	6	1	3	2	2	1	1
Fatal accidents	4	2	1	2	2	0	1	0	0	0
Fatalities	14	4	2	4	9	0	3	0	0	0
Incidents	12	16	5	7	2	5	2	0	3	4

Business turboprops	Total		Private		Charter		Other*		Unknown	
	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019
Total accidents	**14**	**22**	**3**	**5**	**7**	**8**	**4**	**6**	**0**	**3**
Nonfatal accidents	11	15	3	3	6	4	2	5	0	3
Fatal accidents	3	7	0	2	1	4	2	1	0	0
Fatalities	10	30	0	10	1	11	9	9	0	0
Incidents	15	10	3	5	7	2	2	2	3	1

**For example: ambulance, survey, ferry, training, testing, manufacturer, government (non-military), and head of state.*

News Briefs

NetJets Pilots Sign New Pay and Scheduling Deal

NetJets management and both the U.S.-based NetJets Association of Shared Aircraft Pilots (NJASAP) and pilot union representatives in Europe have reached new labor agreements. The agreement with NJASAP extends their collective bargaining agreement (CBA) until the end of 2026, with an option for the company to lengthen this until the end of 2029. For European pilots, the revised CBA introduces a new variable compensation and scheduling program covering Europe's peak summer season. According to NetJets Europe COO Thomas Born, this gives pilots opportunities to boost their pay while also enabling the company "to meet the service and coverage demands of the peak season."

EASA Merges Genav and VTOL Certification Departments

EASA has reorganized its certification directorate, merging the departments handling general aviation fixed-wing and vertical takeoff and landing (VTOL) aircraft, including drones. The new department opened on January 1 and is being led by David Solar, who reports to EASA certification director Rachel Daeschler. EASA now expects to soon publish the final version of its means of compliance for its new Special Condition VTOL type certification rules. Also, a final version of the means of compliance for a special condition for certifying hybrid and electric propulsion systems will be published by midyear.

Teledyne Technologies To Buy FLIR in $8B Deal

Teledyne Technologies has reached a definitive agreement to acquire thermal imaging and night vision specialist FLIR Systems under a cash and stock transaction valued at $8 billion. Approved by the boards of both companies, the transaction is anticipated to close by midyear once it has cleared all the necessary regulatory approvals and closing conditions. Under the agreement, FLIR stockholders will receive $28 per share in cash and 0.0718 shares of Teledyne common stock for each FLIR share. Teledyne has arranged a $4.5 billion, 364-day credit commitment to help fund the transaction and refinance existing debt.

EBAA: Brexit Deal Facilitates Continued Operations, Trade

EBAA said the draft European Union-UK Trade and Cooperation Agreement issued on December 26 was designed to limit disruption of air connectivity between the UK and EU as much as possible. Under the agreement, EU and UK carriers will be able to continue unlimited carriage of passenger and cargo between the EU and in the UK under the so-called 3rd and 4th freedoms. The draft also includes protections of passenger rights and resolution of issues such as ground handling, slots, and fuel taxation.

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Wheels Up acquires Mountain Aviation, adding West Coast bases and 59 aircraft

by Chad Trautvetter

Wheels Up is continuing its buying spree, this time scooping up Denver-based air charter and MRO provider Mountain Aviation following the acquisitions of Travel Management Co. (TMC) in mid-2019 and Delta Private Jets and Gama Aviation Signature early last year. Specific financial terms of the deal were not disclosed. Jefferies acted as the exclusive financial adviser for Wheels Up.

The addition of Mountain Aviation will provide Wheels Up with West Coast bases (in Denver and Thermal, California) and heavy maintenance capability for its Beechcraft King Airs and Cessna Citations. It will also quadruple the size of the company's Citation X fleet to about 40. Mountain Aviation also has bases in Teterboro, New Jersey, and Anchorage, Alaska.

According to Wheels Up founder and CEO Kenny Dichter, this acquisition is similar to its TMC buy, meaning Mountain Aviation will continue to operate under its own brand name and serve existing customers while integrating Wheels Up's technologies and best practices. "Mountain Aviation's wholesale charter operations and super-midsize jet fleet are a perfect complement to Wheels Up's previous acquisition [of TMC], which operates the industry's largest wholesale floating fleet of light jets," he added.

The acquisition adds 59 aircraft, most of which are Citation Xs, to Wheels Up's fleet, bringing the total to about 335 King Airs and Citations flown by more than 1,000 pilots. Wheels Up also plans to further expand its Citation X fleet this year, with Dichter and Gregg Fahrenbruch—former Mountain Aviation CEO and now Wheels Up's senior v-p of operations strategy—praising the model's speed, cabin size, and range. The latter includes transcontinental and West Coast-to-Hawaii capabilities, they said.

Meanwhile, Mountain Aviation's Part 145 maintenance capabilities—housed across seven hangar facilities at Rocky Mountain International Airport in Broomfield, Colorado—will increase Wheels Up's in-house maintenance function and capability. In addition, Wheels Up will offer managed aircraft services to Mountain Aviation's existing clients and broaden its customer base via a growing government defense contract business and expanding services to medical transportation customers.

"We've come to know and greatly respect Mountain Aviation's talented team over the past few years and are excited to welcome them officially to our Wheels Up family," said Dichter. "We are aligned on culture, forward vision, and business goals. This acquisition further strengthens the Wheels Up suite of products and services.

Wheels Up's acquisition of Denver-based Mountain Aviation will quadruple its fleet of Cessna Citation Xs to about 40 of the high-speed jets. The company likes the model for its Mach 0.92 speed, super-mid cabin size, and transcontinental range.

"The air charter industry continues to be highly fragmented, and I see lots of opportunities," Dichter said, hinting that Wheels Up's buying spree is far from over. He told **AIN** that "2021 should be a special year" but did not divulge more details.

Wheels Up currently counts more than 10,000 active members/customers and expects to log more than 200,000 flight hours this year across its entire fleet. ■

FSF and Eurocontrol release runway excursion reduction global action plan

The Flight Safety Foundation (FSF) and Eurocontrol has released a broad set of recommendations aimed at preventing runway excursions, which they said are now the most frequent type of accident for both small and large aircraft. Dubbed the "Global Action Plan for the Prevention of Runway Excursions" (GAPPRE), the report was developed by more than 100 aviation professionals at some 40 organizations, with the effort led by FSF and Eurocontrol.

"Reducing runway excursions and continuing to improve the overall safety of the approach and landing phases of flight continue to be a primary area of focus for the foundation," said Flight Safety Foundation president and CEO Dr. Hassan Shahidi. "We are gratified by the efforts of the many safety professionals who gave of their time and expertise to make the GAPPRE a reality, and I want to thank our partners at Eurocontrol, ACI, CANSO, EASA, and IATA for their continuing commitment to safety collaboration."

With the release of the action plan, FSF is launching a year-long campaign to focus attention on runway excursion risk and support the implementation of the consensus-based GAPPRE recommendations. Overall, there are 101 recommendations outlined in the report—17 for airport operators; eight for air navigation service providers; 35 for aircraft operators; 16 for aircraft manufacturers; 17 for aviation regulators and ICAO; and eight for research and development.

According to FSF, runway safety and GAPPRE will be regular themes this year at its organized events, starting with its virtual safety forum on February 11. While GAPPRE is the foundation's latest initiative related to approach and landing safety, it also offers the "Approach and Landing Accident Reduction Toolkit," along with recommendations from its recent "Go-Around Decision-Making and Execution Project" report. **C.T.**

News Briefs

Embraer Marks 1st Praetor 500 Conversion in Europe

In late December, Embraer completed the first European conversion of a Legacy 450 to a Praetor 500 for an undisclosed customer at its service center at Le Bourget International Airport in Paris. That makes a total of 11 conversions to the Praetor 500 at Embraer's company-owned service centers in Le Bourget; Windsor Locks, Connecticut; Fort Lauderdale, Florida; and Sorocaba, Brazil, but the first in Europe. The conversion process entails replacing the level-sensing wiring in the fuel tanks, moving the over-wing gravity fuel ports, relocating the fuel measurement system, and reinforcing the wing ribs to hold additional weight. Also included were the installation of winglets; updates to the Collins Aerospace Pro Line Fusion flight deck as well as E2VS, a head-up display that combines synthetic and enhanced vision; and new badging.

Bombardier Captures Sale of 10 Challenger 350s

Bombardier landed a firm order valued at $267 million for 10 super-midsize Challenger 350s from an undisclosed customer just days before the year ended. The commitment marks one of the larger orders in 2020 and signifies strengthening interest in the business aviation market during the pandemic, according to Bombardier. This order also is a key win for Bombardier as it begins its transition into a pure-play business aviation company. Once shed of its non-business aviation entities, Bombardier plans to focus on managing its existing portfolio of aircraft and growth in its existing service network as it works to reduce capital and other costs and manage an anticipated residual $4.5 billion debt load. In addition, the sale provides a key boost for Bombardier, which has had to realign production as complexities of working in the Covid environment hampered sales and deliveries.

Judge Allows JSX To Continue SNA Flights

A temporary restraining order issued by a federal judge in late December has allowed JSX to continue flying out of John Wayne Airport (SNA) in California. New FBO lease agreements approved in September and set to take effect on January 1, by the Orange County board of supervisors and between the county-owned airport and its FBOs—ACI Jet and Clay Lacy Aviation—prohibited JSX from leasing space at ACI for its operations, a key element to the company providing its scheduled charter service there. The restraining order comes after JSX filed a lawsuit on December 14 in U.S. District Court for the Central District of California-Southern Division seeking to continue operations at the airport.

Baldwin introduces Alaska-oriented SMS | by Kerry Lynch

Juneau-based Part 135 operator Alaska Seaplanes has become a launch customer for Baldwin Safety and Compliance's Alaska Aviation Safety Exchange.

Baldwin Safety and Compliance has rolled out a safety management system/quality management system program for operators in Alaska with the Juneau-based Part 135 commuter operator, Alaska Seaplanes, as a launch customer.

The Baldwin Alaska Aviation Safety Exchange is a customizable and scalable program that provides access to data, forms, reports, manuals, and other tools necessary for Alaska operations. Subscribers can share de-identified safety data within the Baldwin program and/or the FAA Aviation Safety Information Analysis and Sharing database to facilitate lessons learned among participants.

Baldwin further is providing round-the-clock safety team resources and support. The program is designed for use from the single-fixed-wing or helicopter operator to a carrier with hundreds of aircraft.

Alaska Seaplanes went live with its program in December, noted Ken McLure, Alaska Seaplanes director of safety and compliance. "The big difference for Alaska Seaplanes was that the Baldwin system was customizable and flexible enough to adapt to our operation, and it did not require reworking our processes to integrate with the software," McLure said. "I am already receiving great feedback on the data we are collecting, and many members of the team are providing input and suggestions for small changes that have been very simple to make."

This is key he added, because "Alaska is a unique place to fly and operations here have many challenges that operators in the lower 48 will never experience. From seasonal staffing swings to water landings and limited controlled airspace, we have distinctive risks to consider." He further praised assistance the program gave for its flight risk assessment tool.

Baldwin president and founder Donald Baldwin noted the "extraordinary conditions" the operator faces on a regular basis and the challenges it was having trying to develop its own SMS system. "We wanted to provide a customized SMS/QMS solution that would support the specific Alaskan operational and regulatory standards and emergency response environment," he said.

Baldwin is expected to introduce a similar program for aviation operators in Hawaii shortly, he added. The programs come as the aviation industry prepares for anticipated SMS mandates in 2022. ■

Vaccine rollout leaves open many questions for GA ops

by Kerry Lynch

Air ambulance pilots are the first among the pilot community to receive the Covid-19 vaccines, but the question of when the larger pilot community will have a turn remains unknown. That question was among those discussed January 7 during a National Air Transportation Association (NATA) webinar, "Covid-19 Vaccine Intelligence for Pilots and Essential Workers."

Ryan Waguespack, senior v-p of aircraft management, air charter services, and MROs for NATA, noted that some aviation workers, such as crew, can be on the higher "1b" priority list as essential workers, but "the problem is that it doesn't correlate across the board state to state. In some states, 1b could translate to 1f." He noted some states are skipping over essential workers to address elderly care first. Waguespack said he has heard from air ambulance operators in Arizona who have already received the vaccine. Other states have air ambulance as the first priority as well.

"It is challenging because it is state by state, health department by health department," he said and noted that health departments are overwhelmed. Even so, Waguespack recommends that aircraft operators reach out to their own state health departments to find out how to get their workers in the queue.

Once workers receive vaccines, they should get verification. Some countries have discussed requirements for proof of vaccine. While there is some talk of electronic tracking, more likely a verification card may be necessary because not all countries will have capabilities for such electronic processing, said Dr. Thomas Faulkner, a senior aviation medical examiner who participated in the webinar.

Waguespack added that NATA is exploring means for its Known Crewmember program to assist in this area.

Once crewmembers receive the vaccine, there is a general 48-hour waiting period before returning to duty. But pilots should remain vigilant in case there is a reaction, Faulkner advised. He agreed with Waguespack that those who have had Covid might see a stronger reaction because the vaccine stirs up the body's natural defenses.

He advises that those who have stronger reactions report them to the location where the vaccination was received. If it is severe, such as requiring hospitalization, then the pilot's AME should know.

The vaccine, for now, is thought to be a "one and done" (or two and done with booster) with lifetime immunity, Faulkner said. But he cautioned that since vaccines are just now getting distributed, the medical community hasn't built up the data yet to see if that will transpire. "This has gone at warp speed and we just don't have the data," he said. And there is talk of seasonal vaccines similar to the flu, he added.

Also, a single shot from the available vaccines might be 94 percent or 95 percent effective, Faulkner added, but the booster further generates a stronger defense shield for people. The days between first and second shots will vary from 21 days, with the next vaccine anticipated to hit the U.S. market—potentially AstraZeneca in February—possibly having a four-week period. But for crew purposes, there will be a few days' leeway at either end. How much leeway is still unknown, since the data is still being developed.

These unknowns come with the speed of the development, Faulkner added, noting typical vaccines take seven years to reach the market and involve trials and retrials. "More will be learned about this vaccine [similar to how] we are learning every day about this virus," he said, and stressed masks and testing will remain a critical piece of defense for some time.

Faulkner reminded webinar attendees that a person is challenged every day by viruses and pathogens and the immune system typically handles them. But "If you do get Covid-19 symptoms, respect them," he said. "Raise your hand and take yourself out of the lineup and give yourself the chance to fight this off." Otherwise, Faulkner added, a person could have a harder path to recovery. ■

Pilatus aircraft delivers 100th PC-24

European fractional-share provider Jetfly Aviation has taken delivery of the 100th Pilatus PC-24 light jet produced since the first PC-24 entered service in February 2018. Jetfly operates a fleet of 51 PC-12 turboprops and PC-24s. So far, the worldwide PC-24 fleet has logged more than 33,500 hours.

Powered by two Williams International FJ44-4A turbofans, the PC-24 can seat up to 10 passengers in a flat-floor cabin with volume of 501 cu ft. Current models are equipped with a "modular in-flight catering facility" or forward galley. An enclosed lavatory with an externally serviced vacuum-operated toilet is also standard. A unique PC-24 feature is the large rear cargo door, measuring 51 by 49 inches; the baggage area is accessible in flight. Avionics are Honeywell's Epic system, branded as the Pilatus Advanced Cockpit Environment and featuring four 12-inch displays.

Operators can fly to many airports, as the PC-24 is approved to fly to smaller airports and on grass, gravel, and snow surfaces. Australia's Royal Flying Doctor Service also flies a fleet of PC-24s.

"All our customers without exception have been impressed by the quality of the PC-24 and the incredible performance of this aircraft," said Jetfly CEO Cédric Lescop. "After two years of operation, our customers are still enthusiastic about their acquisition, which is a sign to us of the success of this new aircraft program, which is well on the way to becoming another market bestseller, just like the PC-12."

"We hit the bullseye with the PC-24," said Pilatus chairman Oscar Schwenk. "I'm very encouraged by such high demand. We're already sold out for 2021, but the order book is open for deliveries from 2022 onward. Investment in the PC-24 helps us to secure jobs at our Swiss site on a long-term basis." **M.T.**

News Briefs

Bizav Groups Worldwide Unite in Illegal Charter Battle

Concerned that illegal charter remains a threat to the industry, a dozen business aviation organizations are uniting in their effort to combat the practice through the creation of a new Air Charter Safety Alliance (ACSA). Through ACSA, the organizations will work together to raise awareness of illegal charters for potential customers, charter brokers, ministries of transport, and national aviation organizations. In addition to NATA, the coalition consists of NBAA, IBAC, ABAG, ACA, AfBAA, AsBAA, BAOA, BBGA, EBAA, EBAA France, and MEBAA.

Gulfstream's G600 Enters European Market

Gulfstream handed over the first EASA-certified G600 ultra-long-range jet to an undisclosed customer in late December. The G600, which can travel 6,600 nm under a recently announced range boost, had received European validation in May, not quite a year after the FAA awarded type certification. In addition to the FAA and EASA, the G600 has received approval from aviation agencies in Bermuda, the Cayman Islands, the Isle of Man, San Marino, and Mexico.

Biggin Hill Airport Presses Ahead with Expansion

London Biggin Hill Airport is pressing ahead with long-planned developments in the new year, undeterred by a year of extensive disruption from the Covid-19 pandemic. Next month, the airport expects to break ground on a new four-star hotel, as well as a new terminal building and an air traffic control tower. The 54-room hotel will include a restaurant, lounge, and gym. Meanwhile, construction continues on Bombardier's new 250,000-sq-ft service center. According to Biggin Hill Airport head of marketing Andy Patsalides, the building's core structural steelwork and cantilever roof are now complete. The airport is also poised to receive approval for a new instrument approach for Runway 3, which will add this capability at both ends of its main runway.

Epic Aircraft Partners with Frasca and ATP

Epic Aircraft has selected Frasca International to build the first simulator for the E1000 GX turboprop flight training program. Expected to be installed at Epic's flight training center in Bend, Oregon by the fourth quarter, the sim will be constructed around an authentic Epic cockpit, including Garmin G1000 NXi avionics. Epic will also work with aviation software and solutions provider ATP, using its Flightdocs platform for maintenance tracking and electronic logbooks across the E1000 GX fleet and the ATP Aviation Hub for distribution of technical publications such as maintenance manuals, wiring diagrams, and illustrated parts catalogs.

App improves Traxxall user experience | by Matt Thurber

While maintenance-tracking software Traxxall was available on a mobile app, the user experience and functionality was not the same as the desktop software. Last year, Traxxall redesigned the app so that it replicates the desktop experience, and since then users have rapidly transitioned to the new Traxxall 360 app, which was introduced last March.

"We've been tracking app usage," said Traxxall president Mark Steinbeck. Since shutting down the old app, which had about 250 users, the new app now has more than 4,000 active users, which is about 35 percent of the overall Traxxall user base. "It's been well received," he said. "We want everything on our tablets and phones. The pandemic helped spark some of that."

Traxxall has also added new features, and the Traxxall user base has been growing at 50 to 60 new customers per month, he said.

Aircraft operators these days want to go paperless, Steinbeck said, and Traxxall facilitates that by allowing maintenance signatures in the app so there is no need to print documents and sign them physically. The app does allow printing, for those who prefer to place the printed entry into a paper logbook.

A new feature released a few months ago is the checklist function, which allows users to create their own checklist templates. A checklist can include a signature requirement to confirm compliance. After completion, checklists are stored in Traxxall's documents section, providing a clear audit trail and history.

The new app also provides access to Traxxall's inventory module, which wasn't available in the older app. This allows users to view expiration information, inventory that is below a minimum threshold and needs reordering, technician requests for parts and materials, and parts availability. The app can generate point-of-sale tickets, repair orders, and track core returns. Each part comes with information such as serial number, purchase information, location, and if installed on an aircraft, the aircraft's registration number.

Traxxall is now integrated with flight scheduling software, Spectro Jet-Care for engine trend monitoring, and other third-party software. "We're constantly adding to this," Steinbeck said. "Through APIs and integrations, it's easy to do." The scheduling software can automatically send aircraft times to Traxxall, reducing the amount of hand data entry and thus lowering the potential for errors.

Since the pandemic took hold early last year, Traxxall has been able to continue growing at about 6 percent year-over-year, "but we're not insulated from what happened," he said. "We've grown pretty well through the pandemic." The company's target market is midsize and larger business jets and helicopters, but customer aircraft range from single-engine pistons to Boeing 747s.

Further development plans call for adding an MRO module for repair stations, aimed at serving small to midsize maintenance shops, especially those owned by charter operators. Traxxall's current workorder system is only for companies maintaining their own aircraft. The first version of the MRO module should be available next June. ■

The state of Kansas is paving the way for supersonic trials of aircraft such as the Lockheed Martin/ NASA X-59 through an agreement with the FAA to establish the Kansas Supersonic Transportation Corridor.

Kansas DOT, FAA agree to establish Supersonic Transportation Corridor

by Kerry Lynch

The Kansas Department of Transportation signed an agreement with the FAA to establish a Kansas Supersonic Transportation Corridor (SSTC) that would be used for testing aircraft up to Mach 3, the state announced in December.

The agreement would provide a critical testing site for the emerging group of supersonic aircraft as civil supersonic flight remains banned over land. Flight testing for models such as Aerion's AS2 and Boom's Overture is expected this decade, while NASA noise trials with the Lockheed Martin X-59 demonstrator are anticipated by 2024. "This year marks 73 years since Chuck Yeager broke the sound barrier, and with this supersonic flight corridor Kansas will have a unique role in the next generation of supersonic transportation," said Sen. Jerry Moran (R-Kansas) in the announcement of the agreement.

The 770-nm corridor, designed as a bi-directional "racetrack," runs from slightly west and south of Garden City, Kansas, to nearly Pittsburg in the east at altitudes above FL390. It runs right over Wichita.

