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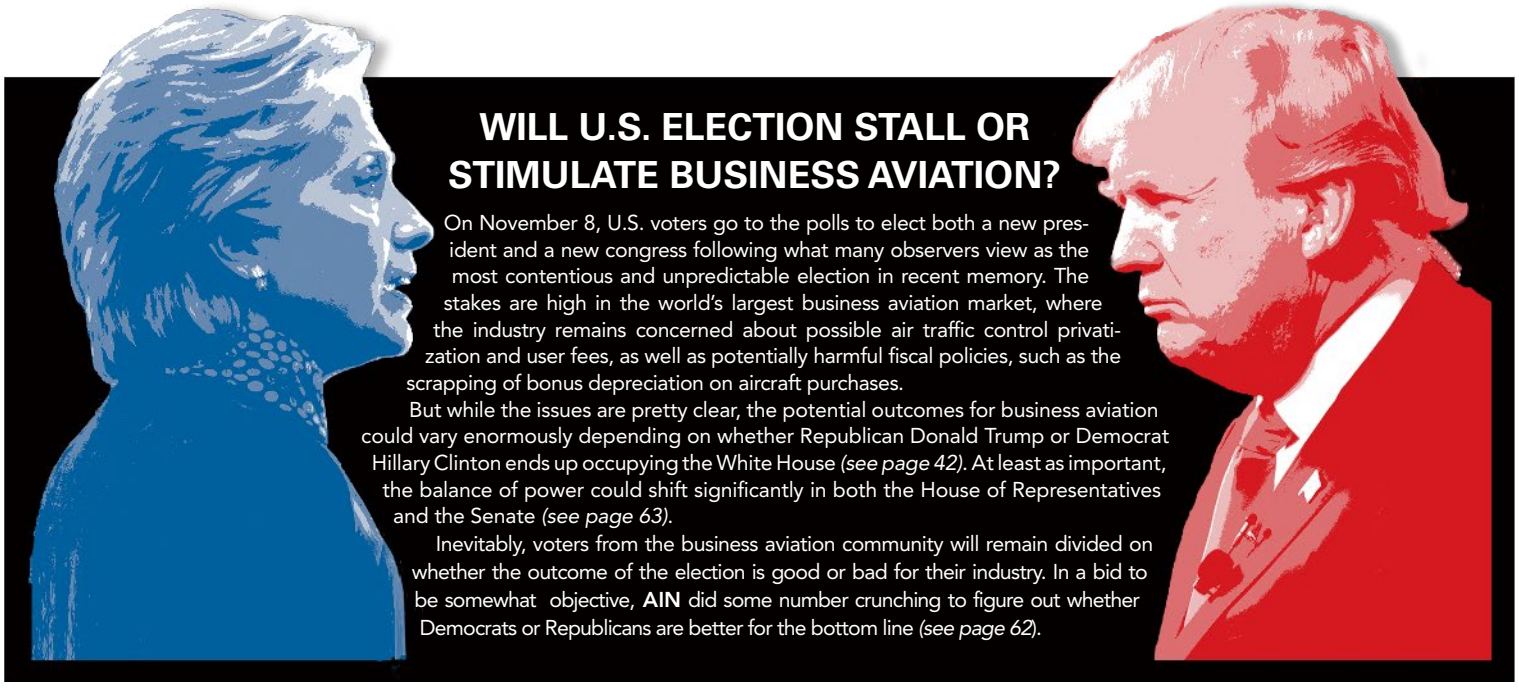


WILL U.S. ELECTION STALL OR STIMULATE BUSINESS AVIATION?

On November 8, U.S. voters go to the polls to elect both a new president and a new congress following what many observers view as the most contentious and unpredictable election in recent memory. The stakes are high in the world's largest business aviation market, where the industry remains concerned about possible air traffic control privatization and user fees, as well as potentially harmful fiscal policies, such as the scrapping of bonus depreciation on aircraft purchases.

But while the issues are pretty clear, the potential outcomes for business aviation could vary enormously depending on whether Republican Donald Trump or Democrat Hillary Clinton ends up occupying the White House *(see page 42)*. At least as important, the balance of power could shift significantly in both the House of Representatives and the Senate *(see page 63)*.

Inevitably, voters from the business aviation community will remain divided on whether the outcome of the election is good or bad for their industry. In a bid to be somewhat objective, **AIN** did some number crunching to figure out whether Democrats or Republicans are better for the bottom line *(see page 62)*.

Despite economic uncertainty, Wichita GA continues to evolve

by Kerry Lynch

When Bombardier executives highlighted concerns about a soft market for its Learjet products, speculation heightened about whether the company would sell the Learjet unit and whether its neighbor, Textron, might be the potential buyer. That speculation underscored the transition that already has occurred in Wichita since the downturn began in 2007, spelling the loss of thousands of jobs and translating into the merger of two giants in the general aviation industry.

Wichita alone lost 13,000 jobs over the 2009-2010 time frame, and an industry-sponsored economic study released in 2015 found that business and general aviation direct, indirect and induced jobs were down by 100,000 since the last time the study was conducted a decade earlier.

"The aviation industry had not seen anything like the damage that happened in 2008," said Richard Aboulafia, v-p of analysis at the Teal Group, adding that Wichita became "the center of the pain." This was because the majority of the general aviation manufacturers there have been focused at the lower end of the market, which was hit harder than any other sector, Aboulafia said. "The bottom half fell by 57 percent in the space of two years—a complete disaster the likes of which we had never seen in the aviation industry." In the aftermath, everyone improved, "except Wichita," he added.

"We've gone through a really difficult time—truthfully, the most difficult eight-year period in my career in this industry, and my career is now 40-plus years," said Dave Franson, president of Franson Consulting as well as president of the Wichita Aero Club. "But I don't feel there's just no way we're coming out of it. There's just a new normal. But I have confidence in Wichita. I have confidence in the companies."

Wichita has long prided itself as being the Air Capital of the World, home to Beech, Cessna, Learjet and Spirit AeroSystems and a base for manufacturers such as Boeing. Since the downturn, Beechcraft and Cessna have merged into Textron Aviation and Boeing has moved manufacturing out of the city.

But, according to the Greater Wichita Economic Development Coalition (GWEDC), a strong base remains that gives Wichita continued bragging rights as an aviation-manufacturing epicenter. Nearly 30,000 workers currently remain involved in manufacturing aerospace products and parts in the greater Wichita area, and companies in the region delivered nearly a third of all global general aviation shipments. In all, Wichita calls itself home to more than 350 aerospace companies.

The GWEDC also notes that, even after the downturn, Wichita still ranked first in the 100 largest U.S. metro areas in manufacturing as a percentage of overall jobs; and third in terms of engineering jobs.

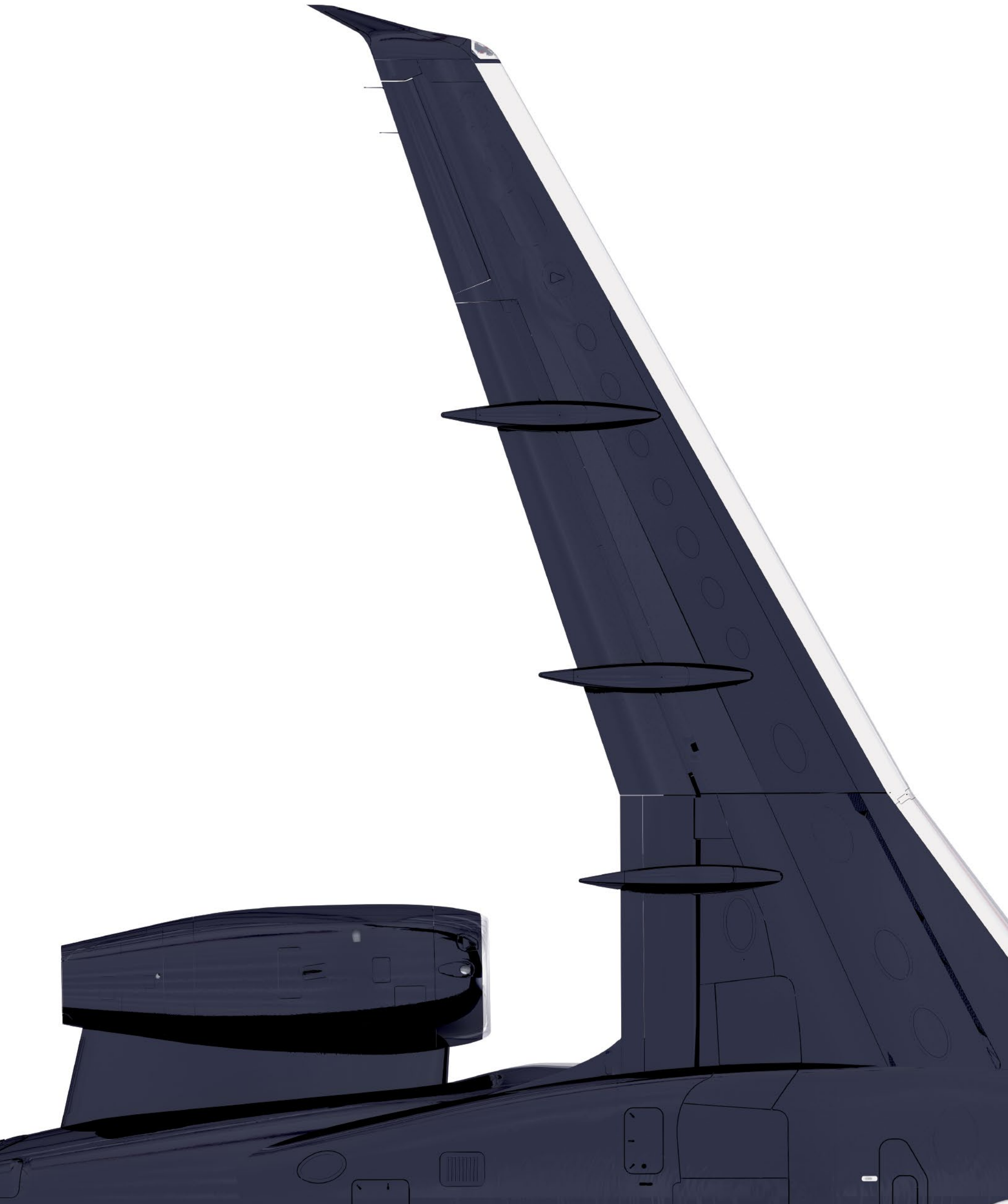
The March 2014 Textron Aviation merger played into a resiliency of the local area, Franson added. "They have been able to take advantage of synergies. They found opportunities to put together talent and resource pools that were here in town," he said. Before the merger, "[Cessna and Beechcraft] weren't working together because they were competitors. Now they can take advantage of what we have here, and it is coalescing nicely, even to the point where it is more efficient."

Continues on page 74 ▶

CHARTER MARKET REPORT

The last several years have been difficult for the charter industry, as users tightened their belts and considered other options, and the industry is adjusting accordingly. In addition to consolidation and fleet expansion, charter operators are offering jet card options.

Operators face challenges from several angles: pricing pressures continue to squeeze margins while upstart operators use technology to disrupt the current personal touch charter model. **page 20**



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Inside this issue

AIN's PRODUCT SUPPORT SURVEY

Part 3: Engines

AIN readers deliver their annual report card on how well the people who built their turbine engines are taking care of them after the sale. The company that has been king of the hill among turbofans for eight of the last 10 years moves aside this year. **Page 56**

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As we go to press

CREWS NEGLECTING PRE-TAKEOFF CHECKS

NBAA is emphasizing the need for compliance with pre-takeoff flight-control checks in a new report that stemmed from the findings of the fatal 2014 Gulfstream IV accident at Hanscom Field Airport in Bedford, Mass. The association's study found that before-takeoff control check non-compliance among business aircraft operators is 17.66 percent. NBAA's report analyzed 143,756 business aviation flights between Jan. 1, 2013, and Dec. 31, 2015. It found that about 15 percent of those flights took off with only a partial check of the flight controls and 2 percent took off without a full, valid check (defined as the stop-to-stop deflection of all flight controls per the aircraft flight manuals). The U.S. NTSB found that the accident GIV crew did not perform a flight-control check before takeoff, leaving them unaware that the gust lock was engaged. The aircraft crashed on takeoff, killing all seven people on board.

BOMBARDIER REALIGNS CUSTOMER SERVICE

Bombardier Business Aircraft has reorganized its leadership team to strengthen its focus on customer service. Leading this effort is Jean-Christophe Gallagher, who takes the position of v-p and general manager of customer experience, reporting directly to Bombardier Business Aircraft president David Coleal. Reporting to Gallagher is Andy Nureddin, v-p of customer support and training. In his new position, he oversees aspects of customer support, including warranty administration, field support, customer care, technical publications and technical services. In addition, Nureddin is responsible for the company's business aircraft training centers. In other news, Bombardier named Peter Likoray as senior v-p of its newly combined sales and marketing organizations.

EMBRAER OPENS FLA. SEAT-BUILDING PLANT

Embraer opened a new 50,000-sq-ft aircraft seat-manufacturing plant in Titusville, Fla., on September 19. The Embraer Aero Seating Technologies facility will focus on manufacturing all seating for Embraer's Phenom light jets and first-class seating for the new E190E2 airliner. Embraer initially acquired a minority stake in Irwindale, Calif.-based Aero Seating Technologies in 2011 and bought the company outright last year, when it also announced plans for the new seat-manufacturing facility in Florida.

ROSS AVIATION BUYS AIRFLITE FBO

AirFlite, an FBO at Southern California's Long Beach Airport/Daugherty Field that consistently earns high ratings in **AIN**'s FBO survey, is being sold to Ross Aviation. Speculation about the fate of the location had swirled since 2014, when Toyota announced it was relocating its North American headquarters from the Los Angeles area to Plano, Texas. The automaker's North American flight department was one of the major tenants at the FBO. The transaction is expected to close by the end of next month, at which time the location will be renamed Ross Aviation-Long Beach, as Toyota will retain the AirFlite name.

TRU EXPANDING SIMULATOR FACILITY

Textron's TRU Simulation + Training is nearing completion of a 30,000-sq-ft expansion of the FAA-certified Part 142 OEM-supported ProFlight Pilot Training Facility in Lutz, Florida, near Tampa. The expansion, which adds to 15,000 sq ft currently dedicated to training there, is scheduled to be completed by next month. It will provide space for training classrooms, flight training devices and full-motion flight simulators for the Cessna Citation CJ1+/CJ2+/CJ3 and Beechcraft King Air 90, 250 and 350 with Rockwell Collins Pro Line Fusion avionics. Simulators for the Citation M2 and the CJ3+ are expected to be on line soon, pending certification.

800TH TBM DELIVERED

Daher handed over the 800th TBM turboprop single—a TBM 930 registered as N930EA—to Elliott Aviation in Des Moines, Iowa, on September 20, just one week after the milestone aircraft rolled off the final assembly line at Tarbes-Lourdes-Pyrenees Airport in France. Elliott Aviation is Daher's authorized TBM distributor for North Dakota, South Dakota, Nebraska, Minnesota and Iowa. "The 800th TBM represents another important achievement and highlights the success of our turboprop aircraft, whose first model, the TBM 700, entered production 25 years ago," said Nicolas Chabbert, senior vice president of the Daher airplane business. The 700th TBM was a TBM 900 completed in 2014. To date, Daher has delivered 132 TBM 900s and 930s since the former was launched in March 2014.

MERIDIAN READIES FOR WEST COAST TAKEOFF

As it prepares to open a second FBO this month, Meridian named Epic Fuels as the fuel supplier for the newly built facility at Hayward (California) Executive Airport. The company's flagship FBO at Teterboro, N.J., has been a fixture since it was founded in 1958. The West Coast location will have a 6,300-sq-ft terminal and office building along with a 30,000-sq-ft hangar. The facility will also serve as a West Coast base for the company's aircraft charter management fleet, and Meridian plans eventually to add a Part 145 repair station.

Two Santa Monica FBOs evicted, city gives 30 days' notice to vacate

by Matt Thurber

On September 15, the city of Santa Monica sent eviction notices to the airport's two FBOs—American Flyers and Atlantic Aviation—giving them 30 days to comply. The letters state: "Attached please find your notice to vacate. Please note you have 30 days to vacate the premises. Please coordinate your departure and pro-rated rent amount with the airport manager…" The notice to vacate was issued "pursuant to California civil code 1946," according to documents provided to **AIN** by the city.

Atlantic Aviation has responded by filing a "motion for cease-and-desist order" asking the FAA to "issue an emergency order…directing the City of Santa Monica to cease and desist from evicting Complainant during the pendency of Complainant's Part 16 action against the City." Atlantic filed a Part 16 complaint with the FAA on September 13.

At an August 23 city council meeting, the city outlined its new FBO policy, which included a plan to serve a "notice to vacate" to both FBOs by September 15 and replace the services provided by the FBOs with city-run operations. Like almost every other aviation tenant at SMO, Atlantic has been operating without a lease since it expired on July 1, 2015.

The city has already managed to get the airport's largest flight school, Justice Aviation, to close on May 11, as part of a settlement of lawsuits between the city and the company.

Atlantic Aviation bought two Supermarine FBOs—the Santa Monica facility and a sister FBO at Stewart International Airport in Newburgh, N.Y.—in 2007. American Flyers, which operates one of its flight training academy locations at Santa Monica Airport (SMO), also sells 100LL avgas. The city claims that safety and environmental issues are the reasons for closing the airport, and in its lease negotiations with Atlantic Aviation, the city attempted to require the FBO to sell only biofuel-based jet fuel, which is currently not possible.

The city also wants to eliminate lead-based 100LL avgas sales at the airport, and while unleaded aviation gas is now available at some airports for lower-powered piston aircraft, there is currently no substitute for the 100LL required by high-compression piston engines.

Challenge Planned

Airport tenants have the right to challenge the city's eviction notices in state court, NBAA pointed out. The FAA also has the power to issue a cease-and-desist order because SMO is bound by federal grant assurances that require the city to keep the airport open until at least July 2023. While this is a rarely exercised move, the FAA issued a cease-and-desist order in 2008 when the city attempted to ban class C and D jets from operating at SMO. The dispute ended up in court, and the FAA prevailed.