In establishing the corridor, the Kansas Department of Transportation (KDOT) Division of Aviation worked with the FAA Central Region and air traffic control and Lemasters Group Consulting to establish specific procedures for use of the corridor such as requirements for entry into the corridor and clearance before takeoff for direction and flight route to minimize effects of supersonic aircraft on commercial traffic.

KDOT is working with Wichita State University's National Institute of Aviation Research (NIAR) to collect noise data and live telemetry from the aircraft. "This partnership with KDOT provides a sophisticated and cost-effective flight test capability within reach of every major aircraft manufacturer in the country," said John Tomblin, WSU senior v-p for industry and defense programs and executive director of NIAR.

KDOT director of aviation Bob Brock said the corridor will provide a logistical advantage since it is the first and only such commercial supersonic flight test route in the nation's interior.

The General Aviation Manufacturers Association (GAMA) lauded the establishment of the corridor, saying it will help in the "re-birth" of civil supersonic travel. "The Kansas Supersonic Transportation Corridor will assist in the assessment of sound mitigating structural and engine designs as well as state of the art atmospheric acoustic modeling that eliminates the sonic boom and shapes the noise signature of an aircraft traveling faster than the speed of sound to a very low volume rumble," said GAMA president and CEO Pete Bunce. "The validation of these technological breakthroughs through the use of sophisticated ground acoustic and telemetry sensors will provide the necessary data to assist global regulators and policymakers in modernizing supersonic flight policies."

> **"This year marks 73 years since Chuck Yeager broke the sound barrier, and with this supersonic flight corridor Kansas will have a unique role in the next generation of supersonic transportation,"**
>
> – Sen. Jerry Moran

NASA plans to use the Lockheed Martin X-59 demonstrator to test low-boom noise effects over various populations. "I'm really excited about quiet supersonic technology and its ability to be transformative for flight and our economy," said NASA Administrator Jim Bridenstine.

Aerion, meanwhile, plans to test "Boom Cruise" technology that is designed to keep the sonic boom from reaching the ground with plans to begin flight trials in 2025, while Boom is looking at low boom technologies for its commercial airliner Overture.

The agreement comes as the FAA has taken a multi-faceted approach to facilitate the emergence of supersonic transport while still meeting environmental and safety goals. "As part of the DOT's priority on innovation in transportation, the DOT and the FAA are taking steps to advance the development of civil supersonic aircraft," the agency said in a recent fact sheet pointing out its two rulemaking activities, including a proposed rule for noise certification of supersonic aircraft and a second proposed rule to streamline and clarify special flight authorization procedures for conducting supersonic flight-testing in the U.S.

Kansas state leaders look at the corridor as an opportunity to stay at the forefront of aviation technologies. "To be able to deliver this new opportunity for our country is yet another example of Kansas cementing its reputation as a national leader in the aviation industry," said Kansas Governor Laura Kelly. "This high-altitude flight corridor gives Kansas a strategic advantage in attracting companies involved in the development of supersonic aircraft and will play a significant role in our state's ability to encourage economic development as we recover from the Covid-19 pandemic."

Citing industry forecasts of a market for as many as 300 supersonic aircraft over a 10-year period, valued at as much as $40 billion in revenue, Moran further said a new crop of supersonic aircraft "will require a deep bench of skilled manufacturing talent. ■

› continued from page 1

FAA final rule

submit was not intended to imply that FAA would forego independently evaluating the information or closely examining the environmental impacts on a proposed test area in determining whether to grant a particular special flight authorization," the agency said. "The language was also not intended to imply shifting the burden of complying with NEPA to the applicant rather than the FAA."

According to the FAA, a number of requests in comments about the ability for more than one program to use a designated test site were received. In response, the FAA said the application process provides latitude for requesting such test sites and added that regulations do not limit a flight test area to one applicant. However, each applicant is expected to submit its own environmental information regarding a test site.

> **"The testing of supersonic aircraft at Mach 1 will only be conducted following consideration of any impact to the enviorment"**
>
> – FAA Administisrator Steve Dickson

That comes as the FAA has reached an agreement with the state of Kansas establishing a supersonic flight-test corridor.

Meanwhile, the agency dismissed more general opposition from environmental groups and certain municipalities about possible harm supersonic operations could have on the environment. These arguments are outside the scope of the rule, the FAA maintained, adding the final rule does not permit regular supersonic operations.

However, in simplifying the approach for special issuance applications, the agency is helping pave a path toward the return of civil supersonic flight. It is one of several steps the FAA is taking, including working with international regulators, as well as developing a separate rulemaking altogether regarding takeoff and landing noise certification standards.

"Today's action is a significant step toward reintroducing civil supersonic flight and demonstrates the [Transportation] Department's commitment to safe innovation," said (former) U.S. Transportation Secretary Elaine Chao in announcing the release of the final rule.

"The FAA supports the new development of supersonic aircraft as long as safety parameters are followed," added FAA Administrator Steve Dickson. "The testing of supersonic aircraft at Mach 1 will only be conducted following consideration of any impact to the environment." ■

NASA's X-59 takes shape

by Kerry Lynch

While NASA revised its timeline for the X-59 Quiet SuperSonic Technology (QueSST) demonstrator to reflect anticipated first flight in 2022, the agency remains encouraged that construction of the X-plane had reached the halfway point by late last year despite complexities associated with the pandemic.

In a recent update, the agency said assembly of the Mach 1.4 aircraft "made great strides" in 2020 as work progressed on the flight deck, wings, and other hardware. In addition, GE Aviation delivered the F414-GE-100 engine that will power the X-59 QueSST in the third quarter. Program partner Lockheed Martin is assembling the aircraft at its Skunk Works facility in Palmdale, California, under a $247.5 million NASA contract.

> **"The fact this is the first time we've reached a milestone like this... It reminds us the X-59 really is coming together."**
>
> – Steve Macpherson, Lockheed Martin

One significant recent milestone was the closing of the wing section, which NASA termed as the "structural backbone of the aircraft." Completed in November, the milestone marked the first major assembly to be closed and clears the way for the joining of other key components, including the fuselage and tail.

"The fact this is the first time we've reached a milestone like this... It reminds us the X-59 really is coming together," said Steve Macpherson, who leads the Lockheed Martin team building the X-59.

Schedule Changes

NASA in September had updated the schedule, anticipating completion of final assembly this year and first flight in 2022. The X-59 QueSST will be used to test the effects on supersonic sound of new advanced technologies over various population centers. NASA anticipates that community testing will start in 2024.

NASA declared the X-59 has reached the halfway mark in development, with the wing closed and fuselage and empennage readying to be joined.

The X-59 incorporates a number of unusual features, including the lack of a forward-facing window, designed to "quiet" the sonic boom associated with supersonic flight. The result, program managers anticipate, will be a sonic "thump" that is much quieter than the sonic boom long associated with supersonic travel. Resulting data will be furnished to regulators for use in evaluating future rules regarding supersonic operations.

To compensate for the lack of a forward-facing window, NASA and Lockheed Martin are incorporating an eXternal Vision System (XVS) involving cameras to give the pilot the forward-facing view. The XVS system also was tested in 2020. ■

The Versatile Pilatus PC-24

By Rich Pickett

I was reviewing the limitations section of the Pilatus PC-24 flight manual before my evaluation flight for this pilot report. Maximum ramp weight: 18,400 pounds. Maximum takeoff weight: 18,300 pounds. Useful load: 6,880 pounds. Maximum pothole depth 1.37 inches (35 mm) with a maximum diameter of 39 inches, and maximum grass height three inches. Potholes, grass height? When was the last time you had to consider the size of potholes or grass height on runways when flying a jet? Unless you are flying a PC-24, it probably never crossed your mind.

I was at Boise Air Terminal with Pilatus v-p Tom Aniello, Phil Winters, v-p of Western Aircraft, and Ashley Fredricks, Western's chief pilot. Western Aircraft, the largest PC-12 and PC-24 dealer, had just received its seventh PC-24, N194PJ, serial number 194, two weeks earlier. Previous aircraft sold by Western have been delivered throughout its sales region, including Alaska where the PC-24 enjoys being in its element, flying on and off unimproved airports in challenging conditions.

Pilatus Aircraft, known for a variety of turboprop designs including the PC-12, has been a privately held company since inception. The PC-24 was a big leap for Pilatus, not only a turbofan-powered twinjet but a truly unique airplane, one that would resonate not only with dedicated PC-12 owners but with performance and cabin features that aren't found in other light jets. As with its other projects, Pilatus financed the PC-24 development internally.

Pilatus developed the PC-12 to be a utilitarian aircraft to support the needs of the Royal Canadian Mounted Police and the Royal Flying Doctor Service in Australia, among others. Originally it wasn't intended to be an executive transport but now it is well known for that function. The PC-24 would have to support all those uses from the start, just faster and higher. That meant it had to have a large cabin, a cargo door as big as the PC-12, operate on the same runways—paved or not—and be certified for single-pilot operations.

The first production PC-24 was delivered to fractional operator PlaneSense in January 2018 and the second and third to Western Aircraft the following month.

The Super Versatile Jet

N194PJ is typically-equipped with six executive passenger seats plus two lighter-weight commuter seats (easily removed for more cargo space) and most of the available upgrades including Gogo Avance L3 connectivity with a price of $11.623 million.

I wanted to explore as much of the jet's operating envelope as possible. We planned a mission that would take us from Boise to Sun Valley Idaho, then to Pendleton, Oregon before returning to Boise. Along the way I wanted to evaluate the high-altitude handling, fly various approaches, including single-engine, and end with a short-field landing. While the weather precluded unimproved runway operations, we would be able to evaluate short-field performance back in Boise.

Wet runways, or gravel or grass airstrips and even snow, are all options for landing in the Pilatus PC-24, adding many more airports to the jet's bag of tricks.

The PC-24 sits tall on the ramp. The empennage rises 17.25 feet above the ramp, the wings span nearly 56 feet and the jet is 55 feet long. With a pointed nose, slightly swept wings (with five different airfoil shapes), large windows in the cabin and flight deck, it appears ready to leap in the air.

The first item on the preflight is connecting the two 44-amp/hour NiCad batteries. Battery #1 is in the nose and battery #2 is aft. Lithium-ion batteries will soon be an option on new PC-24s and retrofittable on aircraft after serial number 184. The airstair door is large and this jet has the optional stair lighting, which is a useful addition providing a welcoming entry, especially in the dark.

The low-pressure nose tire (58 psi) has a pronounced chine design to deflect water or debris from the engine intakes. The tire's beefy size makes it look like it would be equally at home on an off-road vehicle, by design. The nose gear has telltale wedges to indicate whether the towing turn limits have been exceeded, causing potential damage, an ingenious idea.

In addition to battery #1, the left nose compartment houses several circuit breakers, while the right contains the oxygen tank, remote avionics rack with cooling fans, electronic circuit breaker

control unit, and other equipment. The cooling fans' location cuts down on noise in the flight deck, eliminating the need for fans behind the instrument panel.

On each side of the nose are sensors for airspeed, outside air temperature, angle-of-attack, and ice detection. Just forward of the right wing is the lavatory service panel. The PC-24 has a vacuum-operated toilet, unique in its class, which uses clear water as the wash fluid and is externally serviced.

The right wing is clear of any vortex generators and milled from a single piece of aluminum then chemically milled to various thicknesses along its span. Likewise, the ribs and spar are also milled from aluminum billets. With five different airfoil shapes, Pilatus has designed a wing that can fly at 440 knots and stall at 82.

Inspection of the bleed-air-operated leading edge deicing system reveals numerous exhaust vents underneath. The PC-24 has pneumatic deice boots on the trimmable stabilizer, and no deicing is necessary on the ventral fin. With ice detectors, the ice protection system normally operates in automatic mode, and the associated systems are deployed as necessary. This is another feature that reduces pilot workload.

The PC-24 has two multifunction spoiler panels on each wing that serve as airbrakes and lift dump, as well as roll assist with flaps at eight degrees or greater. When the airbrakes are active, pitch trim compensates automatically to some degree. The air brakes also deploy automatically at Mach 0.751—above the Mmo of 0.74—to slow the jet. Two additional ground spoilers aid in lift dump. Lift dump is automatically deployed upon landing and for rejected takeoffs.

ASHLEY FREDRICKS

Writer Rich Pickett teaches owner-pilots how to fly their high-performance steeds and has extensive experience in Pilatus products.

The main dual-wheel landing gear is substantial and clearly designed for unimproved fields with low-pressure tires (73 psi) and anti-skid steel brakes on each wheel. The dual-wheel trailing-link gear is set back fairly far so that any debris is thrown free of the substantial double-slotted flaps, reducing potential damage. An optional gravel kit, required for gravel runways, with a nose wheel skirt or underwing protective film is also available. Flaps, gear, and all lift-dump devices are electric, only the brakes are hydraulically operated, eliminating the weight and complexity of a redundant hydraulic system.

The PC-24 has single-point refueling, running on the hot battery bus, with a maximum fuel capacity of 5,964 pounds.

The next step was checking the Williams International FJ44-4A-QPM engines, each producing 3,420 pounds of thrust and mounted high to reduce FOD ingestion. The engines have a TBO of 5,000 hours. The Quiet Power Mode (QPM) is available on the right engine, allowing it to serve as an APU, without the cost, weight, and maintenance of a separate unit. In QPM mode the engine idles lower with concomitant lower fuel consumption to power all systems including cabin cooling and heating. This is ideal when flying the PC-24 in a remote area, with no GPU available, to keep the airplane cool or warm.

Williams International designed an integral bleed air precooler for the engines, eliminating the need for a drag-inducing precooler inlet on the engine pylon.

Inspecting the exhaust nozzle, the engine designers came up with a clever idea to extract more downward thrust at the lower speeds during initial climb, using the Coanda effect. You observe the Coanda effect when pouring water slowly out of a glass. The fluid, in this case water, curves around the lip instead of pouring out cleanly. The PC-24 has an extended top edge on the exhaust nozzle—Williams calls this the Exact nozzle—that uses this effect to deflect the thrust two to three degrees upward, thus providing additional down force after takeoff, which boosts the climb. This is especially useful for short-field performance. As the PC-24 accelerates, the Coanda effect is no longer applicable and all of the thrust vector is directly aft.

On the left empennage is the signature cargo door, 4.25 by 4.08 feet and electrically-operated. I've used this easy access on my disaster relief flights in the PC-12 to load patients and a donated X-ray machine with a fork lift. The flexibility to have this same capability in a jet is incredible, let alone making everyday cargo loading easier. This is also a useful feature to load, and unload up to two patients head-first on the air ambulance version of this versatile jet.


RICH PICKETT

Single-point refueling is the quickest way to fill the PC-24 with a maximum load of 5,964 pounds of jet-A.

Cabin Features

The PC-24 entry, through the 2.1- by 4.2-foot airstair door, is impressive. Western Jet chose the optional granite-surface entryway, which is practical for this high-wear area and good looking as well. The entry is also the location of the galley, lavatory, and sink. The lavatory has two solid sliding doors, with the toilet deployed from the side cabinet with the touch of a switch. One advantage of a forward lavatory is the flexibility it provides the operator to select multiple passenger and cargo options for the cabin. Pilatus is certifying an aft toilet as an option soon.

Just behind the pilot on the left is a storage cabinet and also the optional galley with a 115 VAC outlet, to power your favorite brewing device. If you would like to cook on board, or make popcorn, an optional microwave is available.

The 501-cu-ft flat-floor cabin, including the 90-cu-ft cargo area accessible during flight, is 23 feet long, 5.1 feet high, and 5.6 feet wide. This is two inches taller and six inches wider than the Phenom 300E and Learjet 75, and nine inches wider and three inches taller than the Cessna Citation CJ4. The standard configuration includes six executive seats, with options for up to eight seats in various arrangements. This PC-24 has eight executive seats, each with excellent legroom. Operators can choose from a large number of seating options, including 10-seat commuter, air ambulance, special missions, and at least five executive configurations.

Cabin environment control is via Pilatus's Integrated Cabin Management

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Pilatus PC-24 Specifications and Performance

Base Price:
$10.7 million

As Flown:
$11.623 million

Engines:
(2) Williams International FJ44-4A, 3,420 lbs

Avionics:
ACE (Honeywell Epic)

Passengers: (typical)
1 pilot + 9 pax

Range:
(NBAA reserves, 4 pax, 200-nm alternate)
2,000 nm at LRC

High-speed cruise:
440 ktas/Mach 0.74

Long-range cruise speed:
375 ktas at 45,000 ft

Fuel capacity:
5,964 lbs

Max payload w/full fuel:
751 lbs

Maximum altitude:
45,000 ft

Cabin altitude at max altitude:
8,000 ft

Max takeoff weight:
18,300 lbs

Balanced field length at mtow: (sea level, standard)
2,930 ft

Landing distance:
2,375 ft

Length:
55.2 ft

Wingspan:
55.75 ft

Height:
17.3 ft

Cabin:
Volume: 501 cu ft
Width: 5.6 ft
Height: 5.1 ft
Length: (seating area) 23 ft

Baggage capacity:
90 cu ft/1,000 lbs

FAA certification: (basis, date)
FAR Part 23, Dec. 7, 2017

Number built (through date)
100 (Jan. 4, 2021)

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System, using an app to control lighting and temperature or serve media from the 800-GB hard drive. Internet connectivity options include either Gogo Avance L3 air-to-ground or low-speed Inmarsat satcom with BendixKing's Aerowave 100.

Flight Deck

Every time I enter the PC-24 flight deck I'm impressed. With panel-mounted flight controls, the legroom is spacious. Pilatus named its avionics suite the Advanced Cockpit Environment (ACE), a version of Honeywell's Epic 2.0 avionics. It is an apt description. The electrical systems (generators, batteries, lighting) and engine start controls are on the overhead console. The expansive front panel contains three high-resolution 12-inch displays: two primary flight displays (PFDs), and one multifunction display (MFD). The center console has another MFD as well as the keyboard, cursor control device (CCD), anti-/deice controls, and the power control levers, airbrakes, and controls for flaps and trim. The autopilot guidance panel is on the glareshield.

The lower MFD has multiple, dynamic windows. One is dedicated to the central advisory and warning system and the others change dynamically in size and content based upon the task at hand. Using the electronic checklist as an example, when on the start engine task, the upper MFD windows that usually display gear and flaps configuration changes to display an engine synoptic. The gear and flaps status moves to a lower window. As you start the engine the synoptic shows the status of the batteries, generator (or GPU), and current flow. Once the engine start is completed, the MFD reverts to the previous configuration, until the next step.

Starting the engines is straightforward. With the power control levers at idle, on the overhead console pull out the right engine start switch, rotate from OFF to RUN then push the START button, and hold for two seconds. After monitoring the engine parameters, with a peak ITT of 534 deg C, the engine idled at 53.4 percent N2 and fuel flow of 156 pph. I asked for the GPU to be disconnected and before starting the left engine, tested the QPM. After selecting the Quiet Mode button on the PFD, the idle decreased to 45.4 percent N2 with fuel flow of 122 pph and the noise level lowered appreciably. With the Quiet Mode disabled, I did the left engine start sequence using the right generator.

The avionics and systems on the PC-24 are sophisticated, no surprise because Honeywell avionics power much larger jets, including modern Falcons and Gulfstreams. For PC-12 NG pilots, the transition to the PC-24 is relatively easy. The avionics may take more time to learn for pilots familiar with Garmin G1000/G3000/G5000 avionics, however, the ACE systems integration and intuitive automation that facilitates single-pilot operation, are amazingly powerful. Mastering these systems is clearly within the ability of a qualified owner-operator or professional pilot.

Pilatus offers a large number of avionics options, including ADS-B In traffic integrating with TCAS II, allowing the pilot to identify and track other aircraft.

Entering the flight plan into the Honeywell FMS is straightforward, using the CCD or wirelessly with the Honeywell Forge app. We were operating as a crew, and Fredricks set our V speeds, calculated using the Pilatus-supplied Guru2 app, and loaded the flight plan for our initial leg from Boise to Sun Valley.

PHOTOS THIS PAGE: RICH PICKETT

The PC-24 flight deck features a Honeywell Epic-based avionics suite, cursor-control device interface, and autothrottles.

The PC-24's forward galley allows for maximum flexibility in cabin configuration and easy inflight access to the large cargo compartment.

This version of FMS software does not generate the takeoff and landing data, which will be available along with other features in early 2021. A new touchscreen controller, which I've flown on the PC-12 NGX, will also be added to production aircraft at that time and can be installed on aircraft starting with serial number 185.

The PC-24 features Honeywell's Runway Awareness and Advisory System (RAAS) as well as a high-quality 2D airport overlay on the MFD, rather than a simple geo-referenced airport chart. RAAS integrates with the Honeywell EGPWS, monitoring 26 conditions, on the ground or flying. Some of the conditions include correct runway, sufficient length for takeoff/landing, flaps monitoring, long landing, or even lined up to land on a taxiway. In low-visibility conditions, which happens at Boise in the winter, this tool can be extremely useful.

We were cleared for departure on Runway 28L and set TOGA. With brakes released, I wanted to test the autothrottle system so I simply moved the power control levers to vertical and felt the autothrottle servos take over. Fredricks called out V1 at 89 kias, then quickly Vr at 92 kias. I rotated the nose up to the command bars. The PC-24's flight director is intelligent; the initial pitch for climb is six degrees which progressively increased over the next 14 seconds to 15 degrees. Our initial climb rate was 3,200 fpm at 130 kias. Positive rate, gear up, then quickly flaps up. At these speeds, the Coanda effect as a result of the Williams Exact exhaust nozzle design results in slight vectored thrust for the climb.

Selecting flight level change (FLC) mode, the autothrottle reduced power to maximum continuous thrust and adjusted the FMS-based speed to 170 kias, increasing to 200 kias for a cruise climb. Quickly climbing through 8,000 feet and in excess of 4,200 fpm, we accelerated to our manually selected speed of 220 kias. We were quickly at our initial altitude of 13,000 on our way to Sun Valley. Hand flying the PC-24, the control feel was comfortable in all axes.

As we prepared for Sun Valley, ATC advised us that the airliners were going

missed at Sun Valley with ceilings of 300 feet agl and asked our intentions. With smiles, we said we wanted the RNAV X 31! Nothing is better during a test flight than to have real weather to below minimums. Friedman Memorial Airport is in a mountainous valley and because this PC-24 is certified for LP minimums, we could descend to the lowest MDA of 6,180 feet msl (900 agl), 740 feet lower than the LNAV MDA. I let the autopilot fly the approach with the autothrottle, with speeds adjusting automatically. Our Vref was 99 kias with 33 degrees of flaps.

At JUNOL (IAF) and 8,600 feet msl, I engaged the APR mode of the autopilot and set the missed approach altitude. As we descended on the approach a voice annunciation—"Ice"—came over our headsets. With the ice protection system in automatic mode, it not only activates the anti- and deice system but also activates an aural warning. This is another task I didn't have to be concerned with flying in IMC. At GUNKS (FAF) our speed was 135 kias, slowing to 105 kias, just above our Vref of 99 kias. At MDA, without the runway environment in sight, I pressed the TOGA button and the autopilot transitioned to the FMS missed approach and the autothrottle advanced to takeoff thrust. I had to do the usual cleanup of gear and flaps and monitor the autopilot. It was the lowest pilot workload approach in IMC to minimums, with a missed, that I've flown. On the initial climb we were exceeding 5,000 fpm, with a stabilized climb at 200 kias and 4,000 fpm transitioning to 215 kias/Mach 0.64 and 2,700 fpm at FL350 on our way to FL450.

At FL450 I hand flew to evaluate the handling, including steep turns. The PC-24 is incredibly stable and I found the control pressures to be very reasonable, with only minor adjustments to trim needed in the rarified air. On the first 180-degree turn I deviated up to 60 feet, after that I was able to keep my altitude easily within less than 30 feet. I would like to say the stability was due to my flying, however, the design of the jet made my job easier.

Western Aircraft flies, supports PC-12s, PC-24s

Western Aircraft started as a corporate flight department 60 years ago and is now a repair station, charter operator, and factory-authorized sales and support provider for a number of aircraft and avionics manufacturers, including Pilatus. The company's Pilatus sales and support territory ranges from Hawaii and Alaska to Nevada, Utah, Northern California, the Northwest U.S., Wyoming, Montana, and the Dakotas. A significant upgrade to the Western Aircraft facilities in Boise is underway with construction of new hangars to support large aircraft.

Western Aircraft has become a significant player in providing sales and service from single-engine to large corporate jets, including the ability to perform extensive structural repairs on many aircraft types, including those made by Pilatus. The Western Aircraft parts operation stores more than $12 million in inventory, enabling the company to promptly support customers and other service organizations, a key advantage when operators and maintenance shops need parts quickly.

During a tour of Western Aircraft's interior shop and avionics installation and repair facilities, it was clear that the company has the capability to support owners and operators with simple repairs and to complete aircraft renovations.

Western Aircraft operates its own Part 135 charter operation with bases in Boise and Honolulu, currently flying PC-12 turboprops and a PC-24 jet. **R.P**

The PC-24 has an emergency descent mode that is activated when on autopilot, above FL300, and the cabin altitude exceeds 10,000 feet msl. The flight director/autopilot enters FLC and the heading moves 90 degrees to the left. The autothrottle sets a speed of Vmo or Mmo, even if the autothrottle is off, and the aircraft descends to 15,000 feet. At that altitude the autothrottle is set to 175 kias, awaiting the next command.

With air work completed, it was time to fly to Pendleton, Oregon, for another approach, this time single-engine. As pilots know, the approach segment of a single-engine instrument approach is not an issue; use the checklist, fly at a higher Vref, and land. The challenge is the single-engine missed approach. That is what I wanted to evaluate.

We were on the ILS 26 at Pendleton and hand-flying the approach, very enjoyable in the PC-24. Fredricks and I had reviewed the missed approach procedure: full power, and with one engine the good engine's Fadec will engage the automatic thrust reserve, increasing the available thrust by 5 percent on the operating engine. The PC-24 has automatic rudder assist that provides additive rudder input until reaching 1,200 feet agl. You can use the autopilot, but not the autothrottle, for a single-engine approach and missed approach.

At minimums, throttles full forward, pitch up eight degrees, flaps to 15 degrees, positive rate, gear up, and hold almost full rudder. I kept the airplane on runway centerline and after a compliment on the airplane by the tower controller, we were off back to Boise. Later that evening at dinner, Aniello told me it was too bad we didn't get to do a single-engine missed approach. I replied, "We did," but he just didn't feel it in the cabin!

I wanted to explore the short-field capabilities of the PC-24 and planned for Runway 28. We calculated using the Guru2 app a required dry runway distance of 2,139 feet at our 14,000-pound landing weight. If it was wet it only increased to 2,479 feet. For landing on an unimproved runway, each condition (gravel, sand, dirt, grass) has its own requirement. For example, if landing on gravel, maximum rock size is 1.97 inches. If there are ruts, none can be over 3.94 inches. Flaps must be at least 15 degrees.

On approach, we picked taxiway Delta, 2,000 feet from the threshold, for a potential turnoff. Stabilized at a Vref of 92 kias, we were set. Over the runway threshold, power control levers to idle, touchdown, and normal braking, we were basically at taxi speed well before the 2,000-foot mark. The lift dump, comprised of air brakes and additional lift dump panels, automatically deploys upon landing.

Shutdown is simple with the electronic checklist. The after-landing checklist contains items specific to landing on unimproved runways. I guess you look for grass stains when landing on the three-inch grass.

Pilatus's flight documentation is extremely thorough, with more detail on operating the jet than I've seen before, including 26 pages of flight profiles alone. Each unimproved runway operation also has its own document with extensive surface descriptions.

Pilatus Support

Pilatus developed a robust support infrastructure to assist its dealers, which are the primary source of owner and operator assistance. Western Aircraft, for example, has technical support personnel available to provide assistance to customers 24/7.

Pilatus Business Aircraft, a wholly-owned entity of Pilatus Aircraft, is located in Broomfield, Colorado at Rocky Mountain Metropolitan Airport and oversees completion, delivery, and dealer support for North and South America. Because 70 percent of PC-12s and 50 percent of the PC-24s are sold within the Americas, the U.S facility's support is integral to the success of operators. Pilatus maintains two other central dealer support facilities, one at company headquarters in Stans, Switzerland, and the other in Adelaide, Australia.

The PC-24 comes with a seven-year airframe warranty, three years on avionics, five years for engines, and two years on systems, paint, and interior. Pilatus estimates direct operating costs (labor, parts, engines) at just under $600/flight hour. Warranty coverage can be extended through Pilatus's CrystalCare program, which includes scheduled and unscheduled maintenance, normal wear and tear, Williams's Total Assurance Plus Blue engine coverage, service bulletins, the Guru2 app, as well as shipping and a mobile AOG recovery service. The CrystalCare hourly rate varies by annual flight hours, ranging from $828 to $1,300 per hour. Most owners choose this program.

PC-24 Competitors

The PC-24's closest price competition for new jets are the Cessna Citation CJ4, Embraer Phenom 300E, and Learjet 75. The Learjet 75, certified under Part 25, requires two pilots, while the others are Part 23 certified and require only one pilot. The PC-24 is not the fastest jet in comparison, with a maximum speed of Mach 0.74 while the Phenom 300E is Mach 0.80 and the Learjet 75 Mach 0.81. Maximum payload, including pilot, of the PC-24 is 2,700 pounds, 47 pounds fewer than Phenom 300E at 2,747 pounds and about 500 pounds more than the Learjet 75.

The PC-24 has a larger cabin than these other models and can carry more cargo, along with shorter runway requirements. None of the other jets have a large cargo door like the PC-24's. When looking at cabin configuration flexibility, the ability to operate on unimproved runways, or fly executives and load cargo with a forklift—on the same flight—there are no competitors. The Pilatus PC-24 is aptly named the Super Versatile Jet. ■

Full-throttle opinion from former NTSB member John Goglia

Where is the FAA's 'diversion' theory when the aviation industry needs it most?

As I write, waiting for a major snowstorm to hit the Northeast and maybe keep people home long enough to help slow the spread of this viral scourge, an approved Covid-19 vaccine is being rolled out to hospital workers and nursing home residents across all 50 states and the District of Columbia. Soon there may be multiple vaccines available and the pandemic's destruction of the health and economic lives of millions will—in the near future—come to an end.

I hope that by the time you read this, tens of millions will have received their two doses of vaccines and millions more will be ready for delivery. Maybe by then, a one-shot vaccine will also be available. I will be lining up for a vaccine as soon as it is available to me. I hope everyone in the aviation industry does so as well and encourages their families and friends to do the same. There's no saving this industry until we free ourselves from the tentacles of this pandemic, and getting vaccinated will be the quickest route even if the federal government finally comes through with another bailout.

But until the day comes that the vaccine's use approaches herd immunity—approximately 70 to 80 percent of the population according to experts—is there more that the FAA could do to reassure the traveling public of the safety of airline travel, with, of course, the proper precautions, as compared to driving? I think there is. And this is not to suggest that frivolous travel should be undertaken with cases surging. But for travel that is essential, whether for work or personal reasons, is driving really better than flying when all risks are considered? Even if driving alone or with immediate household members is safer from the perspective of catching the virus, is it safer when all risks of travel accidents are considered?

As I read recommendation after recommendation from government experts and epidemiologists across the country that it's safer to travel by car than fly, I have to wonder why is the risk comparison only the risk of contracting the virus and not all the risks attendant to other modes of transportation, especially driving? The FAA's silence on this issue not only impacts the aviation industry, it has been particularly galling to safety experts—like myself—who have had to deal with the FAA's so-called "diversion" theory for years. When it suited the FAA's refusal to act to protect our youngest passengers—in other words, refusing to mandate safe seats for every passenger and eliminating lap children, the FAA's rule that allows children under the age of two to fly on a parent's lap instead of restrained like every other passenger and coffee pot on an aircraft—the FAA handily trotted out its diversion theory.

So, what is the FAA's diversion theory and how was it used to push back on rules requiring infant child restraints? As every safety expert has long known, and even the FAA recognizes on its own website, the safest place for a child on an airplane is in a government-approved child safety restraint system, not your lap. The FAA also advises on its website: "Your arms aren't capable of holding your child securely, especially during unexpected turbulence." Children have been injured and some have died from being unrestrained. But while the FAA will advise against flying with a lap child, it has steadfastly refused to issue regulations requiring children to be appropriately restrained.

More than two decades ago there was a significant push to adopt such regulations, after the July 2, 1994 crash of a USAir DC-9 on landing at Charlotte, North Carolina. The flight experienced a significant microburst on landing and crashed just short of the runway. In that crash, two mothers holding their daughters on their laps survived the accident relatively unscathed. That was not the case for the two lap children: one died of her injuries and the other was severely injured because the mothers were unable to hold onto them when the aircraft gyrated wildly as it crash-landed. That accident made kids' seats a personal crusade of mine. As the lead accident investigator for USAir's IAM union, I was on the scene when a fireman brought out the charred remains of the infant whose mother's arms could not restrain the child.

But the FAA was intransigent when it came to issuing a rule to mandate safety restraints. Instead, it came up with this theory as to why such regulations would do more harm than good. So was born the "diversion" theory. That theory has been updated as recently as 2012 and is enshrined on the Department of Transportation's website. According to the FAA's analysis, "requiring the use of [child restraint systems for children under the age of two] would increase total transportation deaths by 72 over 10 years and by 115 deaths over 15 years." This is because the FAA assumes that the increased cost of buying a ticket for the infant would result in a substantial number of parents deciding to drive to their destination or pick a destination accessible by car.

The FAA, therefore, concludes: "The Nation's highway system, which would capture virtually all of the family travel that price might divert from the air transport system, is less safe than the air carrier system. This remains true despite recent improvements in highway fatal accident rates. Consequently, the diverted travel would impose higher risks on the entire travel party and, to some degree, on other drivers. The net effect would be an increase in total transportation deaths."

While the FAA's diversion theory seemed to me to be a pretext to avoid implementing a kid seat rule the airline industry did not want, in the context of saving the industry in the midst of a pandemic, the FAA might want to reconsider its silence. If fear of catching the virus is diverting travelers to motor vehicles, as reports seem to indicate, why isn't the FAA or DOT highlighting the risks of driving over flying? At least someone in the government should be assessing the total risk of the mode of transportation chosen, the likelihood of catching Covid-19, and the likelihood of serious injuries or death. Travelers need to know and the aviation industry could sure use the help if the total risk is actually lower flying than driving. ■

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

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A letter from NTSB's managing director

Sharon Bryson, NTSB

As the managing director of the National Transportation Safety Board (NTSB), I felt compelled to provide **AIN** readers with some facts omitted from Mr. Goglia's recent [op-ed, published in AIN's January 2021 issue–Ed.], "A GA Accident, a grieving father, and now a documentary film."

Like other government agencies, the NTSB implemented maximum telework at the start of the pandemic. I had no idea that 10 months later we would still be in the midst of this crisis.

A key challenge in this new telework environment was determining how to continue to fulfill our investigative responsibilities while not exposing our investigators to unwarranted health risks associated with traveling to, staying near, and returning from accident scenes.

So we did something we've recommended to others: we designed a thorough risk assessment related to the pandemic and incorporated that into the same risk assessment we've used for determining if investigators should travel to the scene of an accident.

Contrary to Mr. Goglia's assertion, the NTSB has not refused to investigate any general aviation accident, and we have not delegated our authority to investigate an accident, nor are we able or willing to do either. Without exception, the NTSB is investigating all aviation accidents meeting the definition of an accident found in Title 39, Code of Federal Regulations, 830.2.

Mr. Goglia asserts the NTSB only investigates general aviation accidents that involve major public figures—that assertion is patently false. It matters not to the NTSB who is involved in an accident, what matters is the conduct of a thorough, objective and comprehensive investigation.

Lastly, his article suggests the NTSB delegated to the FAA an accident investigation that is the subject of an independent film. This is also false. The NTSB routinely works with the FAA and local law enforcement to obtain information from the scene of a crash, but we do not delegate any aspect of an investigation and we thoroughly investigated that crash as one of the 1,200 to 1,300 general aviation accidents we investigate annually.

Sharon Bryson, NTSB Managing Director

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AVFUEL

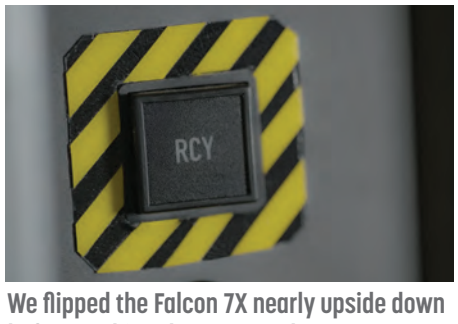
Dassault explores smarter autothrottles that enhance Falcon safety, performance

by Matt Thurber

Dassault's twin-engine Rafale fighter jet has been equipped with what in retrospect seems an absurdly simple design feature: a single throttle lever to control both engines. Dassault engineers had long discussed a similar application for a business jet and now the French manufacturer has conducted extensive flight tests of a single-throttle lever integrated with the three-engine Falcon 7X's fly-by-wire digital flight control system (DFCS). In late October, I had the opportunity to test-fly its SmartThrottle in the 7X flight-test aircraft and experienced another new feature that Dassault has also been testing—a full recovery mode function that can help pilots recover from a loss-of-control situation.

The testing that Dassault conducted on the experimental 7X revealed significant safety and operational benefits. However, the company hasn't yet decided on when the SmartThrottle might be integrated into a new airplane. The next Falcon model is the so-called "Falcon Next," but Dassault has not officially launched this program and it isn't known yet whether this aircraft might feature the SmartThrottle and the recovery mode features that are enabled by the SmartThrottle's integration with the fly-by-wire DFCS.

According to Dassault, the 7X SmartThrottle test program got underway more than two years ago. To put it simply, the SmartThrottle is like an enhanced autothrottle, incorporating all the normal autothrottle capabilities but taking advantage of digital technology to add safety features such as upset recovery, more comprehensive emergency descent modes, and engine failure mitigation, along with single-power-lever operation.



We flipped the Falcon 7X nearly upside down before pushing the recovery button.

For the purposes of flight testing, the 7X was modified with the single-lever SmartThrottle along with three manual "mini-throttles" that can operate each engine individually and during takeoff and landing. Ultimately, a certified version of the SmartThrottle would be usable from takeoff to touchdown, but during testing the SmartThrottle was usable only once airborne.

The 7X's instrument panel was modified with the pilot's primary flight display (PFD) replaced with a touchscreen display that mirrored all the functions of the normal 7X's mode-control panel. Two smaller display screens were mounted on the outboard side of the panel, only for displaying flight-test-related information. The flight-test 7X was set up for single-pilot operation from the left seat so that another test pilot or pilots getting demonstrations of the system could fly from the right seat while not being required crewmembers.

Because the SmartThrottle is entirely digital, engineers can add all sorts of features to take advantage of the technology. Soft and hard stops can be programmed so the pilot feels a detent at the maximum climb power setting, for example, but the detent can be changed depending on conditions. The throttle's friction is also adjustable, not by the pilot, but engineers can tweak friction settings electronically.

It's the marriage of the SmartThrottle with the DFCS that adds even more capability, not just the ease of engine management and simpler handling of engine-inoperative situations but also further extending the DFCS's capabilities. Now Dassault is moving that concept forward to take full advantage of the flight control infrastructure that it has been developing since the 1950s.

Dassault Flight Controls

In the 1950s, Dassault leadership decided to bring all flight control design and

Test flying the 7X recovery mode

Before flying the flight-text 7X for the SmartThrottle and recovery mode demo, I spent some time in Dassault's simulation lab at its St. Cloud, France headquarters, getting familiarized with the 7X flight deck and its flight characteristics. The lab simulator isn't set up with the SmartThrottle/recovery system, however. But it was helpful to "fly" the simulator and practice some of the maneuvers we'd test in the real airplane the following day.

The next day I was escorted into Dassault's flight-test center at the Istres-Le Tubé Air Base, where all the company's military and civil flight-test activities take place. This was to be the final flight of the SmartThrottle-equipped 7X, and the data recorded by the telemetry office would be used as part of the analysis.

Prior to my flight, Dassault test pilots logged 50 hours in the specially-outfitted 7X, collecting data during two test campaigns. Many of the flights introduced operational Dassault pilots to the SmartThrottle and recovery system.

The SmartThrottle in the test 7X, mounted in the center of the forward console between the seats, looks almost like an old-style automobile automatic transmission gear shifter. It is bracketed by strips of LED lights on either side that can highlight various conditions as a way of giving the pilot instant feedback on the status of the engines.

Because it's digitally controlled, engineers can vary the SmartThrottle friction or set hard or soft stops for different requirements. For example, the pilot might feel a click when approaching a reduced-power takeoff setting or feel a hard stop preventing the application of more power if the airplane is nearing Vmo (maximum operating speed). The lights alongside the SmartThrottle could highlight problems such as showing the power setting the digital flight control system (DFCS) is using if the throttle itself were jammed.

Three lights on the aft side of the throttle quadrant illuminate green when the engines are connected to the SmartThrottle and red when the mini-throttles are engaged. For takeoff and landing, only the mini-throttles could be used during the test program, but a production version of this system would not include the mini-throttles.

With test pilots Philippe Duchateau in the left seat and Tom Valette in the jump seat, I flew from the right seat, but as this was a flight-test setup

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manufacturing in-house and set up the flight controls department in Argonay, France. This development stemmed from the crash of a Mystère IV B fighter jet, serial number one, during a demonstration flight flown by legendary test pilot Constantin Rozanoff at Dassault's former Melun Villaroche flight-test center near Paris. The crash had to do with the flight controls, and Dassault decided that owning the flight control engineering and production would help improve safety and allow designers more control of aircraft handling characteristics.

Dassault's first fly-by-wire (FBW) business jet, the 7X, owes much of its flight control design to Dassault's military jet development, starting with the Mirage 2000 but especially the Rafale. The company's fighters and business jets such as the Falcon 7X, 8X, and upcoming 6X all share a key characteristic, a so-called "closed-loop" FBW design.

Open-loop FBW basically replicates the characteristics of conventional flight controls where a yoke is connected to cables, pushrods, and in some cases hydraulic boosters. In an open-loop FBW system, the pilot's movement of a yoke or sidestick sends electronic signals that result in proportional movement of a control surface, just like with the mechanical controls, and the aircraft must be trimmed to maintain each different attitude. Any small perturbation such as turbulence moves the airplane away from the desired attitude, and the pilot has to constantly move the controls to return to the attitude, or trim when selecting a new attitude, and thus this is also known as a trim-stable FBW system.

Closed-loop FBW is path-stable, which means that the pilot uses the controls to select the desired flight path then lets go of the sidestick. Thus, the FBW maintains the flight path or trajectory without further input from the pilot. Dassault illustrates this by showing a video of two FBW jets in side-by-side windows, flying in the same trajectory, and the pilot flying the Falcon can be seen with no hand movement while the other jet's pilot is constantly moving the controls to maintain the desired flight path. That is one of the reasons Dassault believes the flying qualities of its aircraft are superior.

The DFCS adds another dimension, however, and that is to use the optimal combination of control surfaces to respond to the pilot's request, as transmitted through the sidestick, rudder pedals, and—with SmartThrottle—the engines in more than just a normal autothrottle sense.

Although the 6X won't be fitted with the new SmartThrottle, Dassault has added new elements to its DFCS, which now includes all secondary control surfaces and nosewheel steering. A new control surface—a flaperon—on the 6X combines flaps and aileron functions. By incorporating every control, the 6X essentially wrings all the possible benefit out of FBW in terms of trajectory management.