"The city is pushing this further than before, and we hope the FAA will step up to the plate to make them step back," said Alex Gertsen, NBAA director of airports and ground infrastructure. "Santa Monica is a critical airport to our members and the national air transportation system, and we're doing everything we can to work with the FAA and to pursue the legal avenues that we have, to ensure that the airport remains viable and continues to be operational. These are precedent-setting issues."

AOPA is also asking the FAA to step in: "After learning of the most recent eviction notices, AOPA reached out to FAA compliance officials to alert them to the developments, and urged them to move swiftly to counter the city's latest move against airport tenants."

According to NATA president Martin Hiller, the city's moves violate the "fair and reasonableness" requirements of FAA grant assurances and also pose a safety problem at the airport. "NATA member companies, including Atlantic, are committed to managing safe and efficient FBO operations. This commitment requires companies to make ongoing investments in both safety equipment and training…there is no evidence to suggest that the city will take its obligation seriously to operate an FBO with the requisite knowledge of safe ground handling and fueling operations." ❑

The city of Santa Monica is trying to curtail traffic at SMO by evicting the airport's two FBOs.

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NEWS BRIEFS Compiled by Chad Trautvetter

Textron Aviation Trims Staff, Mx Centers

Textron Aviation is offering a voluntary early retirement program for eligible workers and will close two of its 14 U.S. service centers in an effort to improve its "cost competitiveness," the company announced on September 8. "We are taking a number of proactive steps to streamline our business," the company said in a statement. A Textron spokesperson confirmed the offer does not apply to workers in its Bell Helicopter division. The measures include downsizing two Textron Aviation service centers—located at Atlanta De Kalb-Peachtree Airport and New Castle Airport in Wilmington, Del.—to mobile support stations. These service centers will be closed by year-end.

Clay Lacy Aviation, Key Air To Combine

Van Nuys, Calif.-based Clay Lacy Aviation is merging with Key Air, an aircraft management and charter company in Oxford, Conn. After a transition period, the combined company will operate as Clay Lacy Aviation, representing more than 75 aircraft in 15 U.S. locations, along with FBOs and maintenance centers in Van Nuys and Seattle and standalone maintenance centers in Carlsbad, Calif., and Oxford. Integration should be completed by year-end.

U.S. Bizav Flying Makes Gains in August

After a disappointing July, business aircraft flying in the U.S., Caribbean and Canada climbed 3 percent in August year-over-year, according to Argus International. Part 91 flying rose 3.5 percent from a year ago, while Part 135 activity jumped 3.7 percent. Fractional flying dipped 0.9 percent last month versus a year ago. All aircraft categories saw gains, with large-cabin jets leading the way with a 6.1-percent year-over-year surge. This was followed by a 4-percent ascent in light jet activity, 2.2-percent rise in turboprop flying and 1.7-percent uptick in the midsize jet segment.

Pilot Launches Cuba Handling Company

Corporate pilot and Cuba travel specialist Eric Norber launched Cuba Handling to focus on private aircraft flights from the U.S. to the Caribbean nation. Cuba Handling will secure aircraft permits, flight logistics, visas and passenger itineraries for those traveling in their own or chartered aircraft under the modified terms of the 50-year-old U.S. embargo. "Cuba, while friendly and warm, is still a complicated destination for a private aircraft," Norber said.

Hawker 400XPR Upgrade STC'd by FAA

Textron Aviation's Beechcraft subsidiary received U.S. FAA STC approval last month for all "program elements" of the Hawker 400XPR upgrade: winglets, Rockwell Collins Pro Line 21 retrofit avionics and replacement Williams International FJ44-4A-32 engines. All components of the factory-approved, -engineered and -supported upgrade are available for installation on Beechjet 400A/400XPs at any Textron Aviation service center. The 400XPR offers 1,970 nm range with four passengers, 33 percent more distance than a Beechjet 400A/400XP.

TrueNorth Intros Simphonē Pro

TrueNorth Avionics last month introduced its new Simphonē Pro cabin communications system. It is a direct replacement for legacy Simphonē systems. Buyers can purchase Simphonē Pro in two versions: with or without dual Iridium voice and data channels. The system consists of a 4 MCU box and provides aviation-certified Wi-Fi, high-fidelity telephone with full-featured VoIP PBX, enterprise email and connectivity with mobile devices. A TrueNorth incentive allows buyers to upgrade to the Simphonē Pro with Iridium for $49,600 (retail price is $65,200).

JetNet iQ: pre-owned values plunging

by Curt Epstein

The rapidly declining residual values in many segments of the pre-owned business jet market remain one of the major industry concerns, and that topic was the primary focus of the 6th Annual JetNet iQ Summit, held last month in New York. According to data from the Utica-based JetNet, the pace of depreciation, particularly among young, large-cabin aircraft, has accelerated over the past two years.

"It used to be that the typical airplane at the end of five years was at 75 percent of value based on constant dollars," said panelist Robert Zuskin, president and owner of Virginia-based aircraft appraisal firm Jet Perspectives. "Today the norm is 50 to 60 percent at the end of five years, and the best airplanes I think right now are probably at 75 percent at five years, but those are few and far between. In terms of the big airplanes, the residual value depreciation is significant."

Brian Proctor, president and CEO of Dallas-based aircraft brokerage and advisory firm Mente Group, crunched the numbers using the G550 as an example. In his scenario the $50 million airplane flies 400 hours a year for five years. "The market depreciation on that airplane [is] roughly $5,600 an hour, at a 5 percent depreciation rate," he noted, adding that such rates will cause downstream changes in the market. "What's going to end up happening over time is that the operators are going to get smarter, and they are going to realize that the aircraft are losing value faster than they can fly them. So charter rates are going to have to go up."

"There's been a change in behavior," noted Paul Cardarelli, JetNet's vice president of sales. Before the recession, he explained, usage cycles outpaced the growth in gross domestic product (GDP). After the trough in 2009, cycles began to rebound, but this time, steadily underperforming GDP growth. While the usage levels in the U.S. continue to slowly improve, this year they are expected to approximate the number of cycles recorded in 2003. Back then, there were approximately 9,500 business jets in the U.S.; today there are 12,500, according to JetNet statistics.

"There's just such an unbalanced supply-and-demand curve the likes of which, maybe, no industry in the history of the world has ever seen," said industry veteran David Labrozzi. "It's a problem that is not going to get any better until we somehow address the supply-demand curve."

The prospects of an industry resurgence are clearly tied to an increase in utilization, as JetNet's current forecast calls for approximately 7,400 new-jet deliveries worldwide over the next decade, with approximately 2,900 retirements. Yet, owners of older borderline-obsolete airplanes are loath to recognize that they are likely the last owners of their particular aircraft, which are destined to make their final flights to the boneyard, even though they are still able to fly.

Lenders Remain Cautious

This uncertainty in the market, aside from causing jitters in owners and uncertainty in buyers, is also creating turmoil among the appraisal and lending communities. In one particular example, David Crick, a partner and senior appraiser with Lloyd's Asset Services, noted one model with more than a dozen units on the market, all of them listed as "make offer." "There's no real clarity about what the take price might be, there is so much mud in the air that to actually put a value on that aircraft from evidence is nigh impossible," he told the audience. "How can you do a forecast of residual value if we can't even work out what the current value is?"

"What is going to have to happen is that the market is going to have to recognize the new realities, and I think once the manufacturers

Continues on page 102 ▶

WHEELS UP FORMALIZES CARE PROGRAM, INTROS TEAL AIRPLANE

Wheels Up last month launched "Wheels Up Cares," an initiative designed to raise awareness and funds for causes important to the company and its members. Under the program, a Wheels Up Beechcraft King Air 350i will be repainted with a custom-designed livery as a symbol of each charity's mission.

This formalizes a program that saw Wheels Up introduce the Pink Plane last October 1 to raise funds for the Dubin Breast Center of the Tisch Cancer Institute at Mount Sinai in New York City. This month, the company introduced a teal King Air 350i to support Ovarian Cancer Awareness Month. Wheels Up will also raise funds for the Janet Burros Memorial Foundation by donating a portion of the fee for each membership purchased this month.

"Just as Wheels Up has transformed private aviation, we set out to create an innovative way to inspire others to support great causes," said Wheels Up founder and CEO Kenny Dichter. "We are a company with a social responsibility, and this effort reflects our commitment, and that of our members, to help make the world a better, safer and healthier place." *—C.T.*

The teal King Air 350i supports Ovarian Cancer Awareness Month.

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NEWS BRIEFS Compiled by Chad Trautvetter

Bombardier Plans 'Pauses' of Global Completions

Bombardier Business Aircraft is planning a series of temporary "pauses" of Global 5000 and 6000 completions in Montreal as it continues to manage costs. The pauses "are really minor adjustments on a small scale," said a spokesman, emphasizing that the company will honor customer commitments. But it comes as the business aircraft market remains somewhat sluggish and follows a decision by Bombardier last year to slow production of the classic Globals. Bombardier is not revealing specifics about the pauses, nor is it tying the action to production rates. But the spokesman said the pauses would occur over the next year and added that the company is working with its labor unions to minimize effects on employees. Separately, Bombardier had implemented a "workforce optimization plan" throughout the company earlier this year.

3D Printing To Trim GE ATP Parts Count

By using additive manufacturing (commonly referred to as "3D printing"), GE Aviation has eliminated 845 parts from the Advanced Turboprop Engine (ATP), which will power the Cessna Denali turboprop single. GE Aviation president and CEO David Joyce said that using additive manufacturing for the ATP "represents an elimination of thousands of machining features and inspections, and hundreds of quality plants and procurement contracts." The ATP will have no structural castings, as well as a "significant" weight benefit, he added. GE Aviation has been working with the FAA "to make sure that we can verify everything we're doing for certification," Joyce said. Meanwhile, parent company GE acquired two suppliers of additive manufacturing equipment—Arcam and SLM Solutions Group—for $1.4 billion last month.

WingX: Euro Bizav Flying Slides

Business aircraft activity in Europe slid in August by 0.9 percent year-over-year, mainly because "private jet owners were flying less, particularly from Russia and Turkey, with heavy-jet activity in general falling sharply," according to a report from WingX Advance. "There is no doubt some wariness about the elevated terrorist threat, reflected in markedly less activity at major airports, with Nice obviously affected," noted WingX managing director Richard Koe. There were 74,689 business aviation departures in Europe that month, with the UK and France providing the "main growth impetus."

Avinode: Hours Matter When Quoting Charter Trips

Nearly half of business aircraft charter flights are booked within two days of departure, according to Avinode's analysis of 18,000 trips over the past 12 months. In fact, it found that 19 percent of the trips are booked the day of travel, while 20 percent are scheduled just one day in advance. Avinode discovered that 80 percent of departing flights were quoted within the previous 48 hours, and 90 percent were quoted within the previous five days. Simply, operators who do not provide customer charter quotes within 48 hours face the prospect that 80 percent of these trips are already booked before they even respond, it said.

Piper Secures PC for M600

The FAA granted Piper a production certificate for the M600 turboprop single last month. This allows the Vero Beach, Fla. manufacturer to produce, flight-test and issue airworthiness certificates for the M600 for deliveries. The company received the type certificate for the M600 in June and delivered the first customer aircraft on July 12.

Mx manual issues hamstring MROs

by Matt Thurber

The provision of instructions for continued airworthiness (ICA), otherwise known as maintenance manuals, remains an issue for repair stations that need such information to maintain their customers' aircraft and the components attached to them. The Aeronautical Repair Station Association (ARSA) has been working on this issue for many years on behalf of its members and trying to get regulators to uphold rules that require aircraft, engine and component manufacturers (original equipment manufacturers or OEMs) to provide ICA to repair stations, particularly those that don't have an authorized service center relationship with the OEM.

Some maintenance operators claim they are having difficulty securing instructions for continued airworthiness from OEMs, and ARSA is urging the FAA to ensure they get them.

"Research shows that the regulations have long required that ICA be provided," according to ARSA executive director Sarah MacLeod. ARSA's research identifies such requirements (applicable first to engines) as far back as 1941. The requirement that maintenance be done in accordance with manufacturers' maintenance manuals appeared in 1938. Since then, these early requirements have been codified in FAA regulations, specifically Part 21, 43, 145 and others.

In Part 21.50(b), the regulations state: "The holder of a design approval, including either the type certificate or supplemental type certificate for an aircraft, aircraft engine or propeller for which application was made after Jan. 28, 1981, must furnish at least one set of complete Instructions for Continued Airworthiness to the owner of each type aircraft, aircraft engine or propeller upon its delivery, or upon issuance of the first standard airworthiness certificate for the affected aircraft, whichever occurs later."

Further, "Thereafter, the holder of a design approval must make those instructions available to any other person required by this chapter to comply with any of the terms of those instructions. In addition, changes to the Instructions for Continued Airworthiness shall be made available to any person required by this chapter to comply with any of those instructions."

Part 43.13 requires that entities authorized to perform maintenance do so using "the methods, techniques and practices prescribed in the current manufacturer's maintenance manual or Instructions for Continued Airworthiness prepared by its manufacturer, or other methods, techniques and practices acceptable to the Administrator."

For certified repair stations, Part 145.57 applies performance standards as follows: "each certified domestic repair station shall perform its maintenance and alteration operations in accordance with the standards in Part 43 of this chapter. It shall maintain, in current condition, all manufacturers' service manuals, instructions and service bulletins that relate to the articles that it maintains or alters."

Josh Krotec, who volunteers as government affairs chairman at ARSA, is a senior vice president at First Aviation Services and oversees company repair stations that repair and overhaul airliner propellers and business aircraft landing gear, flight controls, electronics and oxygen and fire systems. On the landing gear side, withholding of ICA is a problem, especially because the overhaul cost is a small fraction—roughly 10 percent—of the cost of a new set of landing gear.

For one airframe OEM that First Aviation deals with, Krotec said, "If we ask for the overhaul manuals for landing gear, they say there isn't one. But when their customers reach the overhaul limit, [this OEM] does the overhaul for them." So obviously the manuals exist, but the OEM isn't willing to provide them to First Aviation or even the owner of the airplane, as required in 21.50(b).

In another case, an oxygen systems vendor claimed that it wasn't responsible to provide ICA to another ARSA member repair station but that it was the airframe OEM's responsibility. The airframer said it didn't have to provide the ICA because it didn't manufacture that oxygen system component. Eventually the vendor finally admitted it did have the ICA and charged what Krotec said was "a ridiculous fee" to provide the ICA. The whole process took two to three years, during which time the repair station was unable to serve its customers.

"It has been a mixed bag in terms of successes," he said. "Some OEMs are being more aggressive than others, refusing to provide maintenance manuals, not just to repair stations but also to aircraft owners [which is required by 21.50(b)]. They're trying to keep all that aftermarket work in-house." *(See related article in* **AIN**, *August, page 34.)*

Industry Lobby Seeks FAA Enforcement

ARSA wants the FAA to enforce its own regulations. "We've had mixed success going after OEMs," said Krotec. Sometimes after reminding the OEM of the regulations, the OEM relents and agrees to provide the ICA. The FAA's Flight Standards division has been more helpful in this regard than its Aircraft Certification Offices, he added, "even though certification

Continues on page 64 ▶

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NEWS BRIEFS Compiled by Chad Trautvetter

Piaggio Evo Flies from New Plant

Avanti Evo I-PDVS is the first airplane to come off the production line at Piaggio Aerospace's new Villanova d'Albenga plant in Italy. The twin turboprop made its maiden flight from the facility's adjacent runway at Clemente Panero International Airport in late August, less than a year after aircraft production was moved from Genoa. At press time, the Evo was slated for delivery to an undisclosed customer.

Gulfstream Launches G650 App

Gulfstream Aerospace has released an iOS app that equips Gulfstream G650/G650ER pilots to calculate takeoff and landing performance data quickly. The Gulfstream Performance app uses a verified weight-and-balance file that allows operators to determine takeoff and landing weights for their specific airplane after inputting the number of passengers, cargo and fuel loads. The app can calculate balanced and unbalanced field lengths and speeds; takeoff speed distance visualization; remaining stopping distance; factored and unfactored landing distance visualization; remaining runway; and abnormal-flap landing performance.

Int'l Regulatiors Ease Certification Path

Aviation authorities from the U.S., Brazil, Europe and Canada have developed a roadmap toward more collaboration and a smoother product-validation process. A Certification Management Team—comprising officials from the U.S. FAA, Brazilian ANAC, European Aviation Safety Agency and Transport Canada Civil Aviation—launched the program, which establishes milestones to ensure that efficiencies and benefits are negotiated through the EU/U.S. bilateral aviation safety agreement and simplify the export of aviation products and technologies between Europe and the U.S.

XOJet Pilots Can Get a Lyft to Work

Jet membership firm XOJet has formed a corporate partnership with rideshare platform Lyft to provide "safe and efficient" transportation for XOJet pilots and other employees at the "touch of a button." Under the alliance, the company's pilots can use Lyft for transport to and from the airport and hotel accommodations, while the expense reimbursement process is automated.

Blackhawk Unveils KA350 Upgrade

Texas-based Blackhawk Modifications is working on FAA STC approval for a Beechcraft King Air 350 engine upgrade that replaces the original 1,050-shp Pratt & Whitney Canada PT6A-60As with 1,200-shp (flat-rated to 1,050 shp) PT6A-67As. In hot conditions, the company has seen climb rate more than double from sea level to the FL350 service ceiling, reducing time-to-climb to 18 minutes. Cruise speeds have also gone up by as much as 37 knots, to a maximum of 340 knots.

U.S. Helicopter Accident Rate Improves

The U.S. civil helicopter accident rate continues to fall and the industry posted its second safest July in three decades, according to data released August 31 by the U.S. Helicopter Safety Team (USHST). The accident rate for civil helicopters declined in the U.S. for the first six months of this year compared to the rate posted for the full 12 months last year, falling to 3.28 per 100,000 flight hours compared with 3.73 in 2015, it said. However, the fatal accident rate showed a slight uptick to 0.54 per 100,000 flight hours for the first six months of the year compared to 0.52 for all of 2015. While July is traditionally the worst month of the year for accidents, this July had been the second safest in 34 years, with just 13 accidents, as opposed to a July average of 19.

Concerns unwarranted on EU ramp inspections

by Curt Epstein

As the EU Ramp Inspection Programme marks its 20th anniversary this year, there are pilots in business aviation who have yet to encounter the EASA-administered program, instituted by the European Civil Aviation Conference, and many go their entire careers without ever experiencing one. Intended as a means of ensuring the safe condition of aircraft operating in the member states, the standardized inspections—triggered by data analyzed through a central database by EASA identifying an aircraft as suspicious—can also be performed as random spot checks.

The program has two parts: SAFA ramp inspections derived from ICAO international standards for non-member country operators, and SACA inspections based on EU standards. In both cases, manufacturer's standards are considered for evaluating the technical condition of the aircraft. What inspectors are looking for is hardly a secret, as SAFA ramp checklists are readily available on the Internet from organizations such as the Flight Service Bureau, an airline cooperative that shares non-competitive information.

"It's really safety related in the sense of how they look at the airplane, and if they find something they get you to fix it," said Mark Zee, a flight operations specialist with the group. "If they really don't like what they see, then something along the lines of a ban might take place."

The 53-item checklist covers crew and aircraft documentation as well as the presence of and condition of various pieces of safety equipment. Typically one inspector will examine the interior of the aircraft and interview the crew, while another will inspect the exterior.

The program has a distinctively commercial aviation focus, with 7,000 commercial aircraft inspections conducted so far this year between the SACA and SAFA programs by the 47 participating states (including non-European nations such as Canada, Israel, Morocco, Singapore, Turkey and the UAE). Four hundred inspections of private and charter aircraft were conducted. "What [regulators] have said unofficially is that if you are a private operator, they are far less interested in what you are doing," explained Zee. "What they are really after is a situation where 200 people, or even 20 people on a Gulfstream, have been sold a ticket or are paying for a service and the aircraft that they are on is unsafe."

Caution Ahead

Despite the low numbers of inspections performed on private aircraft, the topic nonetheless remains a concern, according to those in the flight-planning industry. "It comes up in all our conversations because [clients] just want to make sure they are compliant," said Mark Miller, Universal Weather and Aviation's senior manager of technical planning. "They are concerned about being compliant because you never know when you are going to be inspected or where."

But that level of anxiety might not be warranted, especially for N-registered private aircraft pilots and operators, as inspectors in most cases know specifically which aircraft they are looking for, through profiling.

At the beginning of June, the EASA published new guidelines in ARO.ramp.100(b) specifying which categories of aircraft would receive extra scrutiny. "There are a lot of countries that provide registries for tax purposes, and they typically don't have the inspectors for the country to go over the aircraft and all of the certifications for the aircraft to a degree acceptable by inspectors, so those aircraft might be targeted more than an aircraft registered in the U.S. or France or other European country," said Miller.

"We're not really talking about the states or countries that have comfortable maintenance programs," added Zee. "We're talking about Africa, Asia and the Middle East, and these guys sending in aircraft that are 'dodgy,' for want of a better word. That's what they are looking at." Of course, with the centralized database, aircraft that have been previously flagged will continue to raise flags among inspectors, Zee noted. "They are trying to say that if we get a report that your maintenance is shoddy, or you've been doing strange things, we're going to have a look at you."

For any operator who travels to Europe infrequently, the possibility of a random spot check, while remote, does exist, and Zee recommends becoming familiar with the checklist and up to date on what questions are being asked. "First they will ask you for your pilot certificate, medical, logbook, insurance and registration," he told **AIN**. "Let them have a look at it, let them have their couple of questions, answer them and give them a cup of tea if you want or something from the galley." A typical inspection should last half an hour, barring any drastic findings.

The inspectors are not there to assess the ability of the crew and have strict guidance as to what they are entitled to ask about, yet Zee added, there will always be departures from standard procedure. One popular "gotcha" posed to pilots prescribed with corrective lenses on their medical certificate is to ask to see a spare set of glasses.

Results and Consequences

Given the comprehensive nature of the checklist, inspectors are bound to identify one or more findings, which range from Category 1 (minor) to Category 3 (major) depending on their level of influence on safety. The captain of the aircraft will be debriefed regarding the findings, and Category 2 and 3 violations will be forwarded to the appropriate aviation authority as well as the operator's home base.

In some cases an aircraft will be allowed take off under operational restrictions such as in the case of a broken passenger seat, but if there is a "corrective action before flight authorized finding," a repair must be made before the aircraft is permitted to depart. In situations where the inspectors believe the captain does not intend to take action on the deficiencies, they will formally ground the aircraft.

While there is little a crew can do once they see the inspectors approaching the aircraft, Zee suggests they quickly review their flight plan, making sure it is in order, including fuel checks updated during the flight with correct calculations, along with weather updates.

Other than that, he said, crews should just remain calm. "I think the overriding message is that a lot of pilots are concerned about being ramp checked in Europe, and the bottom line is you don't have much to worry about," advised Zee. "Pilots wind themselves up and it's a real stressor because they are not sure what to expect. My advice would be answer the questions they give you, be polite and friendly and you are fine." ❑

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NTSB Investigating Collision with Object

The U.S. NTSB is investigating an accident in which an unidentified object is believed to have hit a Beech C99 on a Part 135 cargo flight from Carbon County Regional Airport in Price, Utah, to Salt Lake City. The accident occurred at about 6:40 p.m. MDT on August 1 while the airplane was climbing through 8,500 feet near Spanish Fork, Utah. According to the NTSB, the pilot "noticed something pass in his peripheral vision, then felt a 'thud' as something struck the airplane." Thinking the event was a bird strike, the pilot elected to continue to Salt Lake City since there was no loss of control or abnormal control feel. Once on the ground, the pilot discovered that about one foot of the vertical fin was missing and that the rudder was substantially damaged. Initial examination did not show evidence of organic material.

Bizav Regional Forum Venues Chosen

NBAA's business aviation regional forums will return to South Florida and the New York City metro area next year. The locations and dates: Atlantic Aviation at Palm Beach (Fla.) International Airport, January 26; the American Aero FBO at Fort Worth Meacham International Airport, March 23; and Signature Flight Support at Morristown (N.J.) Municipal Airport, September 7. The one-day forums include company exhibits, static displays of aircraft and education sessions on current issues facing business aviation, NBAA said.

Advent Tests PC-12 Anti-lock Brakes

Advent Aircraft Systems has begun FAA certification trials of an anti-skid braking system for the Pilatus PC-12. When certified, this will mark the third STC for Advent's eABS; the company holds similar approvals for the Eclipse 500/550 and Beechcraft King Air 300/B300. All PC-12 variants are eligible for eABS installation, provided the aircraft is equipped with a Waas-enabled GPS. The company says its eABS offers improved braking in all runway conditions without the risk of flat-spotted or blown tires. It also allows pilots to apply the brakes immediately after touchdown or in other situations where hard braking is required, such as a rejected takeoff. List price for the PC-12 eABS is $50,604, not including estimated installation costs of about $9,000.

Charter Group Warns of Cyber Attacks

The Baltic Air Charter Association (BACA) is warning European aircraft brokers and charter operators about the escalating threat of cyber attacks. "A sophisticated criminal community is targeting the business aviation sector and has hacked into broker and operator internal communications systems for access to bank accounts and trading information," BACA said. "The attacks have taken place in the UK and throughout Europe." BACA advises brokers and operators to be "extremely vigilant and monitor all transactions, internally and externally, at all times."

FAA Updates MU-2B Training Rules

The FAA has updated and will ultimately eliminate Special FAR 108, the mandatory training requirements for all operators of U.S.-registered Mitsubishi MU-2Bs. Effective immediately, the content of SFAR 108 has been revised. However, SFAR 108 will be eliminated and its content formed into new Subpart N of Part 91 on November 7 next year, after which all MU-2B operators must comply with this subpart. The revised content will correct and update "several inaccurate maneuver profiles to reflect current FAA training philosophy and add new FAA procedures." As a result of this action, operators, training providers and safety officials will have more timely access to standardized, accurate training material, the agency said.

Veteran Fred Reid joins OneJet as service positions for growth

by Kerry Lynch

OneJet, eying continued expansion of its middle-market scheduled services using business jets, has added veteran airline and business aviation executive Fred Reid to its board of directors. Reid, whose résumé includes Delta Air Lines, Virgin America and Flexjet, will help guide the company as it explores new small and mid-size regional markets throughout the U.S. The role formalizes a year-long relationship in which Reid has acted in an advisory capacity.

OneJet launched services a little more than a year ago, initially offering flights from Milwaukee to Indianapolis with Hawker 400XPs flown under Part 135 with Part 380 economic authority. The company, which president and CEO Matthew Maguire characterizes as "a next-generation scheduled product" rather than "a charter or a business jet service," has since added Pittsburgh as a base of operations and routes to Hartford and Louisville, with plans for Raleigh and Kansas City.

Reid noted that it was the opportunity to build the regional services that lured him to OneJet. "To me, what's attractive is not so much the 'business jet' element as it is the massive commercial opportunity opening at the moment in the regional travel segment. It's just absolutely tremendous," he said. "The recent years of consolidation and resulting capacity right-sizing by the major airlines have created a ripe environment for this type of service."

Fred Reid brings extensive experience with scheduled service to his role at OneJet.

For Reid, the predictability of the scheduled approach provides cost efficiencies not found in on-demand services. "The uncertainty associated with traditional on-demand operations drives a huge amount of cost and throughput constraint for the typical business aviation operator," he said. "OneJet's scheduled operations, while using business jets, allow us to apply scheduled airline practices to maintain reasonable cost."

Fares can run as low as $250. "It's a simple proposition: we are providing the only nonstop service in the markets we serve and are doing so with an economically feasible capacity plan," he said.

"There is a substantial need for regional nonstop service," Maguire agreed. OneJet services are designed for direct routes that are less than 700 miles and in markets that can support between 20 and 80 passengers a day, but have limited airline options. The idea, Maguire said, is "to get people to their destinations in 45 minutes to an hour rather than four or five hours." Maguire believes there are as many as 900 city pairs in the U.S. that can support that model.

OneJet sells service per-seat through its own booking engine or through services such as BCD Travel or Carson Wagonlit Travel. The company operates out of main terminals. Maguire said the company decided early on to invest the time and money to receive the same Transportation Security Administration credentials as all the major airlines.

The decision was made at the behest of OneJet's target market: corporations and business travelers. Since the service is sold per-seat, corporations "wanted the people to have the same security standards as airlines," he said.

While there is cost to operating out of a main terminal, the locations chosen typically are looking for more service, have empty gates and have been willing to work with OneJet, he said.

Corporate Flight Management, which is an approved Part 135 commuter carrier, operates the flights for OneJet. It took over those operations from Pentastar in June.

Gradual Growth Planned

The company is looking to grow slowly. As such it is making adjustments along the way. OneJet put plans for Nashville and Memphis on hold, for example. "We want to be prudent," he said. It has four Hawker 400XPs and expects to add a fifth this month, with plans to add one every "one to two months thereafter," Maguire said.

While the company is always considering other aircraft options, the Hawker 400XP—with its low acquisition cost and operational capabilities—fits the OneJet model and likely will make up the fleet at least through next year, he said.

The company is also looking to add markets to connect to its Pittsburgh base this year, but has a longer-term vision of having five to seven "focus cities," where it bases aircraft and from which it serves multiple destinations. While not yet ready to reveal those locations, Maguire said the company is in active talks on three of them.

The company is also focusing on "customer experience," bringing on amenities such as Wi-Fi. ❑

CESSNA MOVING CARAVAN PRODUCTION TO INDEPENDENCE PLANT

Textron Aviation announced in late August that it is moving Caravan production from Wichita to its facility in Independence, Kan. A company spokeswoman did not specify a timeline for the transfer.

"We remain focused on new product development and, as such, must ensure our footprint and facilities meet the current and future needs of the business," the company said in a statement. "This move will use capacity at our Independence facility while making our Wichita workforce available for new products such as the Citation Longitude and Denali. No employees' jobs are expected to be impacted." The Citation Longitude is expected to enter service late next year, while the Denali turboprop single is scheduled to fly in 2018.

All piston-powered Cessnas—the 172S Skyhawk, 182T Skylane, T206H Turbo Stationair and TTx—and the Citation Mustang and M2 jets are manufactured at the Independence plant.

Cessna has been building Caravans in Wichita continuously since it received FAA approval for the type in 1984, though it does have a joint-venture facility with Avic Aircraft in Shijiazhuang, China, where it has assembled copies of the turboprop single for delivery solely to customers in China since December 2013. —*C.T.*

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Management fees stymie operators

by Kerry Lynch

With hopes dimming that IRS guidance will be released any time in the near future, industry leaders have turned to Capitol Hill for help in resolving the continuing confusion surrounding the tax treatment of management fees. "I think the legislative path is the best chance for success," said Scott O'Brien, senior manager for finance and tax policy at NBAA.

U.S. Rep. Pat Tiberi (R-Ohio) and Sens. Sherrod Brown (D-Ohio) and Rob Portman (R-Ohio) have introduced companion bills in the House and Senate to clarify that aircraft management fees are not subject to the 7.5-percent air transportation tax.

The House version, H.R.3608, has gained some momentum, receiving approval from the Ways and Means Committee in July. The Senate version also has had support, with behind-the-scenes talk continuing about attaching such a measure to the taxes portion of a comprehensive FAA reauthorization bill.

Also providing a boost to the legislative effort was a finding from the congressional Joint Tax Committee that such a bill would cost the government less than $500,000 over the next 10 years. Such a finding—that a tax bill is essentially considered revenue neutral—is crucial to gaining support from both sides of the aisle to move the legislation.

Bill Deere, executive v-p for government and external affairs for the National Air Transportation Association, agreed the legislative path is the "most promising path forward," saying, "We have the support. Now we have to find a vehicle for getting it through Congress."

Backers of the bill have been looking at several options, among them bringing it up as a standalone or attaching it to a tax bill that could come up during a lame-duck session. The standalone option might be a more difficult path, with a finite number of congressional days remaining this year and few issues coming up for consideration independently.

As for an alternate tax vehicle, some are holding out hopes that after the elections, Congress will consider a bill to renew certain energy tax breaks that have expired. Such a bill could serve as a venue for the management fees measure. But whether there is enough support to push through the energy tax breaks remains to be seen. An effort to renew the energy tax breaks was blocked this spring.

If the management fee measure fails to move this fall, the association executives believe it will at a minimum remain in discussions for the next long-term FAA reauthorization bill. Since Congress renewed the FAA's authorization only through the end of Fiscal Year 2017, FAA reauthorization will come up again next year.

Tax Structure in Limbo

However, that might come sooner than the long-awaited IRS guidance on the tax treatment of management fees. The IRS agreed to put out the guidance after a 2012 Chief Counsel Advice Memorandum caused an uproar by concluding that management services were taxable as air transportation. That memorandum spurred audits and costly tax bills, a number of which were either overturned or reduced on appeal.

After several meetings with industry leaders, the IRS agreed

Continues on page 70 ▶

Analyst reports dip in pre-owned G650 inventory

by Kerry Lynch

The inventory of pre-owned Gulfstream G650s for sale has dropped by a quarter, according to the latest UBS Business Jet Update. The slide comes as overall inventories of available business jets stabilize, the report added.

The number of G650s/650ERs for sale has fallen from a peak of 18 to 13, UBS reported. The inventory of the type is equivalent to 7 percent of the number in operation. Prices for the type, however, also continue to decline, dropping another percentage point in August, to 19 percent below peak now. This puts the average pre-owned G650 price at about $10 million below that of a new one.

The past swelling of G650 inventory had raised concern among analysts about the potential effect on sales of new aircraft. But Phebe Novakovic, chairman of Gulfstream parent General Dynamics, had questioned some reports on the numbers and stressed that investors shouldn't panic over the inventory, saying in late July, "I'm comfortable that the pre-owned G650 market is appropriate and rational." She also noted the company had not seen any G650 orders canceled as a result of the pre-owned inventory.

Upgrade Opportunities

As for pricing, Hagerty Jet Group (HJG), in its recent market update, suggested that the softening might provide opportunity for G550 owners to upgrade. HJG, noting that G650 sellers "are struggling to understand this quickly changing market," added that the asking price at the end of June appeared to be 5 to 10 percent higher than it should be.

The percentage of young (10 years or less) Gulfstreams available for sale is 8 percent (all in-production models), among the lowest in the industry. The available young Cessna Citation inventory is the smallest, at 7 percent, according to the UBS report.

Industry-wide, used business jets available for sale represented about 11.2 percent of the fleet in August, below the average of 13 percent. Inventories of aircraft five years or younger crept up 1 percent to 7 percent of the fleet in August, while inventories of aircraft between six and 10 years old dropped 2 percent to 10 percent. However, inventories of that six-to-10-year range are still skirting near-historic highs, UBS said. ❑

The number of pre-owned G650s/650ERs for sale fell from a peak of 18 in May to 13 in August, UBS reported. This now equates to 7 percent of the installed base, below the typical 10-percent mark for used business jets.

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TORQUED Full-throttle opinion from former NTSB member John Goglia

GA flying in the age of drones

John Goglia is a former member of the NTSB and currently a safety consultant. He welcomes your e-mails at gogliaj@yahoo.com.

With new drone regulations taking effect at the end of August that are predicted to trigger a proliferation in the number of drones being used by commercial and government entities, there are several provisions that manned aircraft pilots—especially general aviation pilots—need to be aware of so they can ensure their own safety and, of course, the safety of their passengers and the people and property below them. With these new regulations—more than a decade in the making—it's clear that the age of drones is upon us. To underscore the significance of these new regulations, the White House recently held a one-day event to "celebrate the potential of this technology." Called the *Workshop on Drones and the Future of Aviation*, the event highlighted the potential of drones in so many disparate fields—from infrastructure inspection to disaster relief to precision agriculture and so much more. And, indeed, we can expect Amazon to continue to push for package delivery in the airspace where GA often flies.