MATT THURBER


VADIM FELDZER

Dassault test pilot Philippe Duchateau (l) briefs AIN's Matt Thurber on the SmartThrottle.

Energy Management

The Rafale demonstrated that adding the engines with single-lever-power control to the DFCS brings the benefits of energy management into the FBW sphere. Dassault engineers naturally wondered what the result would be if the same were done for a Falcon, according to flight control system engineer Francois Dupre, and this was the genesis of the experimental 7X test program.

"What if we could broaden the flight control strategy to energy management with a single command to control the aircraft?" he asked. By including the engines, helping the pilot manage energy, it would help the pilot control speed with less workload, Dupre added.


The flight test SmartThrottle has LED light strips on either side to highlight engine condition.

Not only that, but the engine integration enables new functions to improve operational safety, he said. This can include helping the pilot in a low- or high-speed condition, which is already something that is done with autothrottle-equipped aircraft. But SmartThrottle adds the capability to manage the entire engine operating envelope, including engine failure, while allowing the pilot to keep flying the airplane the same way as normal (without an engine failure).

"The idea is to have the same [flying process] even in case of engine failure," Dupre explained. "You're still managing energy and will see it decrease, but you don't have to take care of lateral control—that's done automatically by the DFCS."

Dassault has demonstrated some of this functionality in the twin-engine Rafale with its single power lever. Its DFCS, for example, uses the jet's control surfaces to provide air-brake functionality. By managing the Rafale's energy, the DFCS allows pilots, especially in the naval version that lands on aircraft carriers, to focus on flying the proper trajectory with no need to divert attention to speed or even angle-of-attack. "The workload is very high, especially in bad weather," said Dupre, "so it's very useful for navy pilots."

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only one pilot was required. Thus, I was playing the role of an observer/demonstratee and not a required crewmember.

During the briefing before the flight, Duchateau explained Dassault's philosophy behind the recovery system. "The aim of the recovery function is to help in case the crew gets a little bit lost in attitude," he said. Newer-generation pilots tend to fly less hands-on and a recovery function can help get them out of trouble. "But also wake turbulence, if you're getting flipped over, you don't have to think about how to get back to a normal position; it will take you back to a nice flying position."

Using the mini-throttles for takeoff felt a little strange, but then again, it reminded me to wonder why power levers have to be one of a fistful of throttles as in the typical jet design. An electronically controlled engine's power could be manipulated by any old variable switch or knob, after all.

I took off from Istres-Le Tubé's Runway 33 in good weather with calm winds and climbed to 5,000 feet while I refamiliarized myself with the DFCS. I've flown the Falcon 8X before, so the 7X felt comfortable, matching the 8X's easy handling characteristics. Fly-by-wire certainly makes large airplanes more pleasant to fly.

We first programmed the RNAV 33 approach in the Honeywell-based EASy avionics, then pulled the power back on the left engine mini-throttle to simulate one-engine-out operation. With slats/flaps 3 set and hand flying, near minimums at about 300 feet, I clicked the go-around button once and pushed the SmartThrottle forward and watched the power come up on the two "good" engines. Meanwhile, the DFCS commanded the flight director to bank slightly to the right and kept the airplane on course, and then we climbed to 2,500 feet.

Having to move just one lever to command whatever power is available is far simpler and less taxing than trying to figure out which engine has failed and then dealing with three separate levers.

For the second and same approach, with all three engines operating and autopilot on, at 300 feet I pushed the go-around button once for the initial "soft" go-around, which provides a relatively gentle maneuver, then pushed the go-around button again to engage the more aggressive "high" go-around. This moved the nose to about 17 degrees, with full power, resulting in a 4,000 fpm climb.

Continuing the climb, Duchateau showed me some climb modes that

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Of course, adding these capabilities to the DFCS means that Dassault has to work closely with engine manufacturers to gain full access to every aspect of the engine's operation. "We have to define the interface," said Dupre. "Functions need to have vision of the performance of the engine. There must exist some exchange between systems and engines, just like we do with control surfaces. The system has to have a better understanding of the situation. The reactivity of the function has to take into account the dynamics of the engine."

But even with an accurate computer model of the engine, pilots still must fly many actual flight tests to fine-tune the system in real conditions. And Dassault has developed techniques to do just that.

The concept of automation takes on new meaning when all the primary and secondary controls are managed by the DFCS. What this allows is still complete and full control authority by the pilot and improved performance but also the opportunity to assist the pilot in recovering the aircraft if something goes wrong.

"The DFCS enables us to take the benefit from full authority," explained DFCS engineer Alain Boucher. "This is the same level of authority the pilot has with manual control. But we're trying to increase the automation level as a way of getting quicker and more accurate reactions to hazardous situations." This could also include adding functions like TAWS (terrain) and TCAS (traffic) and making them part of the automation and performance and safety improvements.

Such a system could easily help a pilot recover from an upset caused by a wake turbulence encounter. "There are all kinds of unusual attitudes where the pilot may be lost a little bit and doesn't know what to do," said Boucher. "This could bring many [opportunities] to the crew in these kinds of situations."

Basic safety is already covered by certification requirements, but these new features aren't addressed, yet. "My goal is to say all these subjects could be part of a certification program," he said. "We're going toward more safety and more protections for the aircraft and crew. It could become part of regulations in the future."

PHOTOS THIS PAGE: VADIM FELDZER

Dassault test pilot Philippe Duchateau showed AIN's Thurber the Rafale's single throttle.

Recovery Mode

Ultimately, the features that Dassault explored with the experimental 7X were integration of the SmartThrottle and using the DFCS capabilities to effect the recovery mode. The Rafale does have recovery mode, but it also has an added high-level mode called ground protection. This uses the fighter's DFCS to constantly look at the current and projected trajectory, and if it determines that the trajectory is going to result in impact with the ground, it pulls up to maximum g to maneuver the Rafale back to safety. This is enormously helpful if the pilot succumbs to g-induced loss of consciousness. The Lockheed Martin F-16 has a similar system called Automatic Ground Collision Avoidance System, which has so far saved 10 pilots and nine F-16s. One Rafale has been saved by the system, making ground protection well worthwhile.

Dassault could add ground protection to the Falcon DFCS at some point, but that wasn't part of the experimental 7X test program. The ground protection could be enabled by tapping the Falcon Eye head-up display's high-performance camera system. "We can use all that stuff to contribute to safety," said Patrick Parnis, Dassault's head of marketing.

To use the recovery mode, the pilot has to push a button to initiate the recovery, then the DFCS takes over and returns the airplane to a safe attitude. In the experimental Falcon 7X, recovery mode was programmed to stay within 1.5 g, which is more comfortable for passengers. "For civil aircraft, recovery mode will enhance safety to help pilots in difficult conditions," said Jean-Louis Montel, a special advisor on technical and design issues for Dassault chairman and CEO Eric Trappier.

FalconEye and also the primary flight display could help show the pilot that the aircraft is approaching a loss-of-control situation, and if the pilot doesn't correct the situation then the DFCS could engage recovery mode automatically. "The idea is to prevent an upset, but if the pilot doesn't react, maybe he is focused on other things, automation will take the lead," said Montel. All of this is still under consideration and will be informed by the experimental 7X tests.

However, the goal is always to keep the pilot in the loop as much as possible. "If we have a complex system and the pilot is not in the loop, the time to apply the right procedures is very long and not compatible with times taken into account in safety studies," he added. "The idea is to have the pilot in the loop, and not have a discontinuity between the pilot and the automation."

"Clearly this is a challenge when you go for more automation," said Boucher. But the automation inherent in Dassault's recovery system is designed to help pilots, who have shown that a frequent reaction to an unexpected unusual attitude is the wrong control input. "That means seconds that you lose [for recovery]," he said.

And, of course, for each option, Dassault will have to carefully consider the steps needed to obtain certification for the SmartThrottle and recovery modes, including backup modes. "We're just at the beginning of the story," said Montel. ■

After the final flight of the SmartThrottle setup in the flight test Falcon 7X, AIN editor-in-chief Matt Thurber (l) with test pilots Philippe Duchateau (c) and Tom Vallette (r).

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were tested on this 7X—a "comfort" climb and "fast" climb. The comfort climb is optimized for passenger comfort, for example, avoiding a rapid pull-down while leveling off.

We leveled at FL400 for a demonstration of the emergency descent mode, which is designed either to happen fully automatically if the pilots are incapacitated or allows the pilot to manage the maneuver. The pilot can, for example, control direction while the DFCS continues the rapid descent, thus minimizing the pilot's workload.

The descent mode turned us 90 degrees to the left and dropped the nose almost 20 degrees at maximum speed, with descent rate settling at 10,000 fpm, bringing the 7X rapidly down to FL200. Here we planned to fly the recovery maneuvers—the real meat of this demonstration.

Level at FL200 at 250 kias, Duchateau instructed me to fly a series of maneuvers where I would bank steeply then let the nose drop below the horizon. These varied between banks of 110 to 120 degrees with the nose dropping 7 to 15 degrees. We did these in clean configuration and at medium speeds, from 200 to 250 kias. Each time I generated the upset maneuver, I would let go of the controls and Duchateau would press the recovery button on the instrument panel. And each time the DFCS smoothly and precisely returned the 7X to straight and level flight, pulling a maximum of 1.7 g, well below the limit of 2.5 g. Of course, the DFCS also ran the SmartThrottle as needed to manage the recovery properly.

The final maneuver was with slats/flaps 3 and landing gear down, where I slowed the 7X to 114 kias, Vref at that weight and configuration, then banked left 40 degrees and allowed the nose to drop 10 degrees. After I released the controls and Duchateau pressed the recovery button, the 7X righted itself, losing just 200 feet and pulling 1.4 g. This was a good demonstration of how the recovery mode could help resolve an upset in the airport environment.

What was interesting about these exercises was that I didn't need to try to recall the upset recovery mantra that I've learned during a few upset prevention and recovery training courses I've attended. The DFCS operates much faster than a human, using any control needed to care for the airplane and its occupants.

Ultimately, the recovery process was safe and amazingly smooth. I admit that it was a lot of fun getting to flip the 7X nearly all the way over, watching the gorgeous Marseille coastline fill the windows, and feeling forces rarely felt in a business jet. ■

Indianapolis-based TxJet recorded a 29 percent increase in organ transplant transportation missions between 2018 and 2019.

TxJet keeps flying organ missions during pandemic

by Jerry Siebenmark

When Covid-19 first made its way to the U.S. early last year, Indianapolis-based TxJet, like other charter operations, found itself in a demand slump. But it was a momentary pause because TxJet's primary cargo is human organs and the medical teams that transplant them. "Tx" is an abbreviation used for organ transplantation in medical parlance.

"[It] was a challenge for us," said TxJet COO Steve Johnson. "A lot of transplant programs, in the beginning, were frankly not transplanting because we didn't understand the virus, we didn't understand how we were safely going to transplant people. [But] we flew, and we kept flying [and] we've been able to come through this very well."

Started in 2014 with one Cessna Citation CJ3, TxJet is a nonprofit arm of the Indiana Donor Network. It was originally conceived as a service to transplant centers and organ procurement organizations (OPOs) within the borders of Indiana, but its service has since expanded to include a broader swath of transplant centers and OPOs. In 2019—the most recent year for which it has data—TxJet flew 580 organ transport missions in 38 states, a 29 percent increase from the 447 missions flown in 2018.

"We started just to support our local transplant programs," Johnson explained. "Our aspirations were simply to solve the need that was at hand, which was our local transplant centers. As we got established and felt like we knew what we were doing, and that we were doing a good job and people were very satisfied with what we were able to accomplish, we started taking on business with other transplant centers and OPOs that were regionally based." Because TxJet is a 501(c)(3) nonprofit organization, its clients are only charged TxJet's costs. "We look at what our expense of operation is," Johnson said. "We look at the number of flights we're going to do, we divide it up and obviously that's how we come up with our expense associated with what we charge our transplant centers and OPOs."

Johnson said TxJet's sole focus on the transportation of human organs and transplantation teams makes it unique versus traditional Part 135 operators. Human organs become less viable the longer they remain outside the human body. TxJet staff and flight crews understand that race against time.

"Your traditional 135 operators do a fantastic job at what they do but there are a lot of considerations when it comes to flying organs and teams," he said. "You have all the same expectations that users of all 135 [operators] have as far as safety, reliability. But you're just stepping it up one notch more, knowing that half an hour delay means something."

TxJet recently purchased two new CJ3+s, which Johnson explained is an airframe that provides the organization "the reliability, the technology, and the versatility" to be able to fly in all types of weather and to do so efficiently in long and short leg flights, he said. The light twinjets are operated by a team of 14 pilots—all of whom have an ATP rating and are trained as captains—who fly two-pilot missions, which exemplifies TxJet's focus on safety.

"The cockpit resource management that goes on in a two-pilot operation we completely believe is best practice and should be an industry standard," he added. "Our aviators are pilots just like the rest of the charter industry, but they also speak the language. They understand the criticality. They know that they have a lifesaving organ on board that still has to get to its destination."

TxJet also employs a full-time A&P mechanic to service its fleet who is augmented by the Textron Aviation Service Center at Indianapolis International Airport, Johnson noted. "The service center has recognized the mission associated with TxJet and it is just absolutely incredible that these guys will drop anything when we have an AOG to make sure that these airplanes are back up and ready to fulfill their mission," he said. "Everyone at that repair center understands who's on the other end of it and it's actually a really touching thing in aviation to see people behave that way."

As for what's next at TxJet, Johnson said growth will come with demand. It's not purposely looking to expand. Rather its goal is to serve transplant centers and OPOs to the best of its ability. "We don't have aspirations to take over the world," he said. "We have aspirations to make sure that we save as many lives as we possibly can through providing aviation solutions in the transplant environment." ■

Best Group launches new ground power units

The team at Best Tugs has launched two additional product lines: Best Power and Best Scrubbers. With the expansion of its aviation lineup, the company created Best Aviation Products as the umbrella for current offerings and future products. Located in Spanish Fork, Utah, Best Aviation Products is expanding with staff engineers led by company co-owners Mark and Mike Patey.

Best Power's new ground power unit (GPU) is in full production, with the first product in the new series the 28-VDC, 57-amp BP-57/100. This GPU operates on 120-240 VAC. Producing 57 amps of conditional power with surge capability of 100 amps, it can be used to power a variety of ground power needs from aircraft database updates to electric flaps operation and testing.

The GPUs are up to 91 percent efficient in generating 28-VDC power and the power is filtered to avoid any spikes or abnormal frequencies, which is important for the growing number of aircraft equipped with modern avionics. The capability for surge protection and up to 100 amps for 10 seconds in the 57-amp version allows operation of electric flaps on an Eclipse 500, for example, without the worry of a short-term need for power that might overtax the electrical system.

Some GPU features that pilots find useful are the digital displays of energy. This includes voltage and also amperage draw, watts currently being used, and total watts while it is connected to the aircraft.

During a test of the GPU, I decided to assess the company's claim regarding the full 57 amps, which was easy with my Eclipse 500 by activating the three pitot/AOA probes. The GPU display indicated 57 amps and the voltage was rock-steady at 28.5 VDC.

With that milestone reached, I went even further to exceed the GPU's rated amperage draw. I activated enough systems on my Eclipse to raise the current to 67 amps; not surprisingly the voltage dropped below 28 VDC, but it was still above battery voltage.

The display allows users to monitor the load and reduce it as necessary to keep within specs and provide the power needed for the aircraft. If the power needs are higher, then it would make sense to purchase a larger unit rather than unknowingly overload the aircraft's power circuits.

For aircraft with a specific voltage, Best Aviation Products can adjust the output as necessary.

RICH PICKETT

The 57-amp Best Power GPU costs $1,495. A larger unit producing 114 amps—the BP-114/200—is also now available for $1,995. Still larger are the 171-amp BP-171/300 and 300-amp BP-228/400 power supplies, available in the first quarter of 2021. All units, with the exception of the 57-amp GPU, require 220 VAC. The first model of the new floor scrubbers is available now, the 28-inch Best Scrubber-28, for $8,348. A smaller 20-inch version will be available in early 2021. **R.P.**

Airshare expands access, management, mx programs

by James Wynbrandt

Airshare has simplified its fleet to include just Embraer jets, including 13 Phenom 300s.

Lenexa, Kansas-based Airshare is celebrating its 20th anniversary and an expanded range of services, now including on-demand charter, aircraft management, and maintenance, along with its Embark jet card and flagship days-based fractional ownership program.

The company's 2018 rebranding as Airshare (née Executive AirShare) underscored its widening customer base and services and "blended solution" approach, said president and CEO John Owen, who succeeded company cofounder Keith Plumb as president and CEO in 2018.

Starting with one Beechcraft King Air 350 in Wichita in 2000, Airshare now has 19 bases across the nation's midsection—from Denver to as far east as New York state, from Texas's major cities to Chicago and Milwaukee, and a dozen places in between. Meanwhile, its fractional and jet card fleet has evolved, and today features Embraer Phenom 100 and 300 light jets; Airshare was the Part 135 and fractional program launch customer for the Embraer platforms in 2009 and 2010, respectively.

It's noteworthy that neither founding CEO Bob Taylor (now chairman) nor Owen had any aviation experience prior to involvement with what is today Airshare. Taylor, a "finance guy" with public companies, was asked in 1998 to help sell an FBO and certified repair station after the owner—a friend—died in an airplane crash. As Taylor learned how the business operated, "I just fell in love with the industry," he recalled, and after the sale, investigated launching a fractional program in the mold of the then-fledgling NetJets. His market research consisted primarily of asking potential customers two key questions: where do people go and how long do they stay there?

Taylor learned that the vast majority of flights were between 300 and 700 nm and that "most customers' travel is what you call 'out and back'—stay one or two days" and return. Based on this feedback, he launched Executive AirShare, but rather than offering customers a set number of flight hours per year based on the size of their share, Airshare provided a set number of days.

Whereas standard fractional programs allot owners 50 hours annually for the minimum 1/16th aircraft share, for example, Airshare's 1/16th share provides 20 days, with no limits on daily flight hours (other than 14-hour crew duty day rules); its Embark jet card also provides days of access rather than hours (10 days over two years for the Phenom 100, 20 days during that period for the Phenom 300). The days-based plan can provide significantly more flying time and lower hourly costs than hour-based programs, said Owen. "We have several customers who fly well over 100 hours [annually] on a 1/16th share."

The big savings come from taking advantage of discount rates. Airshare's standard hourly (or one-way) rate applies to any trip that begins and ends in different locations; the Express (or round-trip) rate provides a flat 35 percent discount for trips that begin and end in the same place. If a customer flies multiple legs in one day, for example, spends the night at the last destination, and the next day flies multiple legs from that last destination, returning to the previous day's point of departure, all the flight time over the two days would qualify for the Express rate.

Together, the discount rates and daily access allowance can lower the costs of both the Phenom 100 and 300 to the $2,000-per-hour range for fractional owners. (Airshare doesn't disclose pricing or fees for the Embark jet card, but said costs can also dip to the $2,000-per-hour level when deployed efficiently.)

Alex Franz, COO

"Keeping all our employees was job number one..."

Airshare's regional service model and floating fleet help keep operating costs down. To support growth, the company establishes bases in locations with enough potential shareowners and a quality of life that crews would enjoy.

"We like the hubs," said Owen. "We create customer-density in areas we service; at the same time, we're building pilot density. Customers see the same pilots over and over, and it starts to feel like their airplane. "We'll fly out of anywhere," he added, "But we don't want to fly empty to a location to pick up customers—somebody's paying for that."

Owen joined Executive AirShare as CFO in 2016 as Taylor sold controlling interest, arriving from the trucking industry. "I realized how closely related trucking and aviation are from a financial perspective," he recalled, noting that they're both logistics enterprises at heart. "Instead of trucks you have airplanes; instead of cargo you have passengers, and the drivers are pilots." The objectives are also identical: "Creating efficiencies and reducing costs, and passing them on to customers."

He inherited a "complicated fleet mix," and after analyzing missions and operational data, the team determined that Airshare could fulfill 98 percent of trip requests with just the Phenom 100 and 300 and began culling other models from the fleet. Today it consists of 13 Phenom 300s (including the updated 300e, with more on order) and nine Phenom 100s, almost all bought new; the average age is less than seven years, the oldest is 11, and the planned replacement cycle is about 13 years.

Managed Aircraft

Meanwhile, Airshare's management business dates back to 2008, when it purchased Texas-based Executive Flight (now officially part of the company, as per the rebranding). Part 135 approval came in 2001, when Taylor bought the business he groomed for sale three years prior and whose operating certificate he'd helped secure. Today Airshare operates about 25 managed aircraft, including Citation XLSs, Embraer Legacys, and Bombardier Challengers, with plans to expand its midsize jet management and charter business "in the next year or two," Taylor said.

"We do have customers who have grown from the Phenom 300," he added. "If a fourth of their flying is on a midsize, we can adequately handle them with chartering. Or, if they have a lot of flying, we can help find them the aircraft they want and manage it, and put charter hours on it to help offset costs." Though charter has traditionally represented a small portion of Airshare's business, demand is "growing and especially relevant as we manage [more] midsize aircraft."

The company received Argus's Platinum rating in 2018 and IS-BAO Stage 3 registration in 2020. Airshare is also raising its maintenance services profile for third-party work. With its Embraer authorized service center, Airshare maintains its Phenoms as well as the Citations and Challengers in its managed fleet.

"We quote [maintenance RFPs for fractional and management customers] like everybody else," said Owen. "We welcome them to compare our services and prices. We're as good as anybody, if not the best, on Phenoms. Our director of maintenance has been here since we took our first Phenom."

As it has for all providers in recent months, Covid-19 tested Airshare's resilience.

"I remember the day, March 16," when operations ceased, Owen recalled. "It felt like every five minutes the situation would change. We didn't know where we were headed."

The following lockdown days were spent in the conference room monitoring news updates, developing safety and health protocols, and crafting cost-containment strategies.