So for those among us who have been hoping this technology would just go away, it's time to accept that the economic promise of this new aviation technology—some experts predict an $82 billion industry in the U.S. and the creation of at least 100,000 jobs over the next 10 years—is going to make drones a huge player in aviation, and especially in the airspace where one day in the not-too-distant future drones and manned aircraft will be flying side-by-side. But for now, GA pilots need to be aware of what the new regulations allow so that they can take the appropriate actions to stay safe.

Safety: Everyone's Obligation

While much has been written emphasizing the importance of drone pilots learning about the manned aircraft world and gaining the aeronautical knowledge necessary to share the skies safely, not nearly as much has been written about what manned aircraft pilots—especially GA pilots—need to know about the new drone rules that will affect the airspace in which they fly.

This doesn't mean the FAA has put the burden of seeing and avoiding drones on GA pilots; many small drones would be difficult if not impossible for GA pilots to see. Drone pilots are responsible under the new rules for "yielding the right of way to all aircraft, airborne vehicles and reentry vehicles." In addition, there is a prohibition on operating "so close to another aircraft as to cause a collision hazard." The regulation specifies what yielding the right of way means: the drone "must give way to the aircraft or vehicle and may not pass over, under or ahead of it unless well clear." In addition to the requirement to yield the right of way, drone pilots cannot interfere with "operations and traffic patterns at any airport, heliport or seaport."

But even though drones have the responsibility to avoid manned aircraft, GA and other manned aircraft have the responsibility to comply with Federal Aviation Regulations that apply to them, especially minimum safe altitudes. Drones will be allowed to fly in areas that GA pilots need to be aware of so that they can maintain the necessary altitude and traffic pattern discipline that will keep them away from possible drone operations.

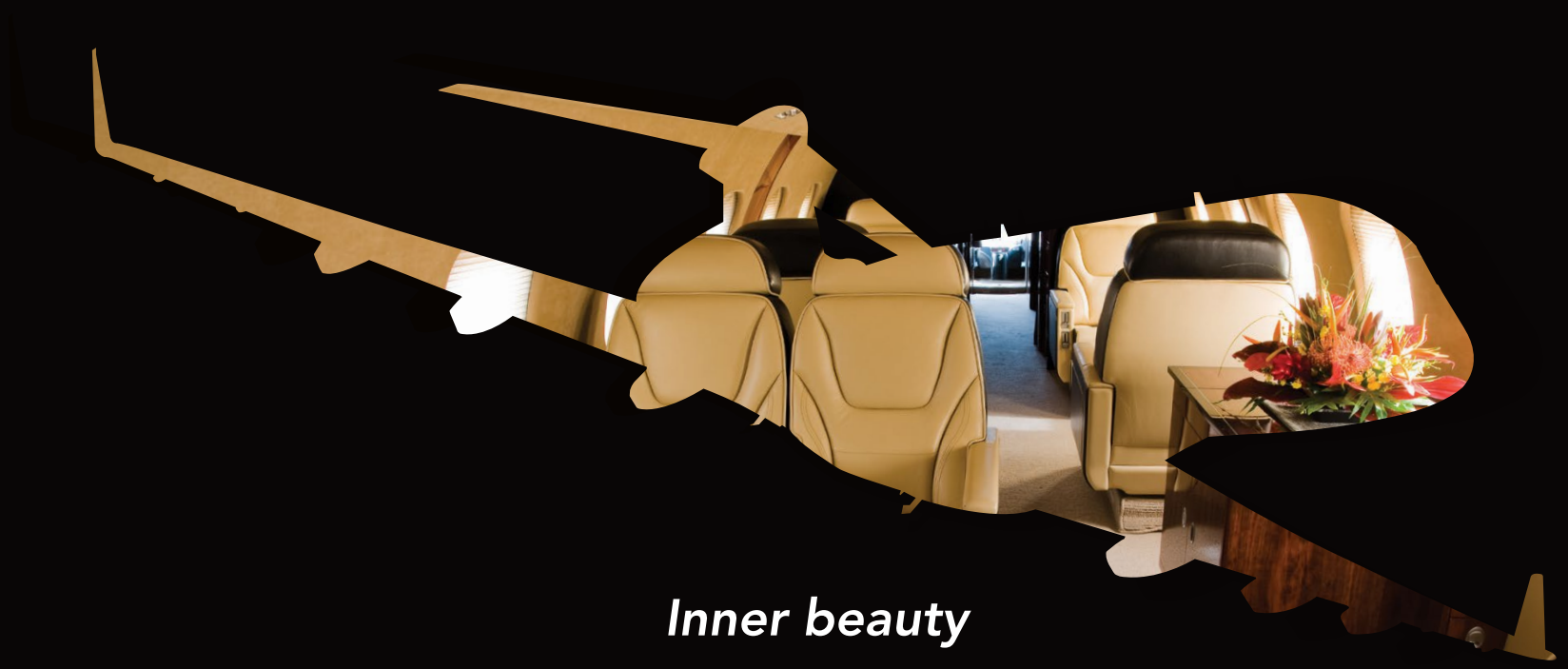
For example, while many believe that drones can't legally operate higher than 400 feet, that is not correct. The new rules allow certified drone operators to fly above 400 feet when the drone "is flown within 400 feet of a structure and does not fly higher than 400 feet above the structure's immediate uppermost limit." Knowing that drones can legally operate at 400 feet above the height of structures, GA pilots need to consider the importance of complying with minimum safe altitudes above structures even in rural or sparsely populated areas.

In addition to the new rules allowing drones to operate above 400 feet when close to structures, the new rules also allow small UAS pilots to fly near airports that are in uncontrolled airspace without any approval or notification to the airport or ATC. As I mentioned earlier, drone pilots are required to yield the right of way to manned aircraft and not to interfere with airport operations and traffic patterns. But this means GA pilots flying at airports in uncontrolled airspace need to be aware that drones could be operating in the airport vicinity and, of course, be aware of the traffic pattern for the airport and maintain pattern discipline when flying in and out of those airports, which, of course, is critical to safety even without drones.

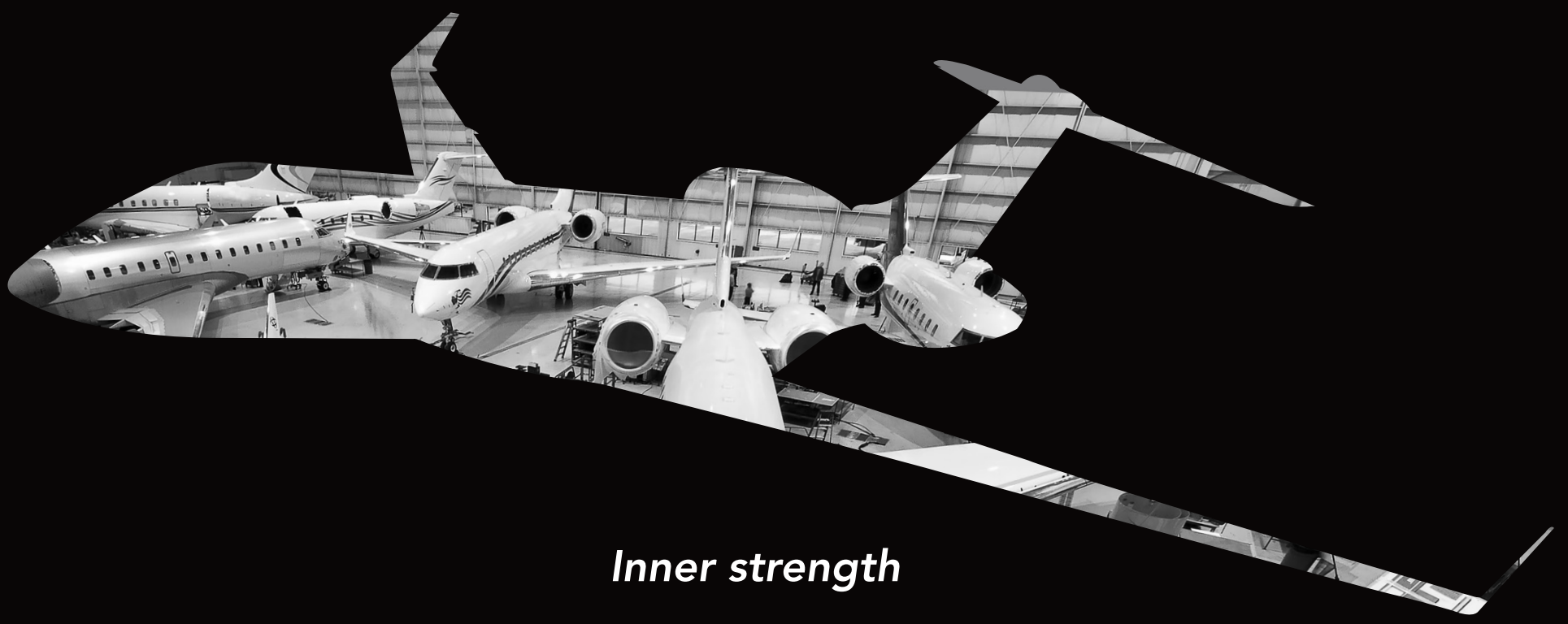
Although drone pilots will need ATC permission before flying in "Class B, Class C or Class D airspace or within the lateral boundaries of the surface area of Class E airspace," it's likely that in some controlled airspace, ATC approval will become fairly routine with appropriate mitigations, such as the issuance of notams.

As the FAA's drone rules open up a new age of unmanned aircraft operations, GA pilots need to do their part to keep the system safe for all users.

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



Inner beauty



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CHARTER
MARKET REPORT

Linear Air

What it takes to run a charter provider today

by James Wynbrandt

Belying the relatively static activity metrics, the air charter market has seen—and instigated—significant change in the past year. Charter fleets are being bolstered, operators are consolidating and upstart access providers are offering non-traditional lift, from per-seat offerings to new jet card programs—all while under the pressure of low margins that show no signs of lifting. Here are some of the companies and developments that helped reshape the industry over the past year.

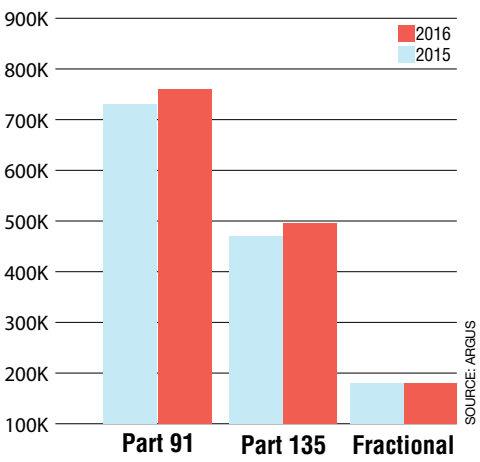
U.S. Charter by the Numbers

The U.S. charter market saw slow growth in the first half of this year while global on-demand activity held its own amidst the collapse of commodity prices and geopolitical uncertainties. Part 135 flight activity in the U.S. rose 3.4 percent during the first six months of this year compared with the same period last year, according to Argus International. Five of the first six months of 2016 (April the exception) registered higher year-over-year Part 135 flight activity, with June the greatest (6.7 percent); April dropped 0.5 percent year over year.

"We still have not reached the flight activity of 2006/ 2007, so the business aviation recovery in general has been slow," said Joe Moeggenberg, president and CEO of Argus.

By category, combined with Part 91 activity, large-cabin aircraft saw the largest growth in flight hours, advancing 2.7 percent (410,166/430,532 hours). Turboprops saw a 3.6-percent increase (528,151/546,954 hours), followed by small-cabin at 2.3-percent growth (451,754/462,133 hours), with mid-size cabins showing a 0.7-percent gain (614,999/619,013 hours). Taken together, combined flight activity rose 2.7 percent, or more than 50,000 hours, to 2,058,632 from 2,005,070. Argus estimates third-quarter flight activity will be up 3.9 percent over the comparable figures for last year.

Total Flight Activity by Operational Category
Jan-Jun 2015 vs Jan-Jun 2016



SOURCE: ARGUS

Part 91 & Part 135 flight activity each rose 3.4% during the first 6 months of 2016, when compared to the same period in 2015. Fractional flight activity was up 0.5% during the same period.

Operators' Log: Bolstering Charter Fleets

During the past year many operators have expanded their fleets to meet charter demand, which has been strong enough to support entering charter revenue agreements with the growing ranks of owners eager for income to offset their operating costs.

Some operators, in fact, have established or are establishing financing programs to assist their charter clients buy jets to place in the operator's fleet.

"We've made a strong push to recruit and attract airplanes that are really charter hungry," said Andy Priester, president and CEO of **Priester Aviation** in Wheeling, Ill. Priester has added 18 aircraft to its fleet this year, several owned by former charter customers who've bought jets, taking advantage of charter revenue arrangements Priester can offer, combined with declining preowned aircraft prices. "It creates a perfect storm for people who have been on the sidelines," said Priester. One customer bought several aircraft dedicated to charter for the company's fleet and intends to sell them individually with their flexible charter revenue agreements in place in turnkey sales.

Priester is also among operators providing aircraft for JetSmarter's per-seat shuttle flights, and the load factors "are higher than I ever thought they would be," Priester said. "Charter users in my opinion are not likely to become by-the-seat customers, but I think by-the-seat customers could become charter users and then aircraft owners."

One of the biggest developments in the U.S. charter market this year was **Jet Aviation**'s acquisition of California-based

Avjet. This deal has added almost 50 aircraft to the Jet Aviation group's managed fleet (and around 60 of the 153 jets are available for charter). Most of the fleet is in the super-midsize to large category.

"When we acquired Avjet we knew that it was a well-recognized brand that is working very well so we don't want to disrupt that while integrating it into the group," said Jet Aviation Flight Services vice president and general manager Don Haloburdo. He maintained that customers now benefit from greater choice and availability of aircraft, as well as having access to Jet Aviation's full portfolio of services (including maintenance and completions/refurbishment). The economies of scale have also made the respective charter operations more competitive.

"Of late, charter demand has been very consistent, but it remains very dependent on the overall state of the global economy," concluded Haloburdo. He said that having capacity at both ends of the busy New York to Los Angeles corridor has been a great competitive advantage.

This year has also seen **Meridian Air Charter** expand westward into the vibrant Californian market. The New York area-based operator has added aircraft to its growing base in the San Jose area and during October will open its new FBO at nearby Hayward Airport. It sees the San Francisco Bay area as a hot spot of growing charter demand, largely driven by the dynamic financial and technology sectors.

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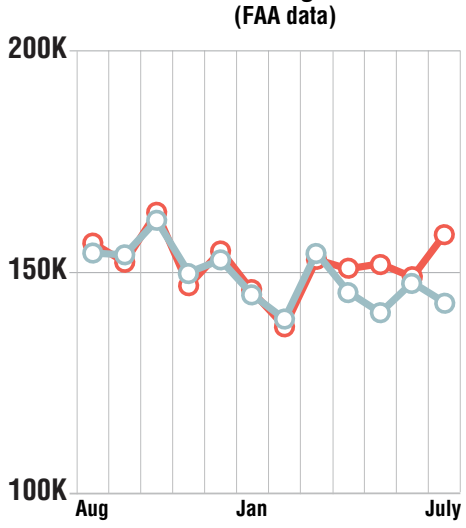
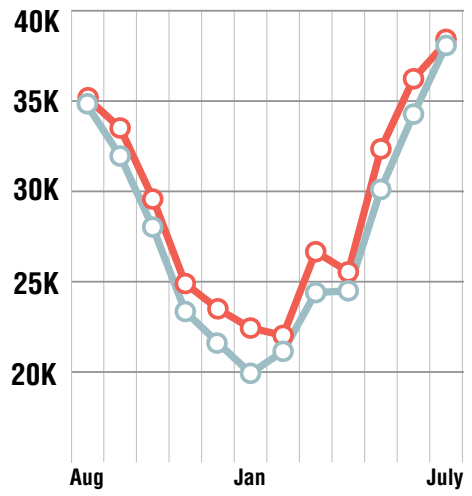
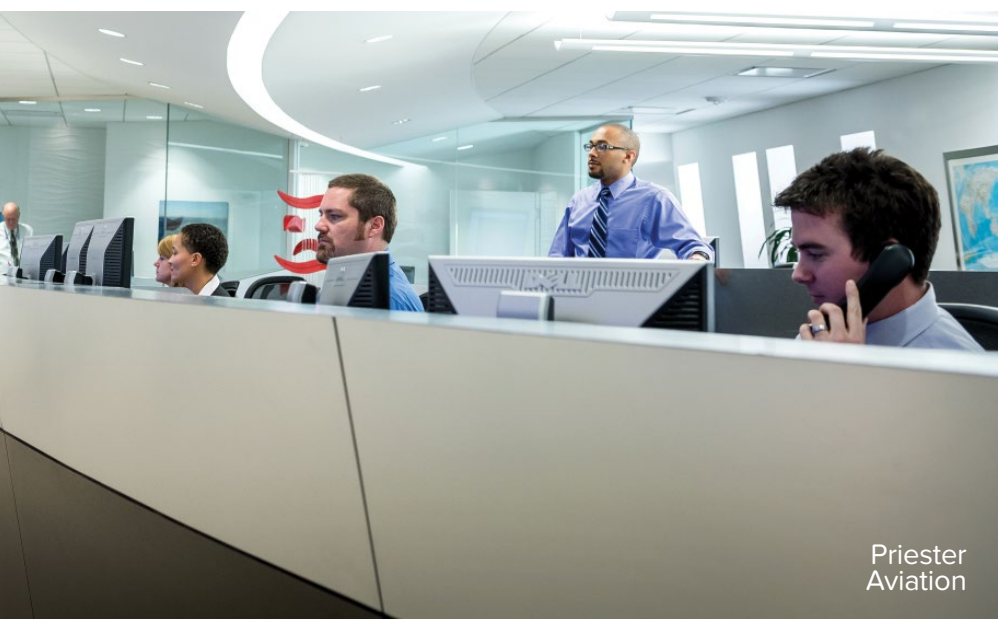
Part 135 Flights U.S.
(FAA data)



Non-Chartered Flights in Europe
(Eurocontrol data)



SOURCE: AVINODE



Industry Prepares for European SET-IMC Rules

Single-engine turboprops have proved popular around the world for commercial operations, but in Europe, apart from a handful of operators in limited circumstances and relatively recently, such use has not been permitted at night and in IMC. International rules under ICAO Annex 6 have allowed such operations under specific conditions since 2005.

For some years there were calls for a new approach to rules governing commercial single-engine turbine flight in IMC (so-called SET-IMC). But later this year that will all change and blanket EASA legislation will pave the way for such operations.

The EASA published a formal opinion in the middle of last year, building on the considerable body of research already available around the world (in particular from Australia and North America); the agency analyzed 24 million hours of SET flight data and found that it "pointed to safety rates that are in line with the safety rates of aircraft, such as twin-engine turboprops, currently used for commercial operations in Europe," according to a position paper published in May 2016 by the European Business Aviation Association (EBAA).

EBAA is "confident that EASA's opinion comprehensively addresses [any safety concerns] and proposes appropriate mitigation measures, ensuring that European commercial SET-IMC operations will be the standard-bearer for safe operations in this category throughout the world." It adds that it will help to open new low-density routes, "improving the lives of people living in remote locations."

To date the only countries where commercial SET-IMC operations have taken place in Europe are Finland, France, Greece, Norway, Spain and Sweden—all under exemptions from current regulations and limited to domestic operations with specific conditions. EBAA recognized that "the situation has clearly created a lack of harmonization and market distortions across Europe," and welcomed relief from the administrative burden of such exemptions. The association also said "some EU operators face competition from [third-country] operators coming from countries where commercial SET-IMC is permitted."

The SET fleet performing commercial operations has declined in Europe from 30 in 2006 to 13 in 2013, so it is of little surprise that turboprop manufacturers are excited about sales prospects. Companies such as Textron have unveiled new single-engine turboprop designs, so this market will be a competitive one.

In terms of operators' adopting such aircraft, Chris Mace of Norwich, UK-based Saxonair commented at this year's BBGA (British Business and General Aviation Association) conference that having such aircraft would make sense in that it gives an operator the greatest possible range of options for clients.

As the fall arrives in Europe it seems likely that manufacturers will see interest grow. In the various EASA nations (the European Union member states, Switzerland, Norway and Liechtenstein), there will be different applications of the EU regulation when it comes into force. The UK CAA, for example, has already said it would be happy for operators to start the approval process to prepare for the expected application of the new rules, likely next month. This will allow them to take advantage straight away. *—Ian Sheppard*

Changing Operator/Broker Dynamics

Concerns about gray-market charter and unscrupulous charter providers that prompted brokers to form Acana (the Air Charter Association of North America) in 2007 and the DOT to publish its 2013 NPRM on regulating charter brokers have largely dissipated. So too has longstanding antipathy between operators and brokers, as brokers have evolved into sophisticated sales organizations aided by real-time online inventory and pricing, and more operators have come to rely on them to augment or even replace in-house sales teams.

"Many Part 135 operators now turn over their entire fleets to these brokers to market," said Joe Moeggenberg, president and CEO of Argus International. "That's starting to have an impact on Part 135."

Andy Priester, president and CEO of Priester Aviation, voiced an operator's perspective: "As we continue with our fleet growth, we want to say yes to as many quality brokers as possible." He added, "Bigger, stronger brokers are getting stronger, and it seems as though there aren't as many bedroom brokers."

Acana, meanwhile, has new concerns. Cyber security tops the list, said Richard Zaher, Acana chairman, and CEO of charter broker Paramount Business Jets. This concern embraces not only the security of information placed on board the aircraft through in-flight connectivity technology, but also the risk of phishing attacks that compromise the security of information shared between [charter providers] and clients, said Zaher. In the past year several Acana members have reported attacks that involved cloned email addresses and invoices that appear intended to defraud charter providers.

Another area of concern: some providers might be offering charter flights using Part 125 aircraft—those with a capacity of 20 or more passengers not approved for common carriage. Acana is preparing a position paper on the issue.

As for the DOT's NPRM on imposing regulations on air charter brokers, which were roundly criticized by Acana members when published as being too lax: the agency's Semi-Annual Regulatory Agenda, issued this past spring, had the final rule slated for publication in July. The DOT has provided no updated schedule.

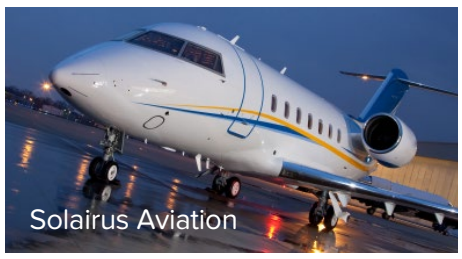
Meanwhile, in Europe a new charter sales model called "marketed by agent" has emerged, which gives a single agent exclusive representation of a selection of aircraft from several operators. Such arrangements might be helpful if, for example, an operator lands a client whose aircraft is substantially different from the rest of the fleet, or if operators of a small charter fleet prefer to outsource charter sales. According to Oliver King, managing director at Avinode, 15 percent of charters in Europe are now marketed by agent. ■

CHARTER MARKET REPORT

Continued from preceding page

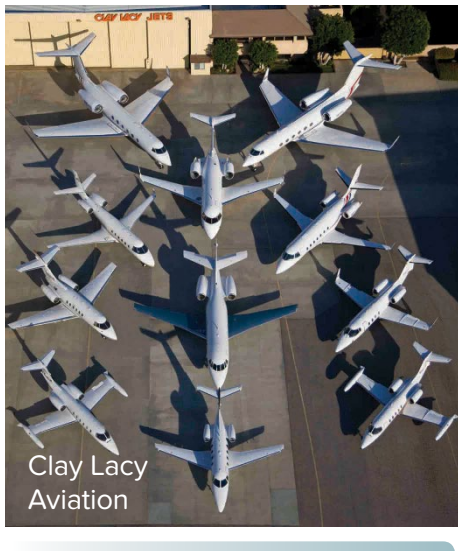
Since January 2016, Meridian has added a Dassault Falcon 7X, a Falcon 2000 and a Gulfstream GIV-SP to its fleet. As of mid September, it was preparing to add three more G450s and a Bombardier Learjet 75. The California fleet already includes a pair of Falcon 2000s and a Citation XLS.

"2016 has been a strong year for us in charter sales," commented director of sales Chris Battaglia. "The success is a reflection of our expanded client base and growing fleet of managed aircraft. The trend for us has been longer trips and larger cabins, which complements our fleet since we now have aircraft based on both coasts."


Solairus Aviation

Solairus Aviation of Petaluma, Calif., has 45 of the 105 aircraft it manages on its charter certificate, yet it has long emphasized management over charter—until the last year. "The aircraft we have added in the last 12 months are more charter driven than ever in the past, and that's a change for Solairus," said Paul Class, senior vice president, charter sales. These customers are looking for 100 to 250 hours of charter annually. The added jets—mostly super-midsize and large-cabin—have also made the fleet more geographically diverse, which makes it more marketable. "We've got as many large-cabin and midsize and super-midsize jets on the Eastern Seaboard as we do in the Northwest and West," Class said. Attesting to its ability to meet charter targets, Class noted Solairus actively brokers vetted fleets of other operators when its own aircraft are unavailable.

Clay Lacy Aviation offers no formal charter revenue agreements, but "We've


Clay Lacy Aviation

Report continues on page 24


Zetta Jet

Owned and Operated Fleets

Charter management companies have long questioned the business model of owned & operated (O&O) charter fleets, arguing that the capital required to buy and own airplanes makes profitability impossible. O&Os counter that eliminating owner approvals and limits on aircraft availability allows much higher utilization of aircraft.

Whether the higher usage yields profits, flight activity proves the O&Os are right. Three of the 25 largest U.S. charter operators that had the highest aircraft utilization rates in the first half of this year—and last year—were all O&Os. XOJet chartered its 19 jets for an annually adjusted average of 1,060 hours each, followed by JetSuite, billing 750 hours, and Travel Management (TMC Jets), whose jets are on pace to generate an average of 662 hours of charter revenue. As for profitability, it bears noting that earlier this year investment firm TPG Growth of San Francisco, which owns a stake in XOJet, bought TMC Jets, of Elkhart, Ind. for an undisclosed sum. XOJet and TMC Jets have had a partnership since 2013.

Charter management companies on the Top 25 operators list put on substantially fewer hours. Gama's fleet will average out at about 550 hours per jet, EJM's less than 400 and Jet Linx about 300. The highest fleet usage among listed charter management companies is Redwing Aeroplane, at #24, whose 11 aircraft are each on track to ring up 614 charter hours this year.

JetSuite complemented its ad hoc/membership charter service with the launch in April of JetSuiteX, a scheduled Part 380 per-seat service linking several major West Coast markets, on luminously appointed 30-passenger Embraer ERJ-135s.

O&Os outside the U.S. also report success. "Owning your own fleet, you can control availability, and can save more and more time," said Ian Moore, chief commercial officer at Malta-based VistaJet. From January through June, VistaJet's flight activity was up 23 percent and passenger count up 20 percent, and in the second quarter the company had its biggest quarter ever, with the average number of new contractual flight hours per customer up to 120. Over the past year the company expanded its U.S. headquarters in New York, established a foothold in Los Angeles and expanded its presence in Beijing and Shanghai. Its 65 large and super-midsize Bombardiers fly an average of 100 flights per day. Half the fleet are Globals; the remainder Challenger 350s, 605s and 850s, and they're registered in the U.S. and Malta, save for one B-registered CL850 based in Hong Kong.

Moore credits growth in part to a shift away from owning assets. "The decision everyone's making is, 'I can't afford or justify owning an aircraft,'" he said. But they're willing to pay for quality. VistaJet emphasizes customer service, catering menus from renowned restaurants and partnerships with luxury brands featured on board. The company also offers its aircraft to the ad hoc market when available. VistaJet owner Thomas Flohr has delivery positions for the in-development Global 7000.

Year-old upstart O&O Zetta Jet, based in Singapore, is following much the same playbook in building its N-registered, all-Bombardier Global floating fleet, tailored to the trans-Pacific market. Zetta Jet has FAA approval for flight through areas of magnetic unreliability—that is, the polar regions—which enables it to offer the shortest route for many flights between the U.S. and Asia, said Geoffery Cassidy, co-founder and managing director. To further distinguish itself, the company has outfitted every Global in its fleet with a different interior. "Some customers want a double divan in back, some want a huge bed," said Cassidy. Zetta Jet currently has eight Globals, expects to have 16 by the end of next year, and is in discussion with Bombardier about Global 7000 purchases, Cassidy said.

On the small-cabin side of the business, Austria's GlobeAir has found success in Europe with its O&O fleet of 14 Citation Mustangs and anticipates seeing revenue climb to €23 million ($25.66 million) this year from €18.6 million ($20.75 million) last year. In May, GlobeAir and JetSuite announced partnering to offer each other's transatlantic customers "last mile" service. ■


Gama Aviation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CHARTER MARKET REPORT

Continued from page 22

met or exceeded every owners' requirements" for charter, booking as many as 500 hours annually on an aircraft, said Scott Cutchall, vice president of marketing.

In the middle of last month, Clay Lacy announced a merger with Key Air, an Oxford, Conn.-based charter-management specialist. After approval from authorities, expected by year-end, the new company will continue as Clay Lacy Aviation and is expected to represent more than 75 aircraft at 15 locations in North America.

"This is the first of several strategic steps to expand our East Coast services," said Clay Lacy Aviation president Brian Kirkdoffer, adding, "Now we have teams of experts on both coasts focused on providing safety, service and value."

Executive Jet Management (EJM) is expanding its West Coast presence and will have 10 percent more aircraft available for charter in the region by the second half of this year, said Ty Dubay, senior vice president of charter sales and customer experience. Beyond ad hoc charter, Dubay said EJM's flat-rate city pair charters are popular, and its block charter programs are finding resonance with "customers who seek a longer-term relationship, with bigger and better benefits than simple retail charter."

But the savings and efficiencies of large, national charter fleets can have their limits. **Wing Aviation**, a regional operator based in Texas, has added this year to its certificate aircraft whose owners are "fed up with


KCAC Aviation

the larger companies that are losing the hometown feel, the family touch they used to have," said president and CEO David Riddle. Wing, with bases in Dallas, Austin, Conroe and its Houston Hobby Airport headquarters, has added three jets and expects two more by year-end, bringing its fleet to 25. Six of them are Hawker 800XPs and 900XPs, providing a recovery capability that Riddle credits with helping drive recent charter growth. Meanwhile, a diverse client base, he said, has shielded Wing from the effects of low oil prices, which has hurt the region's economy.

Pentastar Aviation, from its one base at Oakland County International Airport in Waterford, Mich., has also met the charter goals of owners, several of whom "are increasingly engaged and eager to maximize their aircraft's charter availability," said Jim Davis, manager of customer support. "The newest additions to our charter fleet—two Hawkers and one Falcon 2000LXS—are owned by people who are enthusiastic about our charter business model."

KCAC Aviation in Olathe, Kan.—operating half a dozen PC-12s and a pair each of Citation Encores, Mustangs and

Report continues on page 26

Pentastar Aviation


Executive Jet Management

Card Programs

Like ad hoc providers, card programs—whether offered by operators or brokers—have been paying attention to their fleets and customer service.

Charter broker **Sentient** expects to add 1,000 card members this year, bringing its active membership to 6,000 by year-end, said Andrew Collins, president and CEO of the Braintree, Mass. company. Over the past year Sentient has emphasized its exclusive member benefits package, which includes complimentary resort nights, luxury merchandise offerings and now exclusive events such as the gathering it hosted in Lexington, Ky., this year as official aviation provider of the Kentucky Derby. Meanwhile, Sentient, a Directional Aviation company, is undergoing a rebranding under the tagline "A more thoughtful way to fly," highlighting the "mission of quality we're on," Collins said. In September Sentient released a mobile app for iOS and Android devices providing real-time price quoting and digital booking.

The two-tiered 25-hour card remains Sentient's mainstay. The lowest price light jet card is $125,000, and the average card sale is $140,000, the hours expended in nine months. Cards are also available in 50-, 75- and 100-hour increments, which offer additional features; hourly pricing remains constant. Collins said Sentient draws its lift from "the top 25 percent" of operators, who control about 1,000 jets, and over the course of a year will use 300 different aircraft.

Operator **Delta Private Jets** (DPJ) offers jet cards and ad hoc charter, and revenue for both is up "substantially," said David Sneed, executive vice president and COO. DPJ bolstered its fleet of 75 aircraft through its Ownership Assist program, which provided offset revenue guarantees of 80 to 100 percent of operating costs for qualified aircraft purchased for charter use. With the fleet now at the correct size, DPJ has scaled back the program and is "focused on utilization for the rest of the year," Sneed said.

Last month DPJ announced an exclusive partnership with American Express providing, among other benefits, jet cards at a reduced minimum price for select Amex members. DPJ would like its ad hoc charter to match the card program's success, and Sneed sees real-time pricing as key to that goal. "You need to be relevant in the market every day—I'd say even hourly," Sneed said. "Dynamic pricing is critical for DPJ to build." With its fleet constantly moving across North America and Europe, that's a challenge, Sneed acknowledged.

In next year's first quarter DPJ will begin installing Gogo Biz 4G broadband throughout its fleet (assuming certification is complete). DPJ will be an authorized dealer and provide installation service, for which no STCs will be required.

Nicholas Air distinguished itself this year with the addition of a Citation Latitude to its fleet, becoming the only operator to offer the new jet in a membership-based program, said NJ Correnti, president and CEO of the Columbus, Miss.-based company. Nicholas also operates PC-12s and Phenom 100s and 300s, none older than five years. The company recently supplemented its pre-purchased Blue Jet Card (sold in 15-, 30- and 60-hour denominations) with the Rise Card, a deposit-based program offering enhanced fleet access flexibility, and the Smart Card, a pay-as-you-go plan that's "growing in popularity," Correnti said. Nicholas might be the first to provide member access to another new model. "The Cessna Denali has caught our attention," Correnti said, "and we look forward to continuing our fleet growth with this new aircraft."

Jet Linx Aviation has added 26 aircraft to its charter rolls this year and expects to add another 22 to 24 (mostly midsize cabins) by year-end, said Jamie Walker, president of the Omaha, Neb.-based card program operator. That will bring the fleet total to about 95 jets, operating from its own private terminals at 14 locations, serving about 1,100 members, 300 of them added over the past year. "We believe there's easily, from our recipe, another 20 markets across the United States we could serve," said Walker.

Jet Linx offers two programs: the Executive Jet Card and Club Card. Both are pay-as-you-go, guaranteed-access plans requiring a one-time membership fee. The hourly rates are the same for each, though program benefits differ. The Executive ($17,500) is aimed at frequent fliers, while the Club Card ($12,500) is for more casual users. (Jet Linx also offers its fleet for ad hoc charter through brokers, but not directly to retail customers.)

Last month Jet Linx announced an alliance with ProJet Aviation of Leesburg Executive Airport in Virginia, assuming the latter's aircraft management and charter business. The alliance adds a Challenger 604, Hawker 800XP and 400XP and Avanti to the Jet Linx charter certificate. ProJet will focus on its FBO business and will operate a private terminal at Leesburg for Jet Linx, which already has a base at Dulles Airport. No financial terms were disclosed.