"Keeping all our employees was job number one," said COO Alex Franz, formerly the company's chief pilot and later v-p of flight operations. "Airshare spends a lot of time hiring. We seek individuals who have the aptitude and drive and want to work as part of a team. If they have those three things, that person is going to deliver customer service even if they're not trained—that's their DNA."

Franz noted that maintaining those standards had grown difficult as the pre-pandemic pilot shortage drained the talent pool, but the company "always stuck to our guns" on its hiring principles. With $3.9 million in Paycheck Protection Program funds from the CARES Act, Airshare kept all team members on board. It also used the Covid-induced reduction in flight hours to accelerate its aircraft interiors refreshment program. Now the entire Phenom fleet is outfitted with interiors two years old or less. Most of the refurbishment work is done in-house, of course.

Today, with business aviation's post-lockdown demand bump, "we have more customers than in the past and a lot of first-time [business aviation customer] interest in the space," said Owen. The newbies have bought "a lot of cards—try before you buy—and already we've had some convert to fractions," he said. Charter is also seeing "more and more customers."

Airshare is now hiring pilots to meet current needs and believes all the pieces are in place to support a planned expansion into the Northeast and Southeast U.S.

But first, the company will upgrade its technology platform. "We're going to make a strategic investment in technology for our customer portals," said Owen. "The next wave is giving the right tools to customers that allow them to understand and take full advantage of the program, so we can really develop a service that's second to none." ■

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Pentagon will track D.C. helicopter noise

by Mark Huber

The Pentagon will be charged with tracking helicopter noise in the Washington, D.C. area under provisions of the recently enacted National Defense Authorization Act. The provision in the massive $740 billion legislation was inserted at the behest of several D.C.-area congressmen who have long lamented the steady rotor din over the nation's capital and surrounding suburbs. But what all this data will actually accomplish remains to be seen. As in the Los Angeles Basin, the competing pressures of crowded airspace and the aviation needs of public safety and law enforcement limit practical—and safe—options.

The U.S. Park Police flying over the Potomac River.

The amount of helicopter traffic over the D.C. area is substantial, according to data recently released in a Government Accountability Office (GAO) report that details the scope of helicopter activity there. The GAO found that there were 88,000 helicopter flights there between 2017-2019 by 50 separate operators. All flights were conducted within 30 miles of Washington Reagan International Airport—an area with three large hub airports, 11 regional airports, and 55 heliports. The majority of these flights—some 80 percent—are conducted by the military, law enforcement, and air ambulance providers. Locally-based fleets serving these operators include:

- The Federal Bureau of Investigation—six Sikorsky UH-60Ms and three Bell 429s. The FBI uses their aircraft primarily to shuttle personnel between its D.C. headquarters and its academy in Quantico.
- The U.S. Park Police—two Bell 412EPs and one Bell 206L3—based at its Eagles Nest facility in D.C.
- The USAF 1stHelicopter Squadron—21 Bell UH-1s stationed at Joint Base Andrews.
- The Army 12th Aviation Battalion—34 Sikorsky UH-60s based at Davison Army Airfield, Fort Belvoir, Virginia. Also based there, three more UH-60s and six Airbus UH-72A Lakotas used by the Aviation Branch of the Army National Guard.
- U.S. Coast Guard—three Airbus MH-65Ds based at Reagan National Airport.
- Marine Helicopter Squadron One (HMX-1) stationed at bases including Marine Corps Air Facility Quantico, Virginia, the Pentagon, the White House, the Naval Observatory, and Joint Base Anacostia-Bolling—12 Bell Boeing MV-22s and 11 Sikorsky VH-3Ds, one Sikorsky UH-3D, one Sikorsky UH-60N, and eight Sikorsky VH-60Ns.
- Fairfax County (Virginia) police—two Bell 429s.
- Maryland State Police—10 Leonardo AW139s.
- D.C. Metro Police—two Airbus AS350s.
- Prince George's County (Maryland) Police—four MD520Ns.
- Virginia State Police—four Bell 407s, one Bell 412, two Airbus EC-145s, and one Bell 412.

The GAO study enumerated a variety of factors in the growth of the helicopter noise problem in the D.C. area, what operators already have done to mitigate noise, and the difficulties with any further reduction due to D.C.'s highly-restricted and complex airspace. For example, the Pentagon tightened restrictions as to who was authorized to use its heliport, thereby chopping the number of flights originating there from 226 in 2016 to 124 in 2019. Other operators have told crews to refrain from making tight turns and other maneuvers that exacerbate helicopter noise. In general, helicopter flights in the region adhere to an established network of 25 fixed routes in place since the 1980s that overfly rivers and major freeways to mitigate aircraft noise. But the nature of D.C.'s highly secure and regulated airspace often works at cross purposes with that goal.

This is particularly true in the airspace proximate to Reagan National, where the GAO notes, the "FAA further limits the maximum altitudes for helicopters where helicopter routes overlap with commercial passenger airplane operations to ensure the safety of all aircraft. As a result, helicopters in these areas may fly as low as 200 feet above mean sea level. Elsewhere, the helicopter route structure generally establishes maximum altitudes between 1,000 and 1,300 feet above mean sea level throughout most of the D.C. area. Because FAA's maximum helicopter altitudes are established relative to mean sea level, the maximum posted altitudes relative to objects on the ground may be lower or higher, depending on local geography, buildings, or obstructions."

It is also unlikely that area operators will be able to reduce their volume of night operations that account for 23 percent of all flights and are a disproportionate source of complaints. The GAO found that crime-riddled Prince George's County—notorious for leading the nation in police shootings—conducted 90 percent of its flight operations at night. Air Methods reported that 50 percent of its area air ambulance flights were at night. And military officials told the GAO that certain night operations in the region—particularly training, night vision goggle proficiency, and aircraft intercept—were essential. They also noted that the D.C. area's unabated growth—from a population of 2.77 million in 1980 to 5.38 million in 2020—means that residential housing is being built closer to rotorcraft bases.

Overall, other than measuring helicopter noise, not much can be done. Writing to the GAO in December 2020, DOT deputy assistant secretary for administration Keith Washington warned, "Significant reductions in helicopter noise in the National Capital Region will be challenging since the majority of operations are military, law enforcement, and medevac service providers." ■

FAA-reported helicopter flights in Washington D.C. area

Operator mission	2017	2018	2019	Total
Military	11,598	10,281	11,011	**32,890**
Air medical	6,791	5,369	6,162	**18,322**
Other aviation activity	5,129	4,545	4,303	**13,977**
State and local law enforcement	4,441	4,181	4,239	**12,861**
Federal law enforcement and emergency support	2,068	1,775	1,654	**5,497**
News	1,377	1,443	1,478	**4,298**
Total	**31,404**	**27,594**	**28,847**	**87,845**

FEDERAL AVIATION ADMINISTRATION (FAA)-REPORTED FLIGHTS CONDUCTED IN THE WASHINGTON, D.C. AREA BY OPERATOR MISSION, 2017-2019

News Update

EASA Proposes Overwater Ops Changes

EASA is proposing equipment changes for Part 27 and 29 helicopters that are operated for extended periods over water to help improve survivability during helicopter ditching or survivable water impact. The new requirements could take effect by 2023. Proposed modifications for such aircraft include: black/yellow markings for emergency controls used underwater for all helicopters; remote life raft deployment (cockpit, cabin, from water) for large Part 29 helicopters only (ditching approval only); substantiated sea conditions for capsize resistance in the rotorcraft flight manual; easy opening emergency exits, emergency illumination of underwater ditching exits, and one pair of exits for every four passengers; improved life raft attach lines and easy reach life preservers; and automatic deployment of emergency flotation systems.

Mexico AW109 Crash Now Homicide Investigation

Mexican authorities detained four people in late December in connection with a 2018 fatal crash of a Leonardo AW109S near Puebla that killed all five aboard, including Puebla state governor Martha Alonso. The Puebla attorney general said the four detained—all employed by Toluca-based Rotor Flight Services at the time of the accident—were being investigated for homicide and making false statements. Accident investigators concluded that a known, preexisting problem with the helicopter's stability system should have grounded it from further flight before the accident. Investigators found the helicopter crashed due to a sudden left roll, causing loss of control that deteriorated into inverted flight and impact into terrain. They said the uncommanded roll could have been caused by loose actuator screws contacting the stability system's electronic card.

Blade Partners With Ross For New Westchester Service

Urban air mobility platform Blade plans to begin helicopter rideshare service between the Westchester/Connecticut corridor and New York City in a strategic alliance with Ross Aviation. Denver-based Ross currently operates 17 FBOs nationwide. Under the deal, Ross will work with Blade to build a vertiport at Westchester County Airport in White Plains, New York. The new vertiport also will include all the necessary infrastructure to support future eVTOL aircraft. Blade expects the new five-day-per-week Westchester service to begin as early as March, transforming a typically one- to two-hour hour drive to/from New York City into a 10- to 15-minute flight. One-way flights are expected to be approximately $175 per person, though Blade plans to offer commuter passes that would reduce the per-seat cost to $95.

DOT IG slams FAA 'doors off' helo ops oversight | by Mark Huber

The U.S. Department of Transportation's Office of Inspector General (IG) criticized the FAA's supervision of "doors-off" helitour operators in an audit report requested by New York's two U.S. senators in 2019 following the March 2018 fatal crash of a FlyNYON doors-off tour.

In that accident, all five passengers remained strapped in and drowned after the Airbus AS350B2, operated for FlyNYON by Liberty Helicopters, successfully autorotated into the East River, but then rolled inverted after its emergency pop-out floats failed to fully deploy. Physical and electronic accident evidence showed that the passengers were unable to extricate themselves from the commercial, off-the-shelf supplemental restraints they were wearing.

The NTSB discovered that the FAA had not evaluated these passenger harnesses and the FAA later placed new restrictions for the restraints 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."

While the IG noted that the FAA has made some progress on the issue via the LOA requirement, it concluded, "that authorization process is still-evolving and important risk information has been overlooked."

The IG recommended that the FAA issue a final rule on supplemental passenger restraints; require review of those restraints via standardized checklist to obtain an LOA; define aviation-specific certification load standards for the restraints; revise LOA authorization procedures so applications have local inspection oversight; and provide inspector guidance with regard to the use of supplemental restraints by both Part 135 and 91 operators.

In a formal response from FAA director of the Office of Audit and Evaluation Clayton Foushee, the agency said it agreed with the IG recommendations, but noted, "When developing its submission and evaluation processes for non-required SPRS [supplemental passenger restraint systems], the FAA recognized that acceptable and established minimum standards for supplemental restraints already exist and are in use in other FAA evaluation scenarios and in many occupations. The FAA considers these existing standards when reviewing submission packages. Additionally, FAA recognizes that SPRS are carry-on devices; as a result, the FAA does not certify them. In this regard, SPRS are not subject to the high aviation load factors the FAA applies when evaluating and approving seats and seatbelts. This distinction is appropriate, as SPRS are designed to keep an individual inside the helicopter, while approved seats and seatbelts are designed for emergency landing conditions." ■

TUCKAMORE AVIATION

Doors-off helicopter tours are enormously popular, but raise safety issues.

Lower-cost connectivity options expanding

by James Wynbrandt

New satellite and air-to-ground (ATG) networks and coming improvements to first-generation connectivity systems are bringing lower cost, higher speed, and more compact Wi-Fi access to a growing number of aircraft, now extending from executive airliners to smaller general aviation aircraft. Here are some of the major developments to look for in 2021.

Air-to-Ground Networks

Gogo Business Aviation Avance L3

Gogo Business Aviation rang in the New Year on the heels of notching the 500th installation of its Avance L3 ATG broadband Wi-Fi system, a lower-cost and smaller footprint option to its Avance L5, delivering about one-third the speed of its flagship service, and sized for turboprops to midsize jet aircraft. Connected to the Gogo Biz 3G data network, Avance L3 provides access to email, texting, internet browsing, and voice calls.

Avance L3

Three service levels are offered: Core (email, voice, and light internet browsing on up to five devices); Plus (full internet connectivity in addition to email on up to seven devices); and Max (Plus-level service on up to 25 devices). Service plans can be changed literally "on the fly" en route, without any onboard reconfiguration, to accommodate passengers' and operators' variable needs, a spokesman for the Colorado-based company said.

Avance L3 hardware costs about $40,000. Hourly, monthly, and annual data service plans include unlimited access for $99 per hour; pay-as-you-go monthly plans from $6.95 per MB to 250 MB ($1,195); and annual plans from 500 MB/year ($2,495) to 5,000 MB/year ($12,995). Complementary Text & Talk plans are also available, facilitating the use of passengers' own mobile devices.

The recent Avance 4.2 software update enables Gogo Vision 360 ($849 per month), a premium version of the Gogo Vision IFE service featuring unlimited streaming of on-demand movies, TV programming, and news, and an upgraded 3D moving map.

In December Gogo sold its commercial airline connectivity division to Intelsat for $400 million and announced it would henceforth focus on business aviation. Some of the proceeds will fund the development of onboard connectivity systems "that can provide even more bandwidth and speed, at costs that meet the needs of any owner/operator," the spokesman said.

SmartSky Networks

SmartSky Networks is planning to launch its long-delayed, eagerly awaited high-speed ATG network "this summer," a corporate spokesman said, offering two connectivity options: Flagship, a two-antenna system for larger business jets; and LiTE, a one-antenna installation. Both offer the same "office-grade" internet, operate on the same network, and share the same basic components.

Compared to current ATG and satcom broadband speed, consumers need to use a new metric, the spokesman said: "One second of a peak speed doesn't translate to a good onboard experience. If you need to measure a speed, we'd suggest using gigabytes per hour and not a legacy megabytes per second figure."

In addition to providing inflight video conferencing, access to VPNs, and large file transfers in the cabin, SmartSky's high-speed downlink—a major differentiator from other ATG networks, according to the company—has the capacity to stream aircraft operational and cockpit data.

Flagship will be available first ($90,000), with LiTE ($40,000) to follow. Three business aviation service levels are available: BA5 (5 GB, $2,995 per month); BA20 (20 GB, $4,995 per month); and BA50 (50 GB, $6,995 per month). No speed or performance restrictions separate the plans, and overage fees for all three are $1,495 per 5 GB.

At the debut, the service will cover continental U.S. territory hosting 90 percent of all business aviation flight hours, with remaining coverage gaps to be filled by year-end.

The North Carolina company's onboard hardware manufacturer partners are Satcom Direct, Honeywell, and Avionica, but the SmartSky network is router agnostic and can work with any properly configured third-party hardware. Installation costs "will be very competitive with comparable connectivity services," the spokesman said, and several STCs are available, with "many more" planned and in the works.

Certus Comes to Town

Iridium has launched the high-speed Certus service running on its Next satellite network, an L-band low Earth orbit (LEO) constellation of 66 satellites. The network provides pole-to-pole global connectivity at speeds up to (at introduction) 704 kilobits per second (kbps), at a fraction of the cost of legacy geostationary networks, according to the Virginia-based satcom company. Hardware and service plans from partner equipment manufacturers and access providers debut this year.

The Next constellation's Certus 9810 transceiver, the system's core digital and radio frequency module, offers 10 times the speed of classic Iridium service, able to interface with terminals that support streaming hi-def video and other bandwidth-intensive applications. The lower weight and smaller antenna footprint needed for LEO systems reduce the drag and power requirements of legacy geostationary network installations. Moreover, at some 40 times closer to earth, LEO constellations have lower latency and are more resistant to terrestrial weather conditions than geostationary satellites.

Collins's Certus Solution

Collins Aerospace expects mid-2022 certification for its Certus IRT NX system, with the approval process to be overseen by Boeing, which will install the L-band system on its 737 Max and 777X transports. STC development will follow certification and will be available for a wide range of business as well as commercial aircraft.

The service will initially offer 704 kbps peak speed, but should eventually reach 1 Mbps, according to the company. Collins is developing its own Active Low Gain Antenna for the system, which will reduce the risk "for operators to adopt this new technology," said Mark Fisher, senior manager for product management.

An antenna for a 176 kbps system for smaller aircraft (e.g. light jets and helicopters) or those that don't need full broadband capability is also under development and will debut next year.

Hardware and service specs, costs, and product name have yet to be decided.

Honeywell Aspire

Honeywell offers a variety of Aspire Iridium satcom solutions targeting light to midsize business aircraft, including the Aspire 100, 150, 200, 300, and 350. Aspire 100 comprises a 2 MCU form factor that can fit in many aircraft types, and one or two voice and circuit data channels are available. Aspire 150 and 350 are Iridium Certus systems that will be able to take advantage of the higher speeds offered by Iridium's Next satellite constellation.

News Update

Satcom Direct Activates 500th Global Xpress

Satcom Direct has activated its 500th terminal for aerospace customers subscribing to Inmarsat's Global Xpress network through the Jet ConneX service. This places the company as the leading service provider of Inmarsat's high-speed airborne data service. Jet ConneX is supported by Satcom Direct's router family, which augments in-flight connectivity efficiency, delivers SD applications, and supports cybersecurity management. Satcom Direct was the first business aviation communications provider to provision its services and transmit data over Inmarsat's first two Global Xpress satellites and has been a reseller of Global Xpress since its service launch in 2015.

Honeywell's Forge Added to GoDirect Router

A new software upgrade for Honeywell's GoDirect router adds Forge to the router's toolkit, available to customers subscribing to Honeywell services such as flight planning and datalink. Flight deck enhancements that Forge provides include flight optimization and management and operational and predictive maintenance analytics. Forge also works seamlessly with any Ka-band satcom network, giving customers greater choice in access service providers.

"Everybody is applying filtering and traffic shaping" in an effort to reduce connectivity charges, said John Peterson, Honeywell's director of customer and product support, "saving some operators more than $200,000 per year by applying the tools" in the process.

A new antenna and other components are some 70 percent smaller than first-generation JetWave hardware, suitable for airframes including the Falcon 2000 and Challenger 300- and 600-series jets. A Forge-enabled GoDirect router costs about $10,000. Aircraft already equipped with JetWave systems will simply need to upgrade their software to enjoy Forge.

Eagle Cap Software Assets Sold to eTT Aviation

In December, eTT Aviation announced that it purchased the aviation software assets of Eagle Cap Software, which developed various products serving all segments of aviation. After the acquisition, eTT Aviation took on development and marketing of Eagle Cap's flight planning and aviation charting products.

The acquisition included Eagle Cap's Flight Planning & Dispatch Management System, Aviation Charting Service, Data Delivery Service, and Aero Charting moving-map electronic flight bag products. Plans call for eTT Aviation "to quickly integrate the flight planning and dispatch management software into the SkedFlex suite," which serves airline customers, the company said."

Honeywell GoDirect Router

Honeywell has added Forge software to its airborne router's toolkit, for customers subscribing to Honeywell services such as flight planning and datalink. Flight deck enhancements Forge provides include flight optimization and management; and operational and predictive maintenance analytics, all enabled by high-speed connectivity available on the Certus network.

Skytrac Launches Certus

Skytrac is on course to be first to the Certus market with its SDL-350 (broadband) and ISAT-200A-08 (mid-band) satcom terminals, coming in the third and second quarter respectively. The ISAT-200A-08 builds on Skytrac's previous flagship narrowband terminal, with speeds of 176 Kbps in the launch model. The follow-on SDL-350 offers globally available broadband connectivity at up to 704 kbps, enough to support video conferencing, email, and high-speed internet access. A low-gain antenna and other required components will be included in the SDL-350 shipset.

Skytrac SDL-350

In addition to meeting passengers' connectivity needs, the SDL-350 can support data-driven proactive maintenance solutions and deliver graphical weather data streaming in the flight deck.

Though far from the blazing megabit per second speeds of Ka-band satcom, L-band technologies "offer a gateway for business aviation operators to access reliable and robust capabilities...at a lower overall cost to competitor satcom systems and services," a Skytrac spokeswoman told **AIN**.

With its newest offerings, the Canadian company, already a value-added reseller and service provider, becomes an Iridium manufacturing partner as well, giving Skytrac the margins to offer bundled hardware and service packages "at a fraction of what other networks offer for similar bandwidth and capabilities," she said.

Hardware and service plan pricing remain to be decided; service costs will be based on data volume, length of contract, and number of aircraft equipped. Installation STCs remain to be developed, but Skytrac said it can support the approvals process. Launch customers for both fixed-wing and rotor markets have signed on.

For current customers, upgrading from a predecessor ISAT-200A unit in the field to the new ISAT-200A-08 terminal will enable applications including image transfer and VoIP.

Skytrac ISAT-200A

Skytrac's legacy Iridium Push-to-Talk service remains available. Push-to-Talk links air and ground teams across wide geographic regions, and basic two-way calling and messaging capability can be added. Multiple hardware, voice, and data packages are available.

Simpler Solutions

Bendix King AeroWave

Bendix-King's AeroWave 100 provides global voice, text, email, web browsing, and graphical and text weather services for all onboard via the Inmarsat satellite constellation, with installations approved for dozens of models of high-performance piston, turboprop, and light turbine aircraft.

Bendix-King's AeroWave 100

AeroWave offers up to 200 kbps of bandwidth worldwide. Purchase and installation prices start at about $24,500. Data plans include hourly (about $40 per hour); monthly (about $400); and 50-hour blocks (about $2,000).

BizjetMobile CrewX

Last September BizjetMobile launched CrewX, a small, lightweight router with a three-inch patch antenna, offering unlimited global text messaging and email via Iridium's satellite network. Compatible with both iOS and Android devices, users connect to the portable system via Bluetooth. CrewX is priced at $2,490, and the service plan is $199 per month.

The Boca Raton, Florida-based company's flagship Chiimp Smart system, introduced in 2016, brought Bluetooth technology to inflight connectivity solutions. Chiimp Next, which debuted in 2019, delivers unlimited in-flight email, SMS texting, and WhatsApp messaging via the Iridium for an installed hardware price of $9,900, and $299 per month service fee.