It's understandable why operators like Jet Linx, DPJ and others would help finance purchases; they're not losing a charter client as much as gaining an aircraft. But Houston-based brokerage **Horizon Air Group** has also added a sales/acquisition arm to its services. Founder and CEO Luis Barros says the commissions make up for loss of charter clients, and that Horizon might get "preferential treatment" on charter rates and availability from charter operators that manage the new purchase. Meanwhile, Horizon's "cash back" jet card (one percent cash or 1.5 percent back in flight credit) has gained popularity with big-spending corporate clients. But bowing to slack demand, the company has reduced the buy-in costs for its no-deposit FlyCorp card to $6,000 from $10,000. ■

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CHARTER MARKET REPORT

Continued from page 24

CJ3s—is close to topping last year's record-setting charter performance, said general manager Angelo Fiataruolo. He'd like to expand KCAC's charter activity, which represents about 15 to 20 percent of the business, but noted the runway at Olathe is only 4,100 feet, limiting the equipment the company can operate. (A Pilatus dealer, the bulk of business comes from sales.) KCAC also has a base at Spirit of St. Louis Airport and has just signed on with Member Jets, a new company that aims to create a nationwide network of per-seat charter operators, a long-dismissed charter model that's suddenly in vogue. (*See JetSmarter box at right)*."We didn't want to be the pioneer," Fiataruolo said of the per-seat market. "It looks like there's a fair amount of activity; I just hope it doesn't get too crowded."

If such operators prove charter success doesn't require a nationwide network of jets, Bedford, Mass.-based **Linear Air** demonstrates turbine aircraft aren't necessarily needed, either. Single- and twin-engine piston air-taxi demand has "grown dramatically," said William Herp, president, CEO and co-founder of the company, originally an Eclipse fractional operator. Linear operates a Cirrus fleet and brokers piston charters on the web, accessing 1,500 Part 135 piston aircraft across the U.S. The price of the average trip Linear books is $2,500, and flights and revenues doubled in the last year.

"We're developing an entirely new set of charter customers who would never consider chartering a jet, but a Cirrus or Seneca or Bonanza or Cessna 182" is within budget. "The hard part is finding customers," said Herp, "and that's where we've raised and deployed several million dollars of capital so far." Unlike in the turbine charter world, no army of brokers sells piston charters. Linear is now linked to Kayak, providing more exposure and booking connectivity for this end of the market. ❑

Wing Aviation

TOP 25 U.S. PART 135 OPERATORS IN 2016

Rank	Operator Name	2016 Hours	2015 Hours	2016 Fleet Size	2015 Fleet Size
1	Executive Jet Management	27,612	29,360	139	138
2	Gama Aviation	23,874	15,854	86	33
3	XOJet	21,829	21,946	41	42
4	Travel Management Company	21,186	21,760	64	68
5	Delta Private Jets	18,781	16,751	69	65
6	Solairus Aviation	11,046	9,587	47	39
7	Jet Linx Aviation	10,707	10,461	71	51
8	Jet Edge	8,920	8,328	45	37
9	Jet Aviation	7,474	7,014	33	29
10	JetSuite Air	7,173	8,306	19	19
11	Clay Lacy Aviation	6,558	6,503	43	48
12	Sterling Aviation*	5,984	5,798	33	22
13	Jet Select	5,192	5,165	27	24
14	Aero Air	5,019	4,539	22	21
15	Corporate Flight Management	4,897	2,746	24	20
16	Priester Aviation	4,472	3,357	31	27
17	Talon Air	4,295	4,302	23	19
18	Meridian Air Charter	4,044	5,031	23	22
19	Mountain Aviation	3,937	2,984	20	17
20	Avjet	3,881	3,894	24	24
21	Lyon Aviation	3,866	2,797	20	14
22	Advanced Air Management	3,658	1,695	15	8
23	LJ Associates	3,654	3,558	25	23
24	Red Wing Aeroplane	3,387	3,761	11	10
25	Superior Transportation Associates	3,195	2,350	21	17

SOURCE: ARGUS

**Signature (owned by British company BBA Aviation) recently acquired Landmark and its FBO and charter activities. The former Landmark charter service is operated by affiliated entities holding operating authority from the U.S. FAA and DOT: Sterling Aviation, TWC Aviation, Daedalus and Business Aviation Courier. Sterling Aviation and TWC Aviation do business under the name Landmark Aircraft Management & Charter; Daedalus does business under the names Encore Charter and Business Aviation Services; and Business Aviation Courier does business under the name Encore Air Cargo. Landmark holds a non-controlling ownership interest in these carriers.*

Membership Clubs, Per-Seat Charter and Private Airlines

Upstart providers are finding success in re-imagined charter access programs. New York-based **Wheels Up** this year introduced a charter brokerage arm (Flight Deck) and an introductory level membership program (called "8760"), while maintaining growth plans for its full-price membership rolls and owned charter fleet. By year-end Wheels Up expects to have 3,000 members, 70 to 75 aircraft and annual revenue of $200 million, according to founder and CEO Kenny Dichter. The fleet (operated by Gama Aviation) will then consist of 55 King Air 350is and 15 Citation Excel/XLSes.

Flight Deck, the new in-house brokerage, arranges charter for members through a network of vetted operators. "We believe it will be nine-figure business—a $100 million-plus business—and we think we can get there in 24 months," Dichter said. "8760" provides lift through broker partner Apollo Jets, and non-guaranteed access to the Wheels Up fleet at higher hourly costs. Membership also opens access to the Wheels Up ride-sharing program and select events. The events "create something that will resonate with millennials," who, Dichter said, "value experience more than hard goods." The program has a $5,950 initiation fee and $5,950 annual membership, and Dichter expects to have 1,000 members in 8760 by year-end.

Charter broker **JetSmarter** of Fort Lauderdale, Fla., anticipates it will have 5,000 members by this fall, 10 times the number of one year ago, while its per-seat Shuttle routes will have expanded to 42 in the U.S., Europe and Middle East from a mere two. The per-seat Part 380 flights are a major incentive for drawing new members, and a revenue source, said Sergey Petrossov, JetSmarter's founder, president and CEO; seats on the limited number of scheduled Shuttle flights are free, but members can also set up their own Shuttles on those routes and invite others to join, each paying for only a single seat, for example $1,990 on a light jet from New York to South Florida.

After entering a new market, JetSmarter can analyze customer interaction with its app and website to align service with anticipated demand. The company can "buy up idle time [from operators] for low-cost wholesale rates, and use it during down time, and if customers can be flexible they can save a lot of money," Petrossov said. Recently the company brokered a record 25 flights in one week on one route (New York to South Florida), all but four of them initiated by members. Petrossov said even aircraft owners fly on Shuttles sometimes. "They tell me, 'When I'm flying by myself and see those seven empty chairs, I get heartburn.'"

About three-dozen operators (identified on JetSmarter's site) supply Shuttle lift. However, as the Shuttles are available only in some major markets, JetSmarter has two membership programs: Smart, for members who want access to the Shuttles; and Access, for those seeking only ad hoc charter. Smart membership costs $15,000 for the first year and $10,000 annually thereafter; Access is $6,000/$4,000 and provides guaranteed access to charter aircraft at pre-set prices. (JetSmarter buys empty-leg availability from operators that it posts daily as free flights, a feature Petrossov said many members often check on, though few actually book them.) The average Access member spends $60,000 to $70,000 per year with JetSmarter, while Smart members average about $30,000, Petrossov said. This year the company expects to carry some 35,000 unique passengers. JetSmarter also offers Sophisticated membership, delivering "elevated services," which costs $40,000 annually plus a one-time $5,000 initiation fee.

Part 380 "private airlines" such as California's **Surf Air** and **Rise** in Texas continue to grow, offering members all-you-can-fly service for a monthly subscription fee on high-demand routes poorly served by conventional airlines. This fall, Surf Air will bring its all-you-can-fly charter service to Europe, using new jets (type undisclosed) operated by TAG Aviation (UK), with daily flights between London, Geneva and Zurich; Paris, Amsterdam, Dublin and others will be added next year. Monthly memberships will be £2,500 ($3,235).

But the private airline model hasn't been entirely successful. Last fall Beacon, created by Surf Air co-founder Wade Eyerly, launched service between Boston and New York City (via Westchester County Airport), but the company quietly folded early this year. ■

Wheels Up

Surf Air

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Continued from page 26

Charter demand mixed by region

Though charter demand in Southeast Asia (excluding China) appears "pretty mixed," lack of official data and insufficient penetration by Avinode to gather statistically valid information makes tracking the market difficult, said Oliver King, Avinode's managing partner. The release last month of the *Business Jets Charter Report 2016*, from Hong Kong-based bizav consultancy Asian Sky Group, might help clarify the Asian picture. The 14 nations in the region have 256 business jets on charter certificates, according to the report. However, only about half are available for on-demand service, said ASG general manager Jeffrey Lowe, with the rest placed on AOCs for accounting or other non-revenue purposes.

India's fleet of 57 leads the pack, followed by Australia and China, with 55 and 53, respectively. Eight percent of responding business aviation users in the Asia-Pacific region fly charter exclusively, while 48 percent use both charter and their own aircraft; 73 percent book through operators, while 27 percent use charter brokers. Lowe said regional operators are reluctant to provide information on flight activity, but he believes the Chinese market is "starting to creep back up" from the lows wrought by the government's austerity campaign and regional economic weakness.

In August Deer Jet subsidiary Hong Kong Airlines Corporate Jet (Hong Kong Jet), seeking to expand its charter footprint in Hong Kong, completed acquiring Asia Jet Partners, a deal announced at ABACE in April. The combined fleets comprise some three dozen aircraft, not all available for charter.

Latin America is a tale of two regions: Northern Mexico is matching U.S. charter growth, while areas to the south through South America are flat or declining. Thanks to the Olympics, a 1,000-percent spike in flight requests to Brazil came through the Avinode system in the lead-up to the Games compared to the same period the previous year, but King described the Brazilian charter market otherwise as "on its knees."

The Middle East, which had been growing by 3 to 5 percent in recent years, has flattened. It's "not in contraction, but it's not a growing market at this stage," said King. Charter demand in Africa has been mixed according to the limited data available.

European Charter Market

Europe's charter market remains in negative territory, according to Avinode. "It continues to decline a percentage point per year," said King. King cites weak economic growth in the Eurozone and cratered Russian charter demand among the culprits. But charter doesn't necessarily reflect the overall bizav market. From mid-March to mid-April, for example, the 30,391 business jet flights in Europe reported by the FAA/Eurocontrol represented a 0.7-percent year-over-year uptick, while Avinode reported a 13.3-percent year-over-year decline in its charter demand index (average daily value of all requested trips) during the same period. But with recent strength in the European stock market, the near term could see "flat to small growth" in charter activity, King believes.

But more activity might not spell greater profitability. "One of the realities at the moment, even though the volume of flying is up in some months, [is that] the pricing has dropped, so margins are tight," said Patrick Margetson-Rushmore, chief executive of Luxaviation UK (LUK; formerly London Executive Aviation).

Indeed, charter rates seem divorced from supply. In mid-July Avinode reported year-over-year gains in its charter demand index for Europe of 43.4 percent, and the U.S. of 5.4 percent, yet its price index (average per hour rental cost) for the period slid by 0.41 percent and 0.02 percent, respectively.

Focused providers, however, are finding ways to succeed in Europe as elsewhere. LUK, in the midst of rebranding two years after its acquisition by the Luxaviation Group, reported a 9 percent year-over-year bump in second-quarter charter revenue following a "difficult" 2015. Margetson-Rushmore said the company is benefitting in part from its fleet of Embraer Legacys, which are less costly but carry the same passenger loads as Gulfstreams; their more limited range is no impediment for regional travel, and they have been popular for band and movie release tours. LUK operates six Legacy 600s and two Legacy 650s among its 23 charter aircraft, making this Europe's largest Embraer fleet, according to the company.

Margetson-Rushmore believes synergies within the Luxaviation Group, which has a charter fleet of some 250 aircraft, will lower its costs and help the needs of an increasingly global customer base.

Nomad Aviation, headquartered in Zurich, Switzerland (but with a European Union AOC based in Malta), expects to see further expansion of its managed fleet through the end of 2017, while consolidating in the charter sector where it sees excess capacity. The company operates five aircraft in the charter market and manages three others.

As many of 90 percent of Nomad's clients are from Russia and the former Soviet republics and, given that region's economic problems, the company recognizes the need to diversify geographically through expansion in to emerging markets such as Africa, China, India and even Iran. Nomad also has expanded its product portfolio with new services such as helping European private operators comply with the European Union's new Part NCC rules.

In August, Flexjet Ltd., the UK subsidiary of U.S.-based fractional provider Flexjet, acquired charter management company FlairJet from Marshall Aerospace. FlairJet's seven managed jets will join Flexjet Ltd.'s eight Nextant 400XTis.

In the aftermath of the Brexit vote for the UK to leave the European Union, charter professionals are taking a "wait and see" stance toward its impact, but one immediate effect has been an increase charter activity among UK operators, according to several providers; the lowered value of the British pound has made UK charter less expensive than competitors' flights priced in euros. The potential black cloud on the horizon for British opearators is that their AOCs may no longer give them cabotage right access to European Union markets once the exit process is complete. *–J. W.*

Charter Access Platforms

Online booking platforms continue their quest to expand the charter market and build their businesses through drawing on the immense power of digital data gathering and dissemination.

Sweden's **Avinode**, whose subscription base grew 20 percent over the past year—primarily in the U.S.—now has 5,500 active brokers using the system, which lists inventory from 2,000 operators worldwide, a 10-percent annual increase. Avinode has handled three million requests for charter over the past year, said managing director Oliver King, noting that it took the company 10 years to reach its first seven million requests. Avinode continues "evolving" the system, adding features like Trip, which creates a shared file where all parties can track charters from quote request through completion.

UK-based brokerage **ReturnJet** recently introduced its "widget box" API (Application Programming Interface), which lets brokers host on their Websites a branded charter quote search engine linked to the ReturnJet database. Four hundred brokers in the U.S. are using the system, and over the past year searches have climbed to 400 per day from 50, according to Steve Westlake, ReturnJet aviation director. The system is supported primarily by advertisers; users get 50 free searches per month, and unlimited monthly searching costs $350. Pricing is set to appeal to brokers looking for an alternative to Avinode, which charges higher subscription fees.

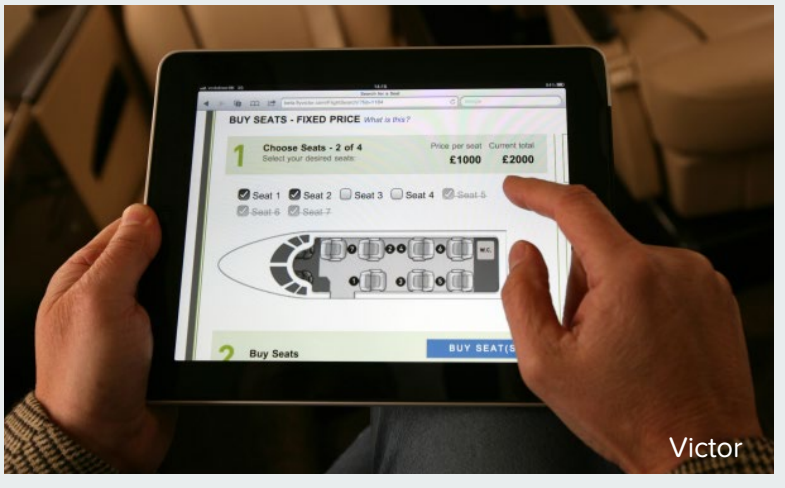
Stellar, the Silicon Valley start-up that aims to transform retail charter with its digital marketplace, announced in August partnering with Rockwell Collins's FOS (Flight Operations System) to create an integrated, next-generation FOS. The next-gen version, incorporating Stellar's instant quotes and dynamic pricing features, will be available in March to all current FOS customers, comprising 500 operators and flight departments, and priced similarly. The two companies will share development costs and revenue, said Stellar president and CEO Paul Touw. A free version will be available for individual owners or small flight departments.

Preparations for rolling out Stellar's B2C product continue, with 35 operators adopting the system, Jet Linx Aviation and Landmark Aviation among them. Stellar has raised $14.7 million in funding and is about to close on a new investment in "the many tens of millions" of dollars, Touw said.

The UK's **Stratajet**, which provides real-time, automated price quoting and booking, is now live in Europe, having launched to the public there in April. Growth is ahead of targets, said founder and CEO Jonny Nicol, with 4,750 users registered by the end of August, and four million charter flight quotes generated "without the aircraft operators having to lift a finger." Stratajet is also creating partnerships with FBOs (TAG, for example) and other companies. The company launched in the U.S. last month. (*See article on page 31.*)

PrivateFly, another UK-based online broker, saw 50-percent year-over-year growth in bookings, said founder and CEO Adam Twidell, with transactions averaging $18,000. PrivateFly opened an office in Fort Lauderdale, Fla., early this year and is eying a West Coast location. To speed U.S. expansion, the company is "looking to acquire one or more brokerages" or partner with good-fitting firms. PrivateFly's mobile app, which supplements its telephone and online support, is finding favor among millennial customers. Twidell cites a young model who flies "between L.A. and Europe. He communicates with us on Instagram, he compares his options on the app and pays online, and he uses social media to say thank you to us when flying. [But] his mother can phone us to find out what times he's landing and see that everything is OK with the flight."

Now five years old, UK online charter broker **Victor** generated $25 million revenue last year, said founder and CEO Clive Jackson, and has booked 350 flights in a single month. Meanwhile, the cost of customer acquisition has declined by 40 percent while "an increasing number of fliers are interacting with us entirely in the digital channel," Jackson said, a trend "that helps us drive down the cost of service." Victor's commission varies with the level of assistance required from its brokers to arrange a flight. As for the charter platforms that have entered the arena Victor helped pioneer, Jackson said, "Their ability to acquire enough customers and hold onto them is going to take more money than they ever thought." ❑



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Astro software aids decision-making efforts

by Matt Thurber

BoldIQ's Astro flight operations software originated as the power behind DayJet, which was slated to become an air-taxi operation eventually flying 1,000 Eclipse 500 very light jets. DayJet didn't survive, for various reasons, but Astro lives on as software that helps fleet operators manage their complex operations.

What makes Astro different from other operations software is its dynamic optimization capability, which does what no human can do: figure out how to get the most out of a fleet for the least cost, basing those calculations not only on existing conditions but also on anticipated demand and resource constraints.

"The whole concept was to run a complex and dynamic operation like a flight department or charter operation," said BoldIQ president and CEO Roei Ganzarski. "Human brains are not built to be capable of looking at a lot of data and then making good decisions. You need sophisticated software."

For busy operations, a typical situation might come about when trying to schedule another flight after allocating all the resources needed for previous trips. According to Ganzarski, humans become unable to manage all of the data involved once the number of elements being managed reaches seven, and decisions after that are compromised.

Better than a Human Brain

For example, say that a charter scheduling team has already made arrangements for seven flights, including blocking off the aircraft, making sure they are all capable of flying the requisite number of hours and cycles without exceeding any maintenance limits, ensuring that the flight crew meets all requirements, arranging ground transport, catering and so on. Then a new call comes from the sales department, a new trip request that is urgent and paid for and must be flown.

Most operations will simply try to squeeze in the last request without even considering how it affects the company's margins. The likely result will be yet another unprofitable deadhead leg.

As Ganzarski explained, "The goal of dynamic optimization is to look at the entire network and make a decision based on the future of the operation. Given all of the resources, pilots, aircraft, crew, demand, rules and the financial cost structure, what's best? An hour from now, if we get more demand or a pilot calls in sick, what should we do right now? This answers what should we do with our resources and demand."

In the example above, Astro's Solver 2.0 engine would look at all of the planned flights on the upcoming schedule and make changes to accommodate the last request. The operator can create criteria within Astro for Solver to use. If the last flight cannot be accommodated without cutting into the required profit margin, for example, then the operator might choose to reject that request. The better outcome is if Solver can move around some elements of previous or upcoming trips to free up resources for that last request.

Astro's Solver doesn't calculate the cost of the flight, Ganzarski explained. "That's usually what operators calculate. We say, the cost of the flight is irrelevant. What's relevant is what will acceptance of this flight add to the network in terms of costs?"

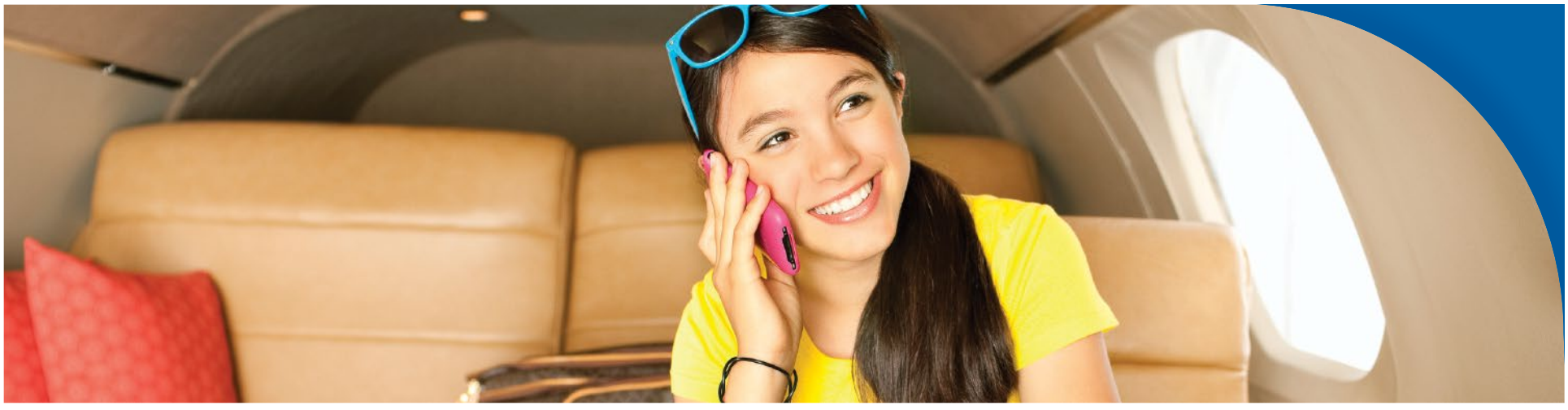
Solver can instantly show how making small changes can affect the proposed flight. If a particular flight will cost the operator $3,000 to complete at a certain time, Solver can show how departing, say, two hours earlier will lower the network cost by $800 or departing two hours later will raise the cost by $2,000. If the customer is flexible and can leave earlier, the flight can still be completed and there is enough cost saving to offer a discount. But if the customer wants to leave later, then either he will have to pay more or the operator should refuse the trip.

"Customers tell us this one [feature] alone allows them to say no to flights they normally would say yes to," he said. "You can't take unprofitable flights. You have the power of negotiation on the fly."

Another way that Solver helps is with an AOG. For example: an aircraft is away on a trip and suffers a broken door seal that will take three days to repair, Ganzarski explains. Solver highlights four flights that are affected by the AOG. After blocking that airplane from flying for the repair period, the operator needs to figure out how to recover the four flights.

The operator can select various criteria and Solver creates six different plans to recover from the AOG. "Each one is feasible," Ganzarski said. "One might be better financially, another operationally. You don't have to focus on how to solve the problem; you just look at which solution you want to choose."

Astro is designed for any size operation and a variety of operator types, from small flight departments to charter providers and fractional-share operations. Executive AirShare, PlaneSense and JetSuite are among the large operators using the system. ❑



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Stratajet launches service in U.S.

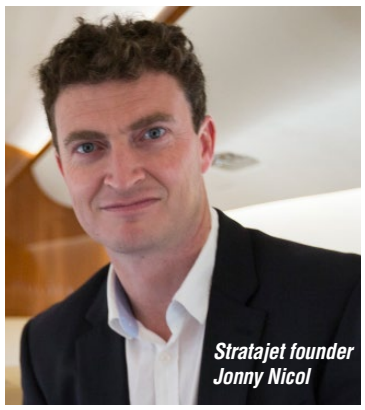
by Charles Alcock

UK-based online private jet booking platform Stratajet went live in the U.S. market last month. Its website allows charter customers to search, themselves, for real-time aircraft availability and pricing, and then book flights directly.

The service launched in the U.S. with the backing of 125 North American aircraft operators. Another 123 operators have committed to making their fleets available via the site and these will be added in the coming months. In Europe, 111 operators so far have signed up to offer aircraft through Stratajet.

Appeal to First-time Users

According to founder Jonny Nicol, Stratajet has recorded 42-percent average month-on-month growth in the number of flights booked by customers in Europe since the service went live there in April. Like other online charter sites, Stratajet declines to reveal the number of flights booked through its system.



Stratajet founder Jonny Nicol

The company said it has generated "several million" charter quotes since launching. More than 4,750 people have registered to use Stratajet.

Nicol told **AIN** that 37 percent of customers booking flights return to do more business through Stratajet. He also reported that 32 percent of all customers are first-time users of private aviation and that, in many cases, the person flying is booking his or her own flight—as opposed to delegating the task to an assistant.

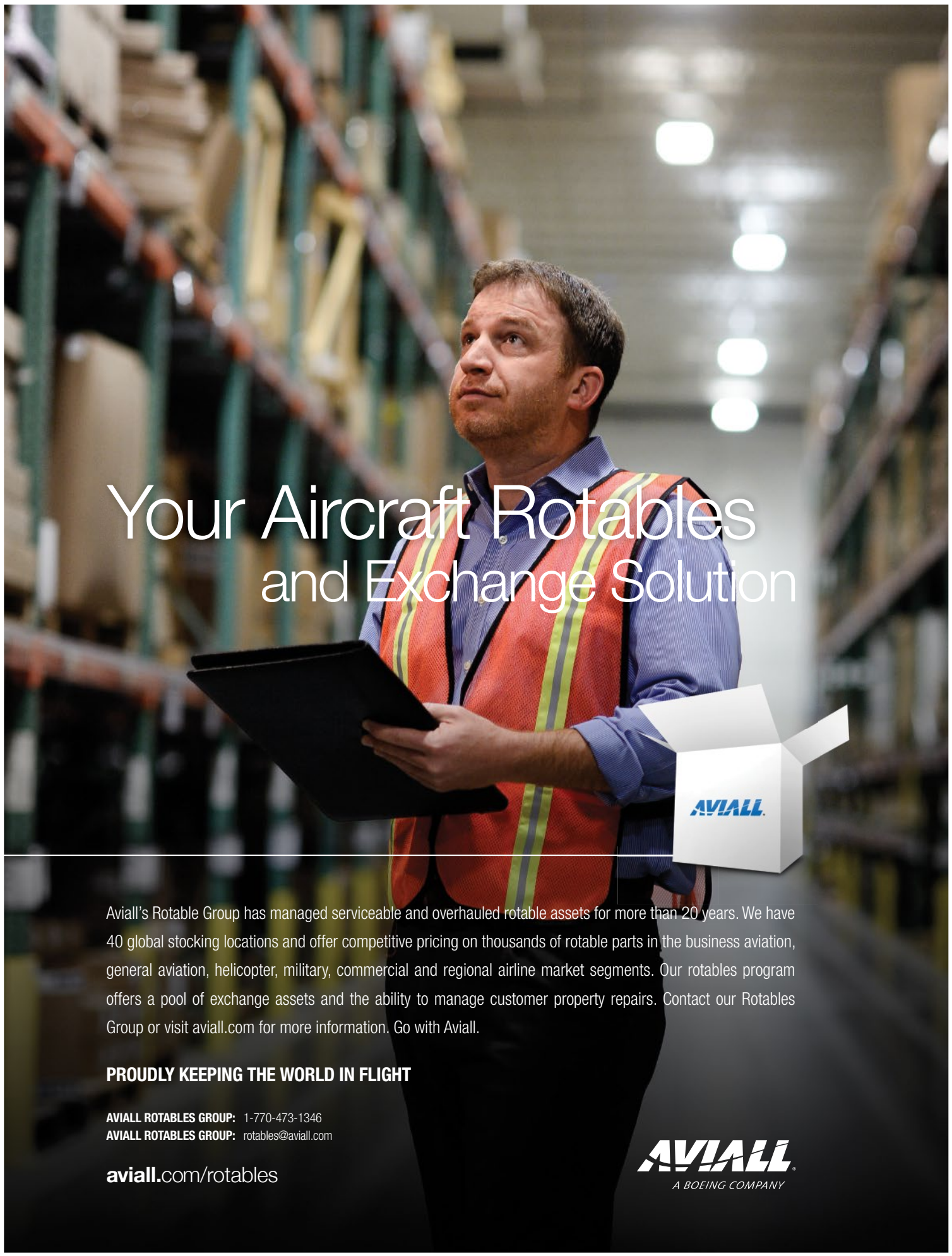
Stratajet maintains that traditional brokers are discouraged from seeking flight quote requests from new customers because they need to qualify these customers to avoid wasting operators' time. Nicol pointed to the example of the owners of UK-based fruit drinks company Innocent, which he said found it almost impossible to book charter flights on its first attempts. The company is now among financial backers for Stratajet, which also include institutional investors, that have raised $14 million in capital for the start-up.

To recruit U.S. operators for Stratajet, Nicol flew the company's Piper Chieftain across the Atlantic earlier this year to tour the U.S., meeting with 225 operators and leading FBOs.

Stratajet claims to be able to eliminate fundamental inefficiencies in the charter industry by allowing multiple quotes to be generated automatically, taking account of all cost factors in any trip. The company's software also allows partial empty legs to be factored into flight cost calculations, potentially making charter rates more competitive.

"The launch into the U.S. is a huge step in the direction of further eliminating the industry's inefficiency and wastage, thus improving the profitability of jet operators, lowering costs for passengers and making private aviation more widely available to the mainstream traveler," Nicol commented.

Stratajet plans to extend the service into the Middle East. ❑



FlyOtto aims to reboot charter booking process

by Matt Thurber

After successfully launching OpenAirplane, a service that allows pilots to rent airplanes throughout the U.S. without requiring a formal flight checkout at each location, the OpenAirplane team decided to tackle another frustrating and long-standing general aviation challenge: the charter market for turboprops and light airplanes. The company's new effort is called FlyOtto, and it aims to simplify the way clients book charter trips in smaller airplanes.

The existing charter system, served predominantly by brokers, "is inherently broken," in the opinion of OpenAirplane and FlyOtto co-founder Rod Rakic. "It's a race to the bottom created by brokers." When a charter client wants to schedule a trip, multiple brokers get involved and quotes fly around the internet seeking the lowest cost, he explained, "and the client ends up in the cheapest, oldest airplane they can afford. That's a terrible way to do business."

Add to that the time it takes to contact the broker, wait for the response, select the charter provider and choose the airplane. "In 2016 the idea that you would contact a broker or charter operator and wait 45 minutes to four hours to know how much it's going to cost and what are the choices is a bit ridiculous," he said. The frequent result is that the actual charter operator has to decide whether it's worth losing money to take the proffered trip.

"We identified this challenge for customers and for the operator, all the time being wasted, and they're not able to maintain their margins. Who's willing to take a loss this week?" he said.

Another factor that encouraged Rakic and the FlyOtto team to look into the charter market was that many of the 97 OpenAirplane participants also run small charter operations with piston singles, light piston twins and turboprops. "It's the same community of partners we already work with," he said. "As we had these conversations with the community, they kept asking us, 'You're sending us pilots to rent my airplane, why can't you do the same thing and send us passengers for my charter airplane?"

Simple Client Presentation

FlyOtto presents a simple interface to charter clients. There is no need for a membership (although users can sign in and create a profile), no initial or recurring fees, just two blank spaces to fill out on the website: the departure and destination locations. Users can input an airport or city name, and FlyOtto delivers a list of available trips showing the airplane type, trip time, one-way price and how many passengers can be carried.

At the top of the results webpage is a map depicting the route. Zooming in on the departure or destination airport shows alternative airports in blue and green. The blue airports are other local airports that the client might select, and the green airports are where one of the quoted airplanes is located. Choosing the green airport could lower the overall cost by avoiding a repositioning flight. The client can click on any of the alternative airports

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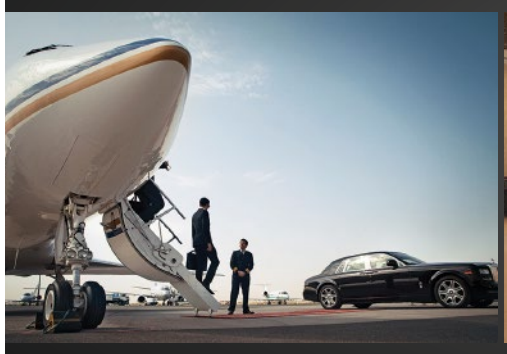
The Difference Is The Difference

Royal Jet - Abu Dhabi, United Arab Emirates - OMAA



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and see an instantly refreshed list of prices.

Once the client selects the airplane, clicking on that airplane pulls up a webpage with further trip details such as desired departure date and time, traveler details (for example, pets and luggage) and any more information the client wants to add. There is also a button to switch between one-way and round-trip pricing (which might not change if the operator is planning to return to the origin empty).

Cost for Operators

For charter operators, FlyOtto is also free, with no charge for listing airplanes. Operators pay FlyOtto only when a trip is confirmed. "When we send a customer we send them a fully baked itinerary for a customer who has already agreed to the price," Rakic explained. The operator has exclusivity for the next 60 minutes for that trip, and if the clock runs out or the operator declines, FlyOtto will offer the trip to other operators with the same airplane type. If 120 minutes elapses and the trip can't be fulfilled, then FlyOtto will notify the customer that no match was available. "This is half the time it takes a typical broker to get pricing," he said. "We've taken the human hassle out of the loop."

For its services, FlyOtto charges 10 percent of the trip price. Three percent goes to the credit card company and 7 percent to FlyOtto. The customer must pay for the trip in full when the operator confirms the trip, and FlyOtto pays the operator right away. FlyOtto's pricing includes all landing fees and federal excise taxes but not extras such as catering.

Clients can cancel a trip and receive a full refund 72 or more hours before the departure time. Between 48 and 72 hours, the client will pay 25 percent of the trip cost to cancel. That climbs to 50 percent at 24 to 48 hours. At less than 24 hours, the client would have to forego the entire amount. "That's a reasonable middle ground," Rakic said.

FlyOtto verifies that all charter operators are valid and operating on a legitimate Part 135 certificate. It will also identify operators that are audited by Argus and Wyvern. Charter clients will be able to rate and review the operators.

"We wanted to create an opportunity for the customer who knows nothing about chartering an airplane," Rakic said. "There is a huge potential audience of people who are not charter savvy, and this gives them real-time access to 5,000 public-use airports. We think we've designed a system that works better for passengers and operators to make private air travel much more accessible." FlyOtto flew its first trip in mid-August. ❑

FlyOtto draws on its relationships with operators of smaller aircraft to make charter accessible to a new market.

Textron is betting big with the Cessna Denali that turboprops have a solid future.

New Business Turboprops

by Mark Huber

In an ever-changing business aviation world, turboprops represent timeless value in a steady market segment.

Perhaps it is appropriate that things do not move very fast in the turboprop segment. Consider this: the Dornier Seastar first flew in 1984, was certified in 1991 and apparently will at last enter production later this year. Or that Cessna, after dipping its toes in the pressurized turboprop single market for the better part of a decade, finally decided to jump into the pool this year—with the Denali—and likely will have an aircraft to customers by 2020. Or India's NAL Saras. After three decades of development, two flying prototypes and reportedly nearly half a billion dollars, the Indian government finally decided to pull the financial feeding tube and kill it. Perhaps at one time there was a market for something that looked like a Hawker 125 with pusher propellers, but that time was probably the 1950s.

No, the turboprop market is plodding, deliberate; evolution in slow motion. More than 50 years after the King Air was introduced, companies are still finding ways not only to tweak the aircraft but also to improve performance significantly, and in ways that make economic sense. In Texas, a company wants to put the Grumman Mallard, an aircraft that first flew in 1946, back into production with Pratt & Whitney Canada PT6A-34s.

DAVID McINTOSH

Dornier Seastar

Twins

Dornier Seastar

After several years of uncertainty, the centerline push-pull, all-composite amphibian twin appears back on track after the Dornier family formed a new joint venture (Dornier Seawings) to manufacture the aircraft with China's Wuxi Industrial Development Group and the Wuxi Communications Industry Group. It then struck a deal in February this year for component airframe parts for the first 10 aircraft to be manufactured at Diamond Aircraft's plant in London, Ontario, and shipped to Dornier Seawings in Oberpfaffenhofen, Germany, for final assembly. Production eventually will be shifted to China.