Garmin GSR 56

For light aircraft equipped with its digital flight decks (from GTN-series touchscreen GPS/Navigators and up), Garmin International offers global voice, text, and data services through its GSR 56 Iridium Datalink and Connext services.

The voice service is channeled into the aircraft's audio/intercom system, and the headset becomes a handset, no longer limiting air-to-ground conversations to brief chats with en route ATC personnel. While a passenger in the back could have a call initiated on the flight deck and talk on the phone via headset, the product is aimed more at pilots and offers global satellite weather and position reporting. That said, insertion of Garmin's Flight Stream 510 SD card enables Bluetooth and Wi-Fi connectivity between the GSR 56 and iOS and Android mobile devices—whether for EFB apps or back seaters who want to call or send texts. Meanwhile, Flight Stream 510's capabilities allow flight crews to load flight plans and other data into the flight deck from mobile devices.

The GSR 56 Datalink is $9,995 when bundled with all-inclusive rate plans, which include packages for aircraft logging 150 hours (about $80 per month); 400 hours (about $175 per month); or 800 hours (about $250 per month) annually. Flight Stream 510 list price is $1,495.

Send Solutions Airtext

Airtext from Georgia-based Send Solutions offers global text, email, and voice service for up to 16 people onboard via the Iridium satellite network. After downloading the free Airtext app, users connect mobile devices to the system via Bluetooth. Four Airtext units are available: two installed (each handling up to 16 devices); and two portable (up to 6 devices). The basic Airtext installation (no voice service) lists for $9,750 (uninstalled); and Airtext+ ($16,975) adds phone service ($1.25 per minute). The portable AirtextLT ($4,950) allows texting alone; and the AirtextLT+ ($6,450) provides texting and email capability.

The portable units—about the size of a cell phone—are powered via an aircraft's 12-volt power and connect to a non-fixed external antenna, eliminating installation costs and making the rigs easy to move from aircraft to aircraft. The systems provide service in the air and on the ground.

All four units offer the same service plan: $300 per year for Iridium and an Airtext network connection, which includes the first 500 text messages, with additional messages 5 cents each. Text messages are limited to 140 characters but can be strung together for longer communiques. ■

Aerion picks Universal ClearVision EFVS for AS2

Supersonic business jet developer Aerion has chosen Universal Avionics to supply the head-wearable ClearVision enhanced flight vision system (EFVS) for the AS2 supersonic business jet's flight deck. ClearVision's head-up display imagery is delivered on the SkyLens head-wearable display, which offers an unlimited field of regard, meaning the pilot can view imagery such as flight symbology, infrared and visual camera views, and synthetic vision system graphics while looking in any direction.

An added feature that ClearVision offers is a combined vision system, where synthetic vision system graphics and enhanced vision system imagery from Universal's EVS-5000 camera are overlaid to give the pilot a comprehensive view of the outside world. This will eventually include traffic displayed on the SkyLens view. ClearVision is the first head-wearable display certified for commercial aviation, and it is approved and flying in Europe on the ATR 42/72.

"This industry-leading technology will offer pilots of the AS2 unparalleled vision and enhanced situational awareness capabilities," said Steve Berroth, Aerion COO and executive v-p of aircraft.

"By using the SkyLens as a wearable head-up display, the ClearVision EFVS brings unprecedented capabilities to the airplane and demonstrates a compelling roadmap to the future, on top of the proven operational landing credit and all-weather operation," added Universal Avionics CEO Dror Yahav. **M.T.**

Boeing to pay $2.5 billion in penalties for Max missteps

by Gregory Polek

Boeing has agreed with the U.S. Department of Justice to pay more than $2.5 billion in penalties to resolve a criminal charge of conspiracy to defraud the Federal Aviation Administration's Aircraft Evaluation Group (FAA AEG) in connection with its assessment of the 737 Max. Under the terms of a deferred prosecution agreement, the penalties consist of a criminal monetary penalty of $243.6 million, compensation payments to Boeing's 737 Max airline customers of $1.77 billion, and the establishment of a $500 million crash-victim beneficiaries fund to compensate the heirs, relatives, and legal beneficiaries of the 346 passengers who died in the crashes of Lion Air Flight 610 and Ethiopian Airlines Flight 302.

Boeing admitted in court documents filed in the Northern District of Texas that two of its 737 Max flight technical pilots deceived the FAA AEG about the airplane's maneuvering characteristics augmentation system (MCAS), a malfunction of which investigators found led to both the crashes. According to the DOJ, in and around November 2016, Boeing's then-737 Max chief technical pilot and another pilot who would later assume that role discovered information about an expansion of the MCAS's operating range. Rather than sharing information about the change with the FAA AEG, Boeing—through the technical pilots—concealed the information and deceived the FAA AEG about MCAS, said the DOJ. As a result, the FAA AEG deleted all information about MCAS from the final version of the 737 Max Flight Standardization Board Report published in July 2017. In turn, airplane manuals and pilot training materials for U.S.-based airlines lacked information about the MCAS.

BARRY AMBROSE

Boeing 737 Max jets sit in storage in Moses Lake, Washington, in October 2019.

While acknowledging the misconduct of the two former technical pilots, Boeing noted that the agreement recognizes that other Boeing employees did inform other officials and organizations within the FAA about the MCAS's expanded operating range.

"The misleading statements, half-truths, and omissions communicated by Boeing employees to the FAA impeded the government's ability to ensure the safety of the flying public," said U.S. Attorney Erin Nealy Cox for the Northern District of Texas. "This case sends a clear message: the Department of Justice will hold manufacturers like Boeing accountable for defrauding regulators—especially in industries where the stakes are this high."

As part of the agreement with the DOJ, Boeing has agreed to cooperate with the department's fraud section on future investigations and prosecutions and report any evidence or allegation of a violation of U.S. fraud laws committed by its employees. The company has also agreed to strengthen its compliance program and to meet with the fraud section at least quarterly and to submit yearly reports on the status of its remediation efforts and compliance program testing results.

In return, the department agreed to defer prosecution and drop the charges against Boeing after three years, provided the company abides by the agreement and pays all penalties. ■

IATA sees 'bleak' prospects for air transport in 2021

The International Air Transport Association's persistent calls for a Covid-19 testing regime to replace quarantine requirements have gone unanswered by governments, prompting IATA director general Alexandre de Juniac to characterize near-term prospects as "bleak" and IATA chief economist Brian Pearce to expect more airline bankruptcies during the first half of the year. Speaking during the latest of IATA's series of conference calls on the effects of the pandemic on airlines, de Juniac reiterated calls to governments for a more balanced approach to reopening borders and to give up what he portrayed as aspirations for a "zero Covid world."

"That's an impossible task, which comes with severe consequences, the full extent of which it would be impossible to calculate," said de Juniac. "But with this approach, we know for sure that first, the travel and tourism economy will not recover."

De Juniac specifically named Canada, the UK, Germany, and Japan among countries that added testing to Covid-19 measures while maintaining quarantines.

"In other words, they have chosen policy measures that will shut down travel," added de Juniac. "This approach tells us that these governments are not interested in managing a balanced approach to the risk of Covid-19.

"Science tells us that travelers will not be a significant factor in the community transmission if testing is used effectively, but most governments have tunnel vision," he concluded.

Pearce called the near $120 billion loss airlines suffered during 2020 as "catastrophic" if not for the $197 billion in Covid relief to which governments committed during the period. While recounting that airlines that either failed or restructured during the crisis numbered a relatively low "40 or 50," he warned of a far worse scenario during the first half of the year, particularly among carriers that have not managed to preserve significant levels of cash.

"The next six months, before we see vaccines making a significant difference to travel, are going to be really difficult," said Pearce.

Facing a slowing recovery of passenger demand resulting from surging Covid cases and related travel restrictions since the Northern Hemisphere's summer travel season reached a full stop in November, airlines saw almost identical revenue passenger kilometer declines from a month earlier, reported IATA January 7. Falling 70.3 percent from the same month a year earlier, November 2020 RPKs went virtually unchanged from the 70.6 percent year-over-year decline recorded in October. November capacity fell 58.6 percent below the previous year's levels and load factor fell 23 points to 58 percent—a record low for the month.

"The already tepid recovery in air travel demand came to a full stop in November," remarked de Juniac in a statement. "That's because governments responded to new outbreaks with even more severe travel restrictions and quarantine measures." **G.P.**

News Update

Atlas Buys Four New 747-8Fs

In a major boost to its flagging 747 program, Boeing received a new order for four 747-8 freighters from Atlas Air last month. Boeing, which plans to deliver the airplanes from May through October 2022, expects them to account for the last four 747-8Fs it produces. Atlas said the aircraft will allow it to meet strong customer demand, particularly in the e-commerce and express sectors.

While noting that its business model allows it to either fly the airplanes itself or lease them through its Titan Aviation Leasing subsidiary, Atlas did not specify its plans for these particular machines. The company added that the new 747-8F order will also provide the flexibility to balance future capacity needs with customer demand, as a number of its legacy 747-400F aircraft leases come up for renewal over the next several years.

Wizz Air Abu Dhabi Launches Service

Wizz Air Abu Dhabi launched its inaugural service to Athens on January 15, a little more than one year after Budapest-based Wizz Air and the Abu Dhabi Developmental Holding Company (ADQ) announced they would jointly establish a discount carrier in the capital of the United Arab Emirates. The Airbus A320-family operator said it would also start flights between Abu Dhabi and Thessaloniki, Greece, on February 4.

Greece appears on Abu Dhabi's list of so-called "green" countries to which it allows travel due to their relatively favorable epidemiological situations, specifically related to Covid-19.

Wizz Air initially announced a route network including Alexandria, Egypt; Kutaisi, Georgia; Larnaca, Cyprus; Odesa, Ukraine; and Yerevan, Armenia. The airline now says it will launch flights to those destinations as each joins the green countries list, followed by further cities as the airline adds to its three-strong A321neo fleet over the coming months.

Amazon Makes First Direct Aircraft Purchases

Amazon has bought seven Boeing 767-300s from Delta Air Lines and four from Canada's WestJet as it moves to expand its air transport network to meet surging demand during the Covid-19 crisis and beyond, the company said Tuesday. The deals mark the online retailer's first direct aircraft purchases. The four WestJet aircraft, now undergoing passenger-to-cargo conversion, will join Amazon's network this year and the Delta jets will begin flying freight for the online retailer in 2022, the company added. All will fly for third-party carriers.

Last year Amazon launched its first-ever air hub at Leipzig/Halle Airport in Germany and new regional air operations at 11 other airports, including New York JFK and Chicago O'Hare.

Rolls-Royce considers need to ‘re-phase’ UltraFan

by Gregory Polek

Rolls-Royce engineers in Derby, UK, prepare to test the UltraFan’s composite fan system.

Rolls-Royce expects to continue testing UltraFan engines into at least 2023 as it commits to the market availability of a new product by the turn of the decade, the company told **AIN** Monday after the Financial Times published quotes from CEO Warren East indicating it would shelve post-testing development until the launch of a new airframe model. The company also said that it will continue to look to secure partnerships for the development of new gas turbine technologies as funded by Clean Sky and other initiatives.

“We have always said that the eventual timing of UltraFan’s entry into service will be dependent on aircraft manufacturers’ requirements,” the company said in a statement. “We remain committed to having a product available to the market at the turn of the decade, but in the post-testing phase, we will continue to monitor customer requirements going forward, particularly given the impact of Covid-19. If this requires us to re-phase the program then we would do so.”

Rolls-Royce has now entered what it calls an “intensive” phase of development, as it manufactures parts for the first demonstrator engine scheduled for testing by the end of the year. Ground testing on its new purpose-built testbed, now nearing completion at its plant in Derby, UK, will take place over “a number of months through 2022,” followed by testing on “multiple” engines.

Targeting a 25 percent reduction in emissions compared with the first generation of Trent turbofans, the UltraFan technology program could address applications ranging from 25,000 to 100,000 pounds of thrust, making it suitable for narrowbody and widebody airplanes. However, the Covid-19 crisis has already forced severe production cuts across a range of seating capacities, and all signs point to a particularly dim outlook for the widebody segment as analysts with the International Air Transport Association project a particularly slow recovery of long-haul travel.

As Airbus, for one, signals an interest in harnessing hydrogen power for its next generation of narrowbody airplanes, potential applications for a small UltraFan appear less promising. At one time considered a contender for the since-scrapped Boeing middle-of-the-market NMA, Rolls-Royce withdrew from that competition in early 2019 after citing timetable pressures. At the time, Boeing had targeted a 2020 launch as it eyed a 2025 entry into service, leaving the still-nascent UltraFan unviable.

Now, the short lead time the NMA would have left Rolls has become irrelevant, as Boeing considers still another alternative to the segment of the market it had covered for many years with the 757. In any case, such a medium-capacity airplane appears unlikely to reach the market until late in the decade, leaving Rolls-Royce and the other engine OEMs ample time to react.

“At the end of testing we will have a commanding position to address future aircraft programs,” insisted Rolls. ■

The N219 has received Indonesian type certification.

N219 turboprop gains Indonesian certification

Indonesia’s 19-seat N219 regional turboprop, developed by PTDI and the National Institute of Aeronautics and Space (LAPAN), has secured a type certificate from the country’s Directorate General of Civil Aviation, according to LAPAN. The model’s first prototype, which flew for the first time in 2017, completed 275 flight hours during 250 cycles, while the second prototype, clocked 176 hours during 143 flights since its first flight in March 2019, the agency reported in a statement.

The N219’s certification marks Indonesia’s return to indigenous aircraft manufacturing following the collapse of the IPTN N250 program, advancement of which fizzled after several hundred hours of flight testing under the weight of the Asian financial meltdown in the late 1990s. Indonesia produces the NC212 Aviocar and CN-235 under license from Spain’s CASA.

PTDI now expects to start assembly of the airplanes at a rate of four per year. The company added it will upgrade its production facilities with more modern equipment and systems with the intention of increasing production capacity as the need arises.

PTDI expects the N219 to prove useful in serving far-flung destinations in the country’s vast archipelago, reaching isolated areas with short dirt runways. According to PTDI’s specifications, the N219 carries a maximum takeoff weight of 15,500 pounds and can take off on runways as short as 1,493 feet with maximum load. Powered by two 850-shp Pratt & Whitney PT6A-42 turboprops, the unpressurized airplane flies to a maximum range of 828 nm. The flight deck is equipped with Garmin’s G1000 integrated avionics suite.

Uses include passenger and cargo services, troop transport, military surveillance, search and rescue, as well as medevac operations in remote regions with short, rugged airstrips. Priced at between $5.8 million and $6 million, the N219 sells for a slightly lower price than its main competitor, the Viking DHC-6 Twin Otter.

PTDI added that it expects an amphibious version, now in its preliminary design state, to gain certification in 2024.

The company has secured two launch customers—the government of Aceh in North Sumatra and the government of Papua in Indonesia’s easternmost province—and claims to have amassed letters of intent covering at least 120 aircraft. **G.P.**

FBO and Airport news by Curt Epstein

The former Exec Air Montana is now the fourth location in the Leading Edge Jet Center chain.

Leading Edge Jet Center Buys Montana FBO

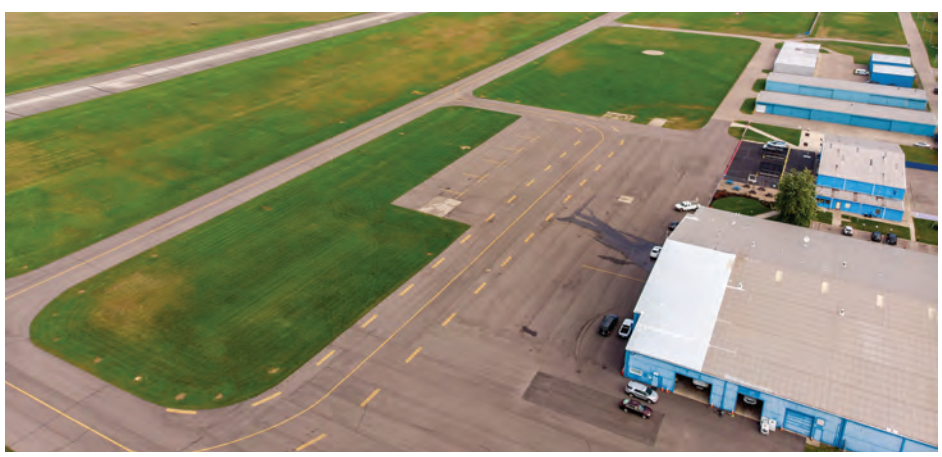
Oregon-based Leading Edge Jet Center (LEJC) has expanded its footprint to the central U.S. with the acquisition of Exec Air Montana (EAM), an aviation services provider at Helena Regional Airport. In addition to operating the lone FBO on the field, EAM also provides aircraft charter, management, and Part 145 maintenance services, as well as medical airlift through its Montana Medical Transport division.

The FBO features a 6,000-sq-ft terminal with a passenger lobby, pilot lounge with snooze room, conference room, concierge, and on-site car rental (crew cars are also offered). U.S. Customs is available on the field. The facility also has more than 70,000 sq ft of hangar space that can accommodate aircraft up to a super-midsize business jet. LEJC operates facilities at Redmond Roberts Field and Bend Municipal Airports in Oregon, and last fall moved into the Seattle area with the purchase of Kenmore Aero Services, an FBO at King County-Boeing Field International Airport.

Sparks Fly Over Ohio Airport's Lone FBO

Ohio's Middletown Regional Airport/Hook Field (MWO) has issued a six-month lease for the operation of its lone FBO to Safe Skies, an aviation business located on the airport. The airport had been operating the FBO since January after it allowed former operator Start Aviation's lease to expire without renewal. According to interim airport manager Matt Eisenbraun, who also serves as the city of Middletown's assistant economic development director, it had received customer complaints stating that Start's line service workers were too involved serving its skydiving business instead of tending to general aviation customers. As a result, the airport said it is looking to attract another, more customer service-oriented provider. "We expect to publish a request for proposals by no later than March 1, 2021, with an award by May 1 and contract services to commence June 1, 2021," city manager Jim Palenick told **AIN**. "We hope to enter into a five-year contract, with possible opportunity for renewal thereafter."

Start Aviation, in the meantime, has filed a lawsuit in the U.S. District Court for the Southern District Of Ohio, Western Division, against the city, Eisenbraun, and former airport manager Daniel Dickten, arguing among other issues, that the city failed to live up to its initial lease agreement with the company in providing the specified hangar and office space for its skydiving business. According to the filing, after Start took over the operation of the FBO, it instead leased the second floor of the FBO terminal to house its skydiving operation, from which the city is now trying to remove it. The company also disputed Eisenbraun's claims regarding Start's workers being too distracted, saying they were part of a wider plan to oust Start from the airport entirely. The FBO terminal, centrally located on the south side of MWO's 6,100-foot runway, includes a pilot lounge and snooze room, as well as showers. While the FBO does not have any hangars of its own, the airport owns a 30,000-sq-ft hangar with 30-foot high doors for community aircraft storage.



Ohio's Middletown Regional is looking to award a new longer-term lease for its sole FBO.

New Hangar Complex, 2nd FBO on Tap for Colorado Airport

A new private hangar complex will rise at Northern Colorado Regional Airport after Water Valley Land Co. and the Business Aviation Group (BAG) broke ground on the first phase of what is planned as Discovery Air, an eventual 29.5-acre development at the Fort Collins gateway. Construction is slated to be completed by year-end on the first structure, an energy-efficient 30,000-sq-ft heated hangar with 28-foot-high doors, along with more than 8,000 sq ft of customizable tenant office space.

According to BAG co-founder David Vaughn, the building is already 65 percent pre-leased. A second phase will add another 148,000 sq ft of hangar and office space, as well as a new 24,000-sq-ft FBO terminal. Vaughn told **AIN** that the start of the second phase will be based on demand, but the company has already secured permission to establish the FBO, which would be the second one on the field. The companies expect to select a service provider to operate it by April.

A rendering of the planned expansion of Avflight's new FBO at Arizona's Falcon Field.

Avflight Acquires Arizona FBO

Avflight has expanded its FBO chain with the addition of Falcon Executive Aviation, the lone full-service provider at Mesa, Arizona's Falcon Field Airport. While Falcon Executive Aviation will retain its maintenance, charter, and flight school operations, Avflight will take over the facility, which includes the 2,000-sq-ft terminal, a 15,000-sq-ft hangar and office building, a recently-built 12,000-sq-ft hangar, and a fuel farm that just completed a new storage tank replacement project.

The location, branded by sister company Avfuel, offers 24-hour fueling, as well as Avtrip rewards. Situated on the southern side of the field, the FBO will expand to a separate facility on the northern side, part of a larger aviation development project underway, which is expected to be completed in the second quarter of 2021.That facility will feature a 5,000-sq-ft terminal with pilot and passenger lounges, snooze rooms, showers, kitchen, flight planning area, and conference room, rampside vehicle access, and an additional 11,000-sq-ft hangar with the potential for another 50,000 sq ft of hangar space, as needed.

Avflight Breaks Ground on New Michigan Hangars

Avflight has broken ground on a new expansion to its FBO at the Detroit-area Willow Run Airport (YIP). The company had leased space in a massive WWII-vintage hangar, which the airport has decided to close. As a result, Avflight's new complex will include a pair of 15,000-sq-ft heated hangars that will be able to accommodate the latest big business jets, more than 7,000 sq ft of office space, and a 14-space indoor parking garage.

The project is scheduled for completion by the end of the third quarter of next year and will allow for a seamless transition for the FBO's dozen based aircraft, which will relocate to the new hangars at that time. AvFlight has enough land to build another 30,000 sq ft of hangars if and when required, it added.

"We're always looking for opportunities to invest in the industry and the communities in which we operate," said AvFlight v-p of finance Garrett Hain. "This new complex at [YIP] will allow the Avflight team to better accommodate a growing customer base of corporate jet traffic looking for an ideal location centralized in southeast Michigan between Ann Arbor and Detroit."