The interior of the Seastar can be tailored to many different operations: personal, commercial, government or corporate missions. It features a light and spacious cabin that can be equipped with various configurations, with seating for seven to 12 and will be available with a "quick change" configuration option. The cockpit has been upgraded with Honeywell's Primus Epic 2.0 all-glass avionics suite with four 10-inch LCD displays with advanced vision, communication, navigation, surveillance and air traffic management systems. The aircraft is certified for single-pilot IFR. Customer deliveries are now forecast to begin in 2018.

The Seastar was designed in the 1980s and was FAA certified under Part 23 in the early 1990s at a cost of almost $150 million. A decade ago, the company said it held letters of intent (LOI) for more than 25 of the $6 million, 180-knot, unpressurized twins. Power for the 10,141-pound-mtow Seastar comes from a pair of 650-shp P&WC PT6A-135s. It has a service ceiling of 15,000 feet, a maximum range of 900 nm and a maximum demonstrated sea state of two feet.

Evektor EV-55 Outback

Certification for the Outback is slated for next year; however, this schedule seems doubtful as the first conforming prototype did not fly until April 8 this year. This $2.1 million light twin from the Czech Republic has been in development for more than a decade, and a non-conforming prototype first flew in 2011. The aircraft was originally slated for certification in 2013. However, the order book to date appears slim and the flight-test program appears to be adhering to a leisurely schedule, perhaps a reflection that it is a largely public-sector project. Evektor says it holds orders for two dozen copies of the military/utility/cargo/combi/passenger aircraft, which seats between nine and 14 people.

The project, underwritten thus far by the Czech ministry of industry and receiving technical assistance from the Czech army, recently received funding from the Malaysian company Aspirasi Pertiwi, which has agreed to invest up to $200 million. The aircraft is designed for high-altitude operations at unpaved airstrips. Evektor claims interest from several air forces and is marketing the aircraft to entities currently flying Cessna 402/404 piston twins and Antonov An-2 single-radial biplanes.

The Outback features a quick-change cabin that can be reconfigured in 20 minutes. Power comes from a pair of P&WC PT6A-21s rated at 536 shp each. Maximum speed at 10,000 feet is 220 knots and maximum payload is 4,021 pounds. Service ceiling is 29,000 feet. The volume of the combined cargo/

Evektor EV-55 Outback

Mahindra Airvan 18


Turbine Mallard G-73T *On new-build Mallards, P&WC PT6s will replace the original P&W R-1340 Wasp radials.*

passenger area is 447 cu ft and the maximum cargo payload is 3,021 pounds. Evektor claims the Outback can take off from, and land on, runways of less than 1,700 feet at 6,500 feet msl. Evektor has selected Esterline's CMC SmartDeck integrated digital avionics system as standard equipment.

Mahindra Airvan 18

Indian-owned Mahindra is working on an updated version of the Government Aircraft Factories N24 Nomad twin; initially rebadged as the GA18, it is now the Airvan 18. Plans for the aircraft include a modern glass cockpit and an 18-passenger layout with quick-change options for passenger, cargo and combi ops. The Airvan 18 will be powered by a pair of upgraded 450-shp Rolls-Royce 250-series engines and new propellers, and it will retain its STOL capabilities, easily using runways shorter than 2,000 feet. Maximum cruise speed is 173 knots and range is 1,080 nm with 2,190 pounds of payload. Maximum useful load is 4,405 pounds with an mtow of 9,400 pounds.

NAL Saras

For the last three decades, India's National Aerospace Laboratory (NAL) has struggled to develop the Saras twin-turboprop pusher for business aviation. A third prototype was spotted taxiing in 2014, but precious little has been heard about the program since. When quizzed about the status of the program last year, Dr. Harsh Vardhan, the country's minister of science and technology, told the Indian Defense Research Wing News Network, "I have no clue." Now we do.

As of the beginning of this year, the Saras program is officially dead and buried. Formal funding for Saras was cut off in late 2013, but NAL managed to keep it alive with "lab" funds after that. Now even that funding has been exhausted and the program has been officially disbanded. Two flight-test aircraft were built and flew, but one crashed in 2009 and the program never really regained traction after that. A third test aircraft was subsequently built and reportedly corrected the myriad problems with the original design, but it never flew.

Turbine Mallard G-73T

Type certificate holder Frakes Aviation has formed Mallard Aircraft in Cleburne, Texas, with the goal of building new-production aircraft with new Pratt & Whitney Canada PT6 engines and Rockwell Collins avionics. Fred Frakes converted eight piston-powered Grumman Mallards to PT6 power between 1970 and 1984 and later purchased the Mallard's TC. Mallard plans to offer several interior configurations, among them an executive floorplan with six single seats and a three-place divan, eight single seats in a utility configuration, and a 17-seat high-density layout. Predicted numbers for the new Mallard: maximum takeoff weight (land or water) 14,000 pounds, up to 4,462 pounds of fuel, a useful load of 5,470 pounds, maximum payload of 2,350 pounds, typical cruise speed of 190 knots and a service ceiling of 24,500 feet.

Remanufactured Twins

Ikhana X2

Ikhana Aircraft Services is remanufacturing the DHC-6 Twin Otter as the X2. For $4.5 million, customers receive an aircraft refitted with GE H-series engines and a new interior. In addition, the aircraft incorporates a variety of proprietary STCs, among them an mtow increase to 12,500 pounds and re-lifed wing box, nacelles, flight controls and fuselage. Ikhana is working on an STC to raise the mtow to 14,000 pounds and hopes to have that in hand to apply to the X2 by year-end.

Ikhana X2

De Havilland Canada built more than 800 Twin Otters, and an estimated 500 are still flying. The X2 package gives owners of timed-out aircraft an economically viable alternative to buying a new aircraft. (The DHC-6 has a life limit of 66,000 hours or 132,000 cycles.) Ikhana's remanufacturing process requires six to nine months of downtime. The completed aircraft is essentially "zero-timed" and good for another 66,000 hours. In addition to incorporating the STCs, the aircraft is torn down and etch-alodined on the inside, and it receives all-new wiring, circuit breakers and avionics.

Nextant G90XT

The company that remanufactures the Beechjet as the 400XTi has turned its sights to remaking C90-series Beech King Airs. The Nextant G90XT received FAA certification in November last year, but the company is delaying customer deliveries until it receives subsequent approval of the single-lever power control. According to Nextant, final approval, from both the FAA and the EASA, is anticipated during the fourth quarter this year, at which point it will be looking to firm up orders from the list of prospective clients from whom it now holds refundable deposits.

The G90XT is powered by General Electric H75-100s and has Garmin G1000 glass-panel avionics, a new digital pressurization system, new air conditioning with twin evaporators that delivers 300 percent more cooling capacity, new seats and new interior. The single-lever power control has been developed to make the aircraft easier and safer for the pilot to control, as well as improving efficiency.

Nextant executive vice president Jay Heublein told **AIN** that he expected GE to deliver the first engine equipped with conforming hardware around the middle of last month, allowing final flight-testing to be performed. "This is novel technology and it has taken longer than expected to get all the paperwork completed," he acknowledged.

TBO for the H75 will be 4,000 hours, with no requirement for a midlife hot-section inspection. The H series uses a fuel slinger instead of fuel nozzles and employs an axial stage compressor rather than the PT6's reverse-flow design. Because there are no fuel nozzles to get clogged, there are no hot spots in the combustion chamber, ensuring even thermal distribution and thereby eliminating the need for an HSI. "GE undersold how good this engine is," said Heublein. "Our performance data shows a 10- to 12-percent improvement in specific fuel consumption [over the standard PT6s], which is just incredible."

The cockpit of the G90XT will be substantially different from a typical G1000 retrofit in a King Air. The instrument panel is trimmed in carbon fiber. It has a three-screen layout with a backup Mid-Continent Instruments standby attitude module and a Luma Technologies LED glareshield warning panel.

The single-lever Unison power control manages engine power and prop speed and has in-flight torque- and temperature-limit protection, autostart

Continues on next page ▶

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and trend monitoring. It also offers full exceedance protection. The fuel-system controls are now mounted above the power levers, replacing pressurization switches that are no longer needed because control of the cabin altitude is integrated into the digital G1000 avionics.

Several different standard cabin configurations are available, among them special mission/air ambulance, a high-density five-passenger layout and an executive three-seat configuration. Beech has built more than 1,500 C90s and Nextant believes an abundance of them are suitable for the program. "We are at $2.3 million for a full conversion (engines/avionics/inspection programs) when a customer brings us an airplane. Airframes start at $400,000, so that takes the price for a completed airplane to $2.75 million if we supply the airframe. We had a big opportunity to bring new technology to this aircraft and it has a real forward-fit feel, not that of a retrofit," Heublein concluded.

New Singles

Caiga AG300

(formerly Primus 150)

This new $1.5 million, five-seat, all-composite aircraft is loosely based on the Epic Escape and remains in the flight-test phase, according to China Aviation Industry General Aircraft (Caiga), and now appears to be falling significantly behind its original development schedule. Certification had been expected this year, but that now seems highly unlikely. Caiga claims the AG300 will have a maximum cruise speed of 352 knots (identical to the Escape), a range of 1,410 nm and a ceiling of 28,000 feet. Power comes from the 850-shp GE H85.

Cessna Denali

Textron Aviation has officially named its long-awaited new single-engine pressurized turboprop. The Cessna Denali was announced at EAA AirVenture in July. First flight is anticipated in 2018 and the company is accepting letters of intent for the $4.8 million, single-pilot-capable, six- to nine-passenger aircraft.

The Denali will have a range of 1,600 nm, a maximum cruise speed of 285 knots and a full-fuel payload of 1,100 pounds. The aircraft has a flat-floor cabin, a 53-inch by 59-inch rear cargo door, a digital pressurization system that maintains a 6,130-foot cabin to 31,000 feet, and an optional externally serviceable belted lavatory with pocket door enclosure in the aft of the cabin. The cabin also has passenger windows larger than those in other Cessna models, interior LED lighting, a refreshment cabinet and a baggage compartment accessible in flight. The cabin is designed to be easily and quickly converted between passenger and cargo configurations.

The aircraft will be powered by a new GE Aviation Fadec-equipped 1,240 shp turboprop with single-lever power and propeller control. GE announced it is developing the engine late last year. The engine draws on the modular architecture of the T700/CT7 turboshaft for better performance and lower operating costs and has an all-titanium, 3D compressor design for light weight and efficient power generation, cooled turbine blades enabling higher thrust and fuel efficiency, and integrated and electronic propulsion control to enable single-lever operation. GE will conduct a detail design review of the new engine next year and start flight-testing in 2018. It will have an initial TBO of 4,000 hours. On the Denali the engine will be mated to a new McCauley (a Textron company) 105-inch-diameter, five-blade, constant-speed propeller, which is full feathering with reversible pitch and ice protection.

The Denali's cockpit will be equipped with the Garmin G3000 touchscreen avionics suite and will have high-resolution multifunction displays and split-screen capability. The G3000 flight deck will come with weather radar, advanced terrain awareness warning system (Taws) and automatic dependent surveillance-broadcast (ADS-B).

The Denali will be offered with a five-year limited warranty covering airframe, engine and avionics and will qualify for enrollment in Textron Aviation's ProAdvantage programs.

Cessna Denali

Caiga AG300

Epic LT

The E1000 will be a certified version of the kit-built LT, shown.

Diamond DA50-JP7

Originally conceived as the diesel-powered, seven-seat SuperStar in 2006, this updated version first flew in January this year with a 465-shp Motor Sich AI450S dual-Fadec turboprop made in Ukraine. Diamond claims that the AI450S burns 20 percent less fuel than comparable engines and is fuel-efficient even at medium altitudes.

Diamond plans to develop two variants of the aircraft: the Tundra, with oversized tires and STOL capabilities that will allow it to use unpaved runways as short as 650 feet; and another version for private owners and for use as a trainer that would feature normal landing gear and cruise at up to 230 knots. The DA50-JP7 is designed to fly in harsh environments such as Africa and Russia, and its engine can endure an outside air temperature range of -50 degrees C to 50 degrees C, according to Diamond. The aircraft will be produced at Diamond's Wiener Neustadt factory in Austria. Diamond collaborated with Ukraine's Ivchenko Progress on the aircraft's design and will use the resources of Diamond's Austro Engine subsidiary in the certification program. Approval of the $1.1 million DA50-JP7 is slated for 2018.

Diamond DA50-JP7

Epic E1000

Anticipated FAA certification of the $2.95 million Epic E1000 turboprop single has slipped six months, to the first quarter of next year, to accommodate the redesign of "about four parts" in the wing, CEO Doug King told **AIN** this summer. King said the delay is "unfortunate," but "one of the things we weren't going to do was compromise the performance of the airplane. Some of the engineers said that if we just lower the max takeoff weight or drop the speed we could lower some of these loads." But King said he resisted all suggestions to compromise the aircraft's performance and insisted on an engineering fix even when it meant a further program delay.

"We took the time and got through that, and I am happy to report that our wing passed structural testing," he said. King said the main differences between the E1000 and the Epic LT kitplane are the addition of an emergency exit, different pressurization, air conditioning, and lighting systems and several switches, and a few structural changes on the certified version.

"But the really big difference is that we are certifying this airplane [the E1000] to Flight Level 340," he said. The LT has a ceiling of FL280. "To go 6,000 feet higher is a really big deal." He said Epic expects the E1000 to have a full-fuel payload of 1,100 pounds and a range of "at least 1,600 nautical miles and at [Flight Level] 340 a lot more, but I don't know what that number is yet." Epic expects the E1000 to cruise at better than 300 knots while burning 40 gph at its service ceiling, King said.

King said the company holds orders for more than 60 E1000s and that plans call for an initial production run of one aircraft per month following certification next year, gradually ramping up to one aircraft per week "once we reach full production, and we're going to get there as quickly as possible."

The E1000 has carbon-fiber construction, three-screen Garmin G1000 avionics and a Pratt & Whitney Canada PT6A-67A (1,200 shp, derated from 1,825 shp) mated to a Hartzell four-blade propeller. Fuel capacity is 288 gallons. Time to climb to FL340 is 15 minutes and the maximum rate is 4,000 fpm. The cabin seats six and measures 15 feet long, 4.6 feet wide and 4.9 feet high. Mtow is 7,500 pounds. Sea-level takeoff distance is 1,600 feet; landing distance is 1,840 feet over a 50-foot obstacle.

Continues on page 38 ▶

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New Business Turboprops

▶ Continued from page 36

Mahindra Airvan 10

Developed from the boxy metal piston-powered Airvan 8, this unpressurized turboprop single is powered by a Rolls-Royce 250-B17 turning a Hartzell three-blade propeller. It features a 50-inch-wide sliding aft cargo door. It has a full-fuel payload of 1,400 pounds (useful load 2,250 pounds, standard fuel capacity 153 U.S. gallons), a maximum range of 550 nm with IFR reserves and a cruise speed of 145 ktas. Maximum climb rate is 1,000 fpm and the service ceiling is 20,000 feet. The takeoff roll is 1,100 feet (1,600 feet over a 50-foot obstacle), giving this aircraft true STOL capability. The flat floor of the Airvan 10 main cabin can be configured for diverse missions, from patrol/reconnaissance/surveillance, medevac and skydiving to freight and commuter operations.

An optional cargo pod (600 pounds capacity) can be attached to the aircraft, and fittings for amphibious floats are another likely option. At this point the program is several years behind schedule.

One Aviation Kestrel K-350

Work on One Aviation's Kestrel K-350 turboprop single appears all but suspended as the company has shifted resources to the "Project Canada" refresh of the Eclipse very light twinjet. Through last year, major suppliers for the K-350 had been selected, among them Garmin for its G3000 touchscreen avionics system and Honeywell for the TPE331-14GR engine, flat rated to 1,000 shp and providing a 5,000-hour TBO.

The aircraft has a four- to five-seat executive interior on par with those of modern corporate jets, complete with high-gloss wood veneers, fine leather, a wide aisle and oversize oval cabin windows reminiscent of a Gulfstream's. It is just one of nine interiors Kestrel is developing, with passenger seating for five to nine people. The others will accommodate missions as diverse as medevac, cargo and a high-density configuration for eight passengers. The cabin measures 50 inches wide, 45 inches tall and 16 feet one inch long and can be configured for nine passengers in the cabin (plus one in the copilot position) or a commuter configuration with an additional 32 cu ft of cargo space in the rear cabin.

The cockpit features sidestick controls, a low, contoured instrument panel with large flat-panel displays and a wrap-around windshield allowing views of both wingtips. Kestrel has not released a price for the aircraft but it is expected to be in the neighborhood of $3 million.

Preliminary specifications: maximum cruise speed of at least 320 ktas; 1,300-nm range (pilot, five passengers, maximum cruise speed at 31,000 feet and NBAA IFR reserves with 100-nm alternate); 1,200 pounds of payload with full fuel (319 U.S. gallons usable); and 8,500 pounds mtow. For now, One Aviation chairman Alan Klapmeier will say only that the timeline for the project has shifted, again, "to the right."

Piper M600

The Piper M600 received FAA certification in June. Flight into known icing certification remains pending, but is expected later this year. Customer deliveries began in July. The $2.853 million M600 is a refreshed and more powerful version of the M500 (formerly known as the Meridian) with a new wing with room for 90 gallons more fuel (to 260 gallons), Garmin G3000 touchscreen-controlled avionics, an uprated Pratt & Whitney Canada PT6-42A flat rated to 600 shp from 500 shp, a higher mtow (6,000 pounds, up from 5,092), more full-fuel payload (645 pounds, up from 550), more range (1,484 nm at intermediate power, up from 1,000 nm), and a higher maximum cruise speed of 274 ktas, up from 260.

Piper M600

While the cabin dimensions of the M600 and M500 are identical, the M600 cabin has more usable space; seat foam has been resculpted to deliver more headroom and memory foam provides greater comfort. Several of the seats