Missouri FBO Alpha Air Calls it Quits

Missouri's Joplin Regional Airport has been reduced to a single FBO with the shuttering of Alpha Air Center, which had been in operation for nearly a decade. Alpha Air occupied 6,000 sq ft of the airport's 20,000-sq-ft general aviation terminal (GAT). The GAT

facility includes a passenger lobby, pilot lounge with snooze room, kitchen, conference room, and coffee bar.

Alpha will continue to operate its 12,000- and 6,000-sq-ft hangars, which are not part of the FBO leasehold. Alpha's Part 145 aircraft maintenance operation closed as well, while the status of its flight school was undetermined at press time, as **AIN**'s attempts to reach company ownership were unsuccessful.

According to airport manager Steve Stockham, the company still had approximately three years left on its FBO lease and the airport now plans to issue a request for proposal for the property within the next two months. The closure means Mizzou Aviation will handle all general aviation traffic and airline fueling on the field, which in a typical year sees 25,000 to 30,000 operations.

Atlantic Expands Colorado FBO

Atlantic Aviation has added a new 30,000-sq-ft heated hangar to its FBO at Colorado's Montrose Regional Airport (MTJ), where it is the lone service provider. The move more than doubles the location's existing hangar space.

"With customers spending more time in the Rockies, and the size of business aircraft increasing, the additional hangar space enhances our ability to service the growing needs of the general aviation community at MTJ," said Jay Hamby, the chain's senior v-p for the mountain region. "In addition to its existing amenities, Atlantic Aviation MTJ now features a total of 57,000 sq ft of hangar space."

The company is also in the process of upgrading its fuel farm at the airport, with the addition of 52,000 gallons of storage capacity to its current amount of 56,000 gallons of fuel.

Sheltair Adds Hangar in Ocala

Sheltair has completed construction on a 20,000-sq-ft hangar at Florida's Ocala International Airport. Earlier this year, the company established an FBO in the airport's new general aviation terminal and announced the groundbreaking on the new structure, which is now fully operational. The new $2.1 million hangar, which can accommodate the latest in-service and under -development ultra-long-range business jets such as the Bombardier Global 7500 and the Gulfstream G700, brings the facility up to 55,000 sq ft of hangar space.

"Our new hangar at the Ocala International Airport fully complements the FBO terminal we inaugurated earlier this year," said company COO Todd Anderson. "We are thrilled to provide our clients with a world-class facility that is supported by our award-winning FBO service and ability to accommodate the latest generation of aircraft." Sheltair added the company continues its efforts to protect the health of its customers and employees, monitoring all CDC and local authority guidelines. The Ocala location earned its NATA Safety 1st Clean certification in August.

Lynx FBO Expands in Northeast U.S.

Lynx FBO has increased its network with the acquisition of Northstar Aviation, the lone service provider at Providence, Rhode Island's Theodore Francis Green State Airport. The acquisition gives Lynx its ninth FBO location in the U.S., and its second in the Northeast along with Morristown, N.J. The facility has a recently remodeled 10,000-sq-ft terminal that offers a pilot lounge, snooze room, showers, business center, three large conference rooms, courtesy cars, and on-site car rental.

"We are excited to further expand the Lynx FBO Network in the Northeast U.S., and Providence will greatly enhance our East Coast presence," said Lynx president and partner Chad Farischon. "We look forward to working with the Rhode Island Airport Corporation, the local FBO team, and all stakeholders in continuing the great partnership Northstar Aviation has established over their tenure of over 30 years at the airport."

Lynx's growth is backed by private equity firm The Sterling Group, which said the Rhode Island capital FBO was key in the company's plans."Providence is a strategic location for Lynx that has been a top priority target for years," said Sterling partner Greg Elliott. ironment." ■

Lynx FBO purchased the former Northstar Aviation FBO at Rhode Island's Green State Airport.

FBO PROFILE: Ross Aviation TRM

Ross Aviation is one of two full-service providers at Calfornia's Jacqueline Cochran Regional Airport in Thermal, near Palm Springs.

Amid Covid crunch, Cali FBO optimistic

One of the impacts of the Covid pandemic has been the widespread cancellation of events that would normally attract large numbers of attendees. For an FBO in a leisure/vacation area that typically hosts many such spectator events, like Ross Aviation at the Palm Springs, California-area Jacqueline Cochrane Regional Airport (TRM), there was a definite economic hit.

Last month, the Desert International Horse Show, an outdoor event that takes place in an equestrian complex near the airport, opened as the first major event in the area in 10 months. "Other than that, everything else was canceled," said Timothy Goulet, general manager of Ross Aviation TRM.

Many large events were scheduled over a span of six weeks starting in March, in the middle of the area's peak tourism season. "If you make your money between November and May 31st, that's probably 30 percent of it," Goulet told **AIN**, adding that while the year wasn't anywhere near where he wanted it to be, it still wasn't horrible, with private aviation activity rising steadily. "On the Sunday after Thanksgiving, we had over 80 movements, but for December of course California went back into another lockdown."

The company, one of the now two full-service FBOs on the field, was primed for a strong 2020, having just acquired and incorporated the rival Signature FBO location. The two companies have had an entwined relationship at the airport. Ross Aviation purchased the former Tradition Aviation FBO in 2005, which was then acquired by Landmark Aviation when it purchased the Ross Aviation chain. In 2016, when Signature acquired Landmark in a blockbuster deal, it was required to divest six locations where it would have had a service monopoly, including at TRM. Jeff Ross, backed by KSL Capital Partners, acquired those six locations, which became the nucleus of a new, resurgent Ross Aviation that now operates 19 FBOs at 17 locations across the U.S. "One thing that [company leadership] in Denver has allowed the managers of Ross Aviation to do is they allow us to run our shows, which is really important," said Goulet.

Between its two TRM locations, the Avfuel-branded FBO, which has a staff of 24, now occupies a 40-acre leasehold, including 14 acres of heavy ramp. Ross Aviation has more than 120,000 sq ft of hangar space able to fit the largest business jets and is home to 24 turbine-powered aircraft ranging from a Global 5000 to several PC-12s.

As part of the Signature purchase, Ross acquired a 25,000-sq-ft 1940's vintage hangar, dating back to the airport's days as a military training base. Ross is now in discussions with a major charter operator to lease that hangar as a Part 145 maintenance base for its fleet of aircraft.

The main 3,600-sq-ft Ross terminal was built in 2015 and features a pilot lounge, 10-seat A/V-equipped conference room, shower facilities, concierge, crew cars, onsite car rental, and a rampside patio. The former Signature facility to the south, which was temporarily closed during the pandemic lull, added another 8,000 sq ft of offices and other amenities.

In addition, the FBO which is staffed from 6 a.m. until 10 p.m. in season and closes two hours earlier in the offseason, now has two fuel farms. On the north side, it has 24,000 gallons of jet A and 12,000 gallons of avgas, while on the south there is a 10,000-gallon jet A tank and 5,000 gallons of avgas. They are served by the company's NATA Safety 1st-trained line staff, which operates a fleet of seven tankers, including one 10,000-gallon commercial grade and four 5,000-gallon jet A refuelers and two avgas trucks.

"Hopefully this year once we get past the Covid and things settle down, we're going to have a good year," said Goulet, who is also the current vice president of the Southern California Aviation Association. "We're really investing heavily in this airport and we believe in it. It's a destination and it will weather this storm in my opinion." **C.E.**

EASA Moves Ahead with SMS for Repair Stations

Following up on a notice of proposed amendment (NPA) published for comment last year, the European Union Aviation Safety Agency (EASA) issued an official regulatory opinion with its plan to adopt regulations requiring certain Part 145 repair stations to have safety management systems (SMS). The rules would apply to maintenance organizations that maintain airliners and turbine business aircraft.

The final rules are slightly revised, based on EASA's consideration of some 2,650 comments submitted in response to the NPA this summer. To limit the impact on small Part 145 facilities, the application of SMS provisions would be commensurate with the size of the organization and the complexity of the operations.

Some respondents, mainly from the U.S. (where repair station SMS is currently applicable only on a voluntary basis), would have liked to see SMS not mandatory and are concerned about its impact on bilateral agreements. The agency expressed disappointment that "A significant number of comments did not address the safety management principles although this was the very essence of this rulemaking project."

Compliance would be required within one year after the date the final rule is published.

Gulfstream Slides Timeline for Alliance Service Center

Gulfstream Aerospace will be focusing on the construction and opening of a new service center at Fort Worth Alliance Airport in Texas, as well as preparing its maintenance teams for the entry into service of the G700, customer support president Derek Zimmerman said on a December 10 webinar.

Groundbreaking on the $42 million, 163,000-sq-ft facility was originally expected to begin in the third quarter, with an opening in 2021. Now, Zimmerman believes it will be the first quarter of 2021 before construction begins, followed by an early to mid-2022 opening. The transition will involve preparing about 135 maintenance staff to move from its Dallas Love Field site to Alliance. Gulfstream plans to add another 50 jobs at Alliance while keeping between 30 and 35 employees at Love Field.

Also, the customer support organization "will be working in the background" to prepare for handing over G700s to customers in 2022.

"There's a lot of preparation and embedded teams that are behind the scenes right now getting ready for a new aircraft deployment so we're ready to hit the ground running when customers start taking deliveries of G700s," Zimmerman said.

ExecuJet MRO Services Malaysia is planning a 100,000- to 150,000-sq-ft facility at Subang Airport as its work on Dassault Falcon jets and aircraft from Bombardier and Gulfstream expands.

ExecuJet MRO Services Plans Malaysian Expansion

ExecuJet MRO Services Malaysia is laying plans for a 100,000- to 150,000-sq-ft facility at Subang Airport in Kuala Lumpur that will accommodate 10 to 15 large-cabin, long-range business jets at the same time. The announcement comes after the Dassault Aviation subsidiary reports that it is now certified to perform maintenance on all in-production Falcon aircraft.

Certifying authorities of the Malaysia facility include the FAA, EASA, Cayman Islands Civil Aviation Authority, Bermuda Civil Aviation Authority, Civil Aviation Authority of the Philippines, Civil Aviation Authority of Vietnam, and the Civil Aviation Authority of Malaysia. "Falcon aircraft accounted for less than 10 percent of ExecuJet's Malaysian business in 2019, being an inception year, but by the end of 2020, Falcon aircraft will account for 15-20 percent and next year we anticipate Falcon aircraft will account for at least a third," said Ivan Lim, ExecuJet MRO Services regional v-p for Asia.

Significant maintenance checks on the Falcon 900, 2000, 7X, and 8X have been completed at the facility, including a 24-month maintenance check on a Philippine-registered Falcon 900EX with ADS-B Out upgrade as well as a number of 24-month/1,600-flight-hour inspections on Falcon 2000 series aircraft. It also is an authorized service center for Bombardier and Gulfstream.

The Malaysian operation encompasses 64,000 sq ft of hangar, workshop, and office space at Subang. As a temporary measure, it expanded into a second, 32,000-sq-ft hangar because of the increased workload. Lim said the new facility it is planning at a different site at Subang will help it serve the increasing number of Falcon and other aircraft.

Omni Air Adds Charter Base, Expands Mx Operations

Charter and aircraft management firm Omni Air Transport has opened a new satellite base in Oklahoma City and plans to offer maintenance services to owners and operators outside the charter and managed aircraft it operates. Company president Chris Deslongchamp told **AIN** the decision to expand its maintenance operation comes after 37 years of maintaining its charter and managed aircraft in-house.

Nearly all of the twinjets the Tulsa, Oklahoma-based company operates are Learjets and over the years its technicians have developed an expertise in that type, with its current director of maintenance serving on the Learjet advisory council for maintenance.

Omni's managed fleet comprises 11 aircraft, nine of which are available for charter and include the Learjet 40, 45, 60, and 75, as well as a Beechcraft King Air 350i. Those are the models it will initially offer outside maintenance services for, Deslongchamp said. But it will seek to add other types as the 50-employee company expands its maintenance and charter business, the latter of which is also growing with its Oklahoma City base at Sundance Airport.

That base will be served by a Cessna Citation XLS+ that will be added to Omni's managed fleet. Besides Tulsa and Oklahoma City, Omni operates bases in Dallas and Houston, Texas, and Nashville, Tennessee.

Turbine Engine Specialists Increases Bizjet APU Support

Engine and APU MRO provider Turbine Engine Specialists (TES) has acquired the 36-100 and 36-150 APU rental bank used on light and midsize business jets from Honeywell and will begin support of those units on January 18, the Fort Worth, Texas-based company announced. The APU rental bank supports business jets manufactured by a variety of OEMs.

This deal complements parts distributor agreements on the Bombardier Challenger 600/601 and Learjet 60 that TES's parent company, Killick Aerospace Group, made last year. In addition to the rental bank, TES has received overhaul authorization from Honeywell on the RE220GX APU for Bombardier's Global Express.

West Star, Collins Team Up for G450 Cabin, CMS Upgrade

West Star Aviation has introduced an A-level cabin upgrade bundle for the Gulfstream G450 that includes Collins Aerospace's Venue cabin management system (CMS) and interior upgrade, the MRO provider announced. The bundle, in which Venue replaces the original ACMS and CMS-1 system, is being offered through a partnership between the two companies at a limited-time price of $800,000 for the first quarter of 2021, which West Star estimates is a savings of $200,000.

Offered at any one of West Star's four full-service authorized Collins dealer locations—East Alton, Illinois; Grand Junction, Colorado; Chattanooga, Tennessee; and Perryville, Missouri—the installation time is estimated between eight and 12 weeks.

Duncan Completes Houston Hobby Move

MRO provider Duncan Aviation has completed the relocation of its satellite repair shop at Houston's Hobby International Airport to a larger hangar at Wilson Air Center on the south ramp.

Duncan Aviation's satellite operation has moved to a new hangar at Wilson Air Center at Houston Hobby Airport with three times the space as its previous location at HOU.

"This new hangar gives our team at the Houston satellite three times the space and twice the hangar door height as our previous space," said Duncan satellite operations manager Matt Nelson. "This means we can bring customers' aircraft inside the hangar, and we can work on everything up to a Gulfstream G650 in there now."

At Houston, Duncan employs 19 staff whose capabilities include avionics maintenance, repair, and retrofit, in addition to minor airframe maintenance and, with the assistance of its Rapid Response team, engine maintenance.

Charter Provider Jung Sky Opening Mx Department

Croatian business aviation operator Jung Sky is taking the first step to establish an in-house maintenance department with the hiring of a former airline maintenance executive, Davor Bujan. Bujan was previously technical director of maintenance and CMO at flag carrier Croatian Airlines.

"After all these years we're still burdened with the necessity to outsource aircraft maintenance, which inevitably affects our flexibility, aircraft availability, and expenditures," said Jung Sky COO Kresimir Vlasic. "When we decide to add a third jet to our fleet, this will become an even bigger problem."

The next step will be to set up line maintenance operations followed by the first base maintenance tasks. The 11-year-old charter provider currently operates two Cessna Citation Model 525A CJ2 jets.

Clay Lacy Completes First Global 6000 JetWave Install

Clay Lacy Aviation recently completed its first installation of a Honeywell JetWave Ka-band connectivity hardware system on a Bombardier Global 6000. An authorized Honeywell dealer, Clay Lacy installed the system at its Part 145 repair station in Van Nuys, California.

The multi-component system connects to Inmarsat's Global Xpress Ka-band satcom network, which provides high-speed streaming internet connectivity for watching movies, sharing video on social media, and performing tasks such as videoconferencing and sending and receiving large files. "Clay Lacy performed this complex JetWave upgrade on schedule and on budget thanks to their Honeywell and Bombardier expertise," said Renan Bayar, the ultra-long-range twinjet's captain.

In addition to the Global 6000, the MRO provider's factory-trained technicians can install the JetWave system on Dassault Falcon and Bombardier Challenger business jets. Downtime for installation is typically 30 to 35 days.

(l-r) Cliff Barker, Duncan aviation's engineering flammability lab team leader, and technicians Naomi Haralson, Ryan Ball, and Travis Wilcox at the site of the planned new flammability lab.

Duncan To Open New Flammability Test Lab

Duncan Aviation expects to open a new flammability lab at its Battle Creek, Michigan facility by the end of March. The MRO provider's engineering and certification services division is not only being expanded in size but in capabilities to include the NexGen or Sonic Burner test (also known as the FAR 25.853 (b) fireblocking test).

According to the company, the expansion was necessary to accommodate the new test equipment as well as provide adequate ventilation for employee safety. Once construction is complete, team leader Cliff Barker and his technicians will migrate test equipment into the new space, assemble it, and calibrate it to ensure proper functionality. The team will relocate one test chamber at a time so flammability testing can continue without interruption during the move.

"Currently, we have two vertical test units and a multi-use test unit for horizontal, 45-degree, and wire testing," said Barker. "After those have been installed and are fully functional, we'll install the new Sonic Burner test equipment and begin conducting those tests as well."

Once the equipment is thoroughly tested over a span of several weeks, Duncan's organizational designation authorization (ODA) engineer structures-flammability unit will submit an application to the FAA seeking the authority to issue approvals on fireblock testing.

Bombardier Completes Acquisition of Berlin MRO Facility

Bombardier has completed the acquisition of issued and outstanding shares it didn't own of Lufthansa Bombardier Aviation Services from Lufthansa Technik and ExecuJet Aviation Group. The deal, first announced in September, clears the way for Bombardier to operate a wholly owned service center in Berlin and further expand its global MRO reach to nine company-owned service centers.

"We welcome the highly talented employees of the Berlin Service Centre to the Bombardier service network," said Bombardier v-p of OEM parts and services Chris Debergh. "We value their expertise and customer focus—as part of the Bombardier team, they will continue to provide best-in-class aircraft maintenance services to our valued operators of Bombardier business aircraft."

Located at Berlin Brandenburg Airport, the service center has been offering MRO services to Bombardier aircraft operators for 24 years. It has more than 160,000 sq ft of service capacity, employs 240 people, and supports Bombardier's Learjet, Challenger, and Global lines. The facility also holds the distinction as the first service center in Europe to perform maintenance on Bombardier's flagship Global 7500.

Safran Signs China Utility To Engine Support Program

Safran Helicopter Engines has signed a Support-By-Hour (SBH) contract with State Grid General Aviation Company of China (SGGAC), covering its Airbus H215 and H225 fleets. The contract also includes the renewal of SBH support for 14 Arriel 2D engines powering the operator's fleet of 13 H125 turbine-single helicopters within its larger fleet of 33 rotorcraft.

SGGAC is a wholly owned subsidiary of the world's largest utility company, State Grid Corporation of China, and is responsible for the air construction and maintenance of extra-high-voltage and ultra-high-voltage power networks. It is the launch customer for the Airbus H215 in China.

SBH now covers 50 percent of Safran's turbine helicopter customer flying hours. The program and health monitoring are part of Safran's EngineLife Services. "We are proud that SGGAC has renewed its confidence in Safran Helicopter Engines and its SBH support contract, and we look forward to delivering them world-class services and supporting them in their most demanding missions," said Bernard Plaza, Safran Helicopter Engines China CEO.

New FlightData Feature Enables Automatic Reporting

Aerocor's FlightData product (formerly CirrusReports) has added an automatic reporting feature to its cloud-based data analysis platform, allowing operators of light jets, turboprops, and piston aircraft to share data with three third-party data analysis providers. These include CAMP Systems engine condition and trend monitoring (ECTM); Boeing Distribution (formerly Aviall) for Eclipse 500s enrolled in Boeing Engine Intelligence (formerly ESP); and Savvy Aviation for aircraft enrolled in maintenance consulting services.

"Automatic reporting is a key enhancement to FlightData," said Aerocor co-founder and president Gavin Woodman. "We know that it's a hassle for our customers to manage multiple platforms for reporting aircraft data to program providers, so we've automated the process."

To participate in the fully integrated data analysis process, from data capture to program reporting, aircraft must be equipped with the BlueMAX wireless data transfer device. Aerocor acquired BlueMAX earlier this year from Australian manufacturer Control-J.

Jet Aviation Dubai Completes Milestone Mx Check

Jet Aviation Dubai has completed the Middle East region's first 4C maintenance check on a Dassault Falcon 50, the General Dynamics subsidiary recently announced. A milestone maintenance event that comes due 24 years after service entry, the check requires removal and reinstallation of an aircraft's structures and systems for a detailed inspection.

In the case of the Falcon 50, Jet Aviation technicians stripped the cabin and removed its three engines. They also replaced the landing gear as part of the inspection process. Additionally, technicians upgraded the FMS, installed ADS-B, and performed a light refurbishment to the aircraft's cabin. In all, the Falcon 50 check and upgrade totaled 8,000 man-hours.

Simultaneously, Dubai facility technicians completed a 144-month check on a Gulfstream G450 that included a limited cabin refresh and a 192-month inspection on a GIV, which required major structural work for a total of more than 5,000 man-hours.

At Dubai, the company recently established a dedicated team of interior specialists and it is building an interior shop that will have the tools to perform limited refurbishment activities. ■

by David Jack Kenny

PRELIMINARY REPORTS

Pilot Unhurt After Swamp Landing

BELL 206, OCT. 16, 2020, ZEPHYRHILLS, FLORIDA

The pilot was uninjured in a precautionary autorotation into a swamp, but damage to his helicopter included separation of the tailboom and mid-span fractures of both main rotor blades.

Fifteen minutes after departing from Plant City on a personal flight to Jacksonville's Craig Field, the pilot noticed a "binding sound" and felt a decrease in engine power and slight left yaw. Engine instruments remained in their normal ranges and no warning annunciators illuminated before the low rotor rpm warning horn sounded, when he initiated the autorotation. The helicopter was subsequently recovered for examination.

Citation Landing Overrun Ends in Gear Collapse

CESSNA 551, DEC. 2, 2020, LUFKIN, TEXAS

The airplane went off the end of the runway, through the airport perimeter fence, across a road, and came to rest in a cow pasture after landing in the rain. The pilot suffered minor injuries and the two passengers were unhurt, but all three legs of the landing gear collapsed, causing structural damage to both wings' spars. The IFR flight from Austin to the Angelina County Airport had proceeded normally, flying the RNAV approach to land on Runway 16. Visibility was reported as six miles under a 900-foot broken layer. The pilot told investigators that it was raining and the runway was wet.

He reported having cycled the anti-skid braking system two or three times during the landing roll, but said the brakes stopped responding after the airplane slowed to about 20 knots. Local press reported that one of the passengers was the incoming Speaker of the Texas House of Representatives.

Two Fatalities in N.Z. Helicopter Ditching

AIRBUS HELICOPTERS EC130, DEC. 15, 2020, KEKERENGU RIVER, SOUTH ISLAND, NEW ZEALAND

A TAIC press release reported that two of the five people on board were killed and the other three suffered serious injuries when the helicopter crashed into shallow water near the beach at the mouth of the Kekerengu River. The accident took place near a busy café on State Highway 1, and potential witnesses were asked to contact the TAIC. The destination of the flight, which originated at Christchurch, was not initially reported.

Phenom 100 Damaged in Runway Overshoot

EMBRAER EMB-500, DEC. 16, 2020, JACKSONVILLE, FLORIDA

The airplane's right wing hit the ground after the airplane overran the runway in heavy rain. Neither of the pilots nor their passenger was injured in the accident, which occurred at Jacksonville Executive Airport at Craig, but the main landing gear punctured the wing near its root. The corporate flight from Miami's Opa-Locka Executive Airport flew the ILS approach to Runway 32, landing in the touchdown zone at about 100 knots. The pilot reported that he applied full manual braking as it slowed to 80 knots, but found the airplane "was not reducing speed for stop as expected."

Approaching the departure end, he tried to use the emergency brakes three times without effect. A fourth attempt as the airplane rolled into the grass was also unsuccessful, so the pilot used left rudder to steer the airplane away from the approach lights. Weather conditions included one-quarter mile visibility in thunderstorms and heavy rain under a 300-foot broken ceiling, with 0.32 inches of rain in the preceding hour.

FINAL REPORTS

Sabreliner Lost After Unspecified Electrical Failure

ROCKWELL INTERNATIONAL NA-265-65, APRIL 13, 2019, NEW ALBANY, MISSISSIPPI

Five and a half minutes after its pilots began discussing "unknown system anomalies," the jet entered a descending right turn and crashed at high speed into woodlands. The pilots and sole passenger were killed and the aircraft was so severely fragmented that many of its components could not be identified. The captain had reported "AC voltage problems" in his next-to-last radio transmission, but the exact nature of the anomaly could not be determined from either the cockpit voice recording or examination of the wreckage.

The flight departed Oxford, Mississippi, at 15:06 local time on an IFR flight plan to Hamilton, Alabama. Two minutes after takeoff, the airplane's transponder stopped transmitting altitude readouts as the pilot reported climbing through 9.000 feet for their cleared altitude of 11,000. At about the same time, the CVR recorded discussion between the pilots that included mentions of a "filament," a "ground blower breaker," the "avionics master...heading," and "something off on the autopilot." Thirty seconds after the pilot took control from the first officer, the FO reported having lost contact with ATC. No further conversation was captured by the CVR, and the NTSB noted that it didn't record either pilot referring to the airplane's emergency checklists.

The airplane turned right from an 080-degree heading to a heading of 120, then, two minutes later, left to 040 degrees. At 15:12, the controller asked whether the crew was having navigational problems or deviating for weather. The captain replied that they were deviating and reported "AC voltage problems." Thirty seconds after he read back an assigned heading of 095 degrees, the airplane again turned right and disappeared from radar coverage. At 15:05, the Tupelo Regional Airport, some 13.5 miles southeast, reported light rain under a 4,000-foot overcast with lightning distant to the northwest through north. A special observation recorded at 15:24 included a broken ceiling at 4,900 feet with thunderstorms in the vicinity.

Spatial Disorientation Caused Fatal Helicopter Crash

AGUSTA A109, JUNE 28, 2019, BRAINERD, MINNESOTA

The NTSB ascribed the crash of a helicopter emergency medical services flight onto airport grounds to spatial disorientation as the pilot attempted to initiate a missed approach in low IMC at night. The pilot and flight nurse were killed; the flight paramedic survived with serious injuries. The accident occurred after midnight on the return flight after a patient transport. Brainerd Lakes Regional Airport's automatic surface observing system reported a 200-foot overcast, with visibility varying between one-quarter mile in fog and half a mile in haze.

The pilot flew the ILS approach to Runway 23 with the autopilot coupled. The helicopter crossed the final approach fix 5.3 miles from the threshold at 93 knots. When it reached decision height, the radar altimeter indicating 130 feet, the pilot set the flight director to altitude hold and decoupled the autopilot. Over the next 14 seconds, pitch attitude increased from 3 degrees nose-down to 20 degrees nose-up and the helicopter climbed 100 feet with power set below 30 percent torque. Airspeed slowed from 50 knots to 25 as the pilot set the vertical speed and heading modes on the flight director and rapidly increased power. At 00:39:38, he announced a go-around; power increased above 80 percent while airspeed dropped to zero. The helicopter "entered a right rotational yaw" and the radar altimeter reading reached 300 feet as power exceeded 110 percent torque with airspeed still near zero. The last recorded flight data showed a radar altitude of 100 feet with the autopilot set to altitude hold and power below 30 percent. The flight paramedic recalled seeing the pavement and runway lights through thin fog during the approach with clouds to one side. After the pilot called for the go-around, the helicopter spun right and hit the ground.

Provided the final approach segment is flown at less than 90 knots, Federal Aviation Regulations allow helicopters to fly instrument approaches in visibility as low as half the published minimum for Category A, though not less than one-quarter mile or 1,200 feet runway visual range. Following the accident, the operator revised its internal procedures to require a minimum of one-mile visibility and 400-feet for instrument approaches. ■

Airline accident fatalities up despite Covid

A severe drop in air traffic in 2020 did not result in fewer accident fatalities, as the air transport industry saw more deaths last year than it did in 2019 despite far fewer flights, according to Netherlands-based aviation consultancy To70. In a report released on January 1, the group noted that 299 people died in five accidents last year, compared with 257 deaths resulting from eight accidents in 2019. All told, the industry suffered 40 accidents last year compared with 86 in 2019.

While the accident rate for 2020 remains low, the circumstances around some accidents raise concern, according to To70.

Three of the five fatal accidents in 2020 and several of the non-fatal ones relate to runway excursions. The crash of a Pegasus Airlines Boeing 737-800 on February 5 and the accident involving an Air India Express 737-800 on August 7 both occurred in heavy rain and the Indian case involved a strong tailwind. The Pakistan Airlines A320 accident on May 22 followed an initial hard landing and go-around that appears to have damaged the engines, resulting in the undershoot on the subsequent approach. Flight performance calculations made prior to the approach and the timely use of the go-around maneuver remain key factors in accidents, said To70, which added that "more must be done" to understand the role of human factors and technology in such situations.

"Stable approaches remain a key success factor in successful landings and require all airline, ANSP, and airport stakeholders to collaborate in what is a crucial phase of flight, and more must be done to ensure this is effective," said the report. **G.P.**

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Efforts to reduce or eliminate lead from aviation gasoline continue, but progress is slow.

Report targets ways to lower leaded avgas impact

by Kerry Lynch

A broad-based and sustained commitment across the aviation industry, along with the FAA and other government agencies, is necessary if significant progress is going to be made on reducing lead emissions from aviation-gasoline-powered aircraft, according to a new report released by the National Academies of Sciences, Engineering, and Medicine.

Developed by a Committee on Lead Emissions from Piston-Powered General Aviation Aircraft with the support of the DOT, the congressionally-mandated report found that questions surrounding current efforts to develop a drop-in replacement unleaded aviation fuel mean other steps will be necessary to begin reducing lead emissions and exposures.

While the FAA has worked with the industry on studying potential drop-in replacements through the Piston Aviation Fuels Initiatives, that program is now years behind the initial goal of having completed testing on potential candidates by late 2018 as early leading contenders required further study. Research has continued on potential candidates.

"The committee came to realize that currently there is no individual, certain solution to the aviation lead problem, and therefore a multi-pathway mitigation approach offers the greatest potential for tangible and sustained progress," according to the report.

Meanwhile, the report makes a number of suggestions to help alleviate the reliance on avgas and mitigate the impacts. Among the recommendations is that the FAA should work with the Environmental Protection Agency, Occupational Safety and Health Administration, and aviation organizations to develop education campaigns, provide training, and raise awareness on lead hazards and potential mitigation measures for pilots, airport personnel, and aircraft technicians.

Also, the report notes that the only specified and available unleaded avgas, UL94, has the potential to be used in about half to two-thirds of the existing piston fleet. However, this would require expensive infrastructure changes and aircraft recertifications. As such, the report stressed effort is needed to motivate fuel refiners to reduce the amount of lead added to high-octane aviation gasoline, suggesting that the FAA explore policy options to accomplish that, as well as prompt airports to add infrastructure to dispense more unleaded gasoline.

The report recommends easing recertification needs for aircraft that do not require high-octane fuel to encourage use of lower-octane fuel. A timeframe should be set for these efforts, it says, suggesting this might require a congressional directive.

Elimination of lead from all aviation fuel must remain a public policy priority, the report emphasized, calling on the FAA to continue collaboration with industry and agencies such as NASA to continue its research.

Progress is crucial because general aviation aircraft are now the single-largest emitter of lead in the U.S., the National Academies notes, citing concerns that these emissions can be inhaled by people living near or working at airports.

"Because there is no known safe level of lead in the blood, there is a compelling reason to reduce or eliminate lead emissions from small aircraft," said Amy Pritchett, professor and head of the department of aerospace engineering at Pennsylvania State University and chair of the committee that wrote the report.

The report recognizes that lead is necessary to provide the requisite octane levels for many high-performance piston aircraft and also notes the critical societal functions these aircraft play, from medical airlifts, aerial firefighting, business transport, crop dusting, pilot training, and search and rescue. "Due to the small market for aviation gasoline and limited fueling infrastructure at most of the country's more than 13,000 airports, leaded aviation gasoline is usually the only fuel available to operators of small aircraft," the National Academies said. For that reason, the committee decided restricting use by high-performance aircraft is not a viable option. ■

by Gordon Gilbert

Within 6 Months

Jan. 11, 2021, Jan. 1 2023, and Jan. 1, 2028 **NEW**

U.S.: Aircraft CO_2 Emissions Standards

The first U.S. standards for CO_2 aircraft emissions have been enacted by the EPA and initially apply to large subsonic jets, including business jets, that weigh more than 132,277 pounds mtow for which the application for a new type certificate is made on or after Jan. 11, 2021. The standards apply to all other new jet design applications made on or after Jan, 1, 2023 and to new deliveries of in-production large jets starting Jan. 1, 2028. Jets with an mtow under 12,566 pounds, turboprops below 19,000 pounds mtow and piston-engine airplanes are exempt.

February 19, 2021 **NEW**

New Zealand: Performance Based Navigation

The CAA of New Zealand has released a package of proposed changes to update its performance-based navigation (PBN) regulations. According to the CAA, the existing requirements are unclear, out of date, and do not fully support all aspects of PBN operations. Comments can be submitted through Feb. 19, 2021.

March 1, 2021 **NEW**

EASA: Regular Update of CS-25

Annually EASA proposes revisions to regulations to reflect the state of the art and improve harmonization with U.S. FARs. The objective of this NPA to CS-25 large airplane certification standards is to upgrade specific requirements, such as: turboprop propeller vibrations, fabrication methods, windshield failure conditions and structural effects, and cabin interior crashworthiness. Comments on the NPA are due March 1, 2021.

March 31, 2021

EASA: Maintenance Licenses

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

May 31, 2021 **NEW**

EASA: Helicopter Ditching Survivability

Improving the ability of occupants to survive a water impact from a helicopter ditching is the subject of a NPA from EASA. The NPA would revise type certification standards for both small (Part CS-27) and large (Part CS-29) rotorcraft by requiring several design improvements. In addition, this NPA also proposes enhancements to certification specifications for new ditching and emergency flotation provisions. Comments are due May 31, 2021.

June 2, 2021

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

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

Within 12 Months

Nov. 4, 2021

Runway Surface Assessment Format

In response to the on-going Covid-19 pandemic and the associated challenges facing the aviation industry, ICAO has delayed for one year the applicability date of the new global reporting format (GRF) for assessing runway conditions to Nov. 4, 2021. The GRF was scheduled to go into effect Nov. 5, 2020.

Dec. 2, 2021

Australia: Flight Operations

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

Beyond 12 Months

Dec. 31, 2022 **UPDATE**

NEW Zealand: ADS-B Out Mandate

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

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

by Kerry Lynch

JEFFREY JERGE

KEVIN MARTIN

GLENN HOGBEN

DAN DAVIS

LEMIRACLE HENDKING

Gregory Beason has stepped in as president and CEO of *AllClear*, which formed from the merger of Aero Precision and Kellstrom Defense. He takes the role from **Darryl Mayhorn**, who has stepped down after serving as president and CEO since 2018. Beason, who had served as executive chairman of the Aero Precision board, has more than 30 years of aerospace experience and formerly was CEO of Wencor Group.

AeroParts Now named **Jeffrey Jerge** CEO. Jerge brings more than 20 years of combined aerospace technology consulting, management, and leadership experience to his new role, most recently as v-p of sales and marketing for Inventory Locator Service

Cadence Aerospace appointed **Kevin Martin** as CEO of the company's engine systems segment. Martin also is continuing as CIO for Cadence. A 30-year aerospace industry veteran, Martin joined Cadence in January 2019 after serving with Pratt & Whitney. He succeeds **Bob Quaglia**, who is retiring.

Glenn Hogben, who stepped in as joint deputy chair of *The Air Charter Association (ACA)* late last year, is moving into the new role of CEO for the organization. In that capacity, he succeeds Dave Edwards, who has run ACA on a part-time basis since 2017 but has returned full-time to his commercial duties. Hogben, who joined ACA in2008 and was elected to the non-executive board in 2017, has 17 years of aircraft, charter, leasing, and management experience, including with ACC Aviation and ACMI Leasing.

Dan Davis joined *FlightSafety International* as president of FlightSafety Services Corporation. Davis, who previously served in the U.S. Army, held leadership roles with Lockheed Martin and Cornerstone Consulting.

David Monks was elected as president of *FAI, the World Air Sports Federation* for a two-year term. An electrical engineer from the UK who has participated in FAI championships, Monks has held positions in several air sports organizations, including chairman of the UK's Royal Aero Club and the Helicopter Club of Great Britain.

AJ Becker was appointed president and has become an equity partner in *Elite Air*. He succeeds **Gray Gibbs**, who founded Elite Air in 2001 and remains CEO and director of operations. Becker has served as director of marketing and sales for the aviation management and charter company for more than a decade.

David Davenport has joined the executive leadership team of *Solairus Aviation*. Davenport joins Solairus after serving with FlightSafety International for 20 years, including most recently as president and CEO, and also has served on the NBAA Board of Directors and Corporate Angel Network Board of Governors.

Gur Kimchi joined the board of directors for *Ascent AeroSystems*, becoming the company's first outside board member. Kimchi, a founding member of the FAA Drone Advisory Committee, is the former v-p of Amazon Prime Air.

The *Aerospace Industries Association* elected **Kathy Warden**, chairman, CEO, and president of Northrop Grumman, as chairman of the association's Board of Governors for 2021. Huntington Ingalls Industries president and CEO **Mike Petters** will become vice-chairman, while Eric Fanning remains president and CEO and Ginette Colot secretary-treasurer.

The *General Aviation Manufacturers Association* has elected its executive committee leadership for 2021, naming **Nicolas Chabbert**, senior v-p of Daher's Aircraft division and CEO of Daher Aircraft and Kodiak Aircraft, as chairman of the board. Chabbert has served as the 2020 vice-chair and has led GAMA's Safety Affairs and Accident Investigation Committee. The 2021 vice-chair is Embraer Executive Jets president and CEO **Michael Amalfitano.** He has been chairman of GAMA's Communications Committee.

Bombardier appointed **Bart Demosky** executive v-p and CFO. Demosky has more than 30 years of financial and executive leadership experience, previously as president and CEO of Universal Rail Systems, executive v-p and CFO of Canadian Pacific Railway, and CFO for Suncor Energy. Bombardier further appointed **Annie Torkia Lagacé** as senior v-p, general counsel, and corporate secretary. Lagacé has more than 20 years of corporate and commercial law experience, most recently as executive v-p of Stornoway Diamonds.

Jeff Barstow joined *King Aerospace* as senior v-p. Barstow previously had a 41-year career at Boeing, including as COO for Boeing Business Jets as well as in management roles with the P-8 Poseidon, 737, and 757 airplane programs.

Sean Bond joined *Elbit Systems of America* as senior v-p to lead the airborne solutions business unit. Bond has held a range of executive and technical roles, including program management for the V-22 Osprey at Bell, the Joint Strike Fighter engine at Pratt & Whitney, and most recently as CEO and president of HDT Global.

David Wyndham joined *Asset Insight* as v-p of Asset Insight Consulting Services. Wyndham, an industry veteran who is known as an expert, author, and speaker in the business and general aviation community, was a partner with Conklin & de Decker and then held executive positions with Jet Support Services, Inc. (JSSI) after it acquired Conklin.

Gulfstream Aerospace named **Brian McCarthy** regional v-p of sales for Singapore, Indonesia, Australia, New Zealand, and Oceania. McCarthy, who has 10 years of business aviation experience, joined Gulfstream in fall 2019 as a regional sales manager.

EPIC Fuels added two executives to its leadership team—**Joshua Foster,** who was named v-p of supply, and **Kyle O'Leary**, v-p of operations. Foster previously served as director of supply and training for various Delta Air Lines subsidiaries. O'Leary formerly was senior manager of fuel supply for Spirit Airlines and also has been a fuels marketer and general manager of an FBO.

LeMiracle Hendking joined *FreeFlight Systems* as director of sales. Hendking brings a background in both the airline transport, business jet, and other transportation segments, having spent nearly 10 years holding management positions with Recaro Seating and also holding project and engineering positions with Aerotek, Huitt-Zollars, and the Alabama Department of Transportation.

ZeroAvia added **Andy Brown** and **Christine Ourmières-Widener** as advisors. Brown is a 35-year Shell executive who most recently led the upstream division. Ourmières-Widener brings more than 25 years of operator management expertise in the commercial aviation market, recently with Flybe.

The *Association of Air Medical Services* (AAMS) named **Matthew Fox** director of event design and **Christina Childs** director of education and special events as well as MedEvac Foundation International director of events. Fox had served as a senior project manager at Meeting Management Services since 2011. Childs ran this year's MTLI Virtual Grad School and previously has handled event planning for engineering, telecommunications, and renewable energy industry associations.

Aero Asset appointed **Joe Viveiros** and **Sebastien Delmaire** as sales directors. Viveiros, who is type rated in both the Sikorsky S-76 and Gulfstream G550, has more than a 30-year career in aviation and has completed more than $200 million in aircraft transactions. Delmaire formerly was a French Air Force officer before joining Airbus Helicopters and then Aston Martin. ■

AWARDS and HONORS

CAE president and CEO **Marc Parent** was appointed Member of the Order of Canada by the Governor-General of Canada Julie Payette. Recognizing extraordinary Canadians whose services shape society, the Order of Canada is considered one of the country's highest honors. Parent is being honored for "his achievements that have greatly contributed to the development and growth of the aerospace industry in Canada."

Parent began his career as an engineer at Bombardier Canadair in 1984 and joined CAE in 2005, taking the role of president and CEO in 2009. A staunch advocate for the Canadian aviation industry, he has served on the boards of Aéro Montréal, the Canadian Association of Defense and Security Industries, and the Aerospace Industries Association of Canada. ■

FINAL FLIGHT

Lawrence L. "Larry" Burian, who led the *National Air Transportation Association* (NATA) for nearly two decades, died on December 23.

Burian, who soloed at the age of 14 in his Missouri hometown, joined NATA in 1974 initially as a v-p with a focus on the FBO industry and became its president two years later. At the time, the organization had just three employees, 160 members, and a $135,000 budget, Burian was quoted as saying during his retirement. By the time he left NATA in 1994, the association had grown to some 2,000 members and had a $2.5 million budget and 16 employees.

NATA noted that Burian stepped in when the association's members were fragmented and needed focus and worked to attract leaders who understood the general aviation business. As he had joined the association, it was going through a transformation with the scheduled commuter and cargo carriers deciding to split off to form a separate organization. The remaining organization rebranded to the National Air Transportation Association and under Burian's direction became a strong voice of advocacy for business and general aviation businesses. Under his stewardship, NATA fought major conflicts such as fuel price and allocation controls—a battle that ultimately resulted in an estimated $70 million being returned to the FBO industry, according to the association. ■

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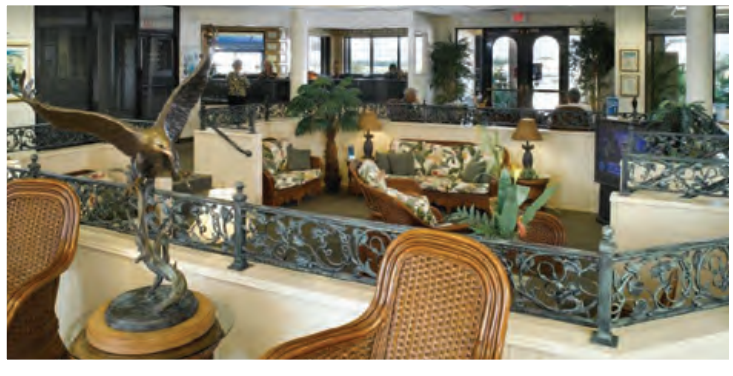

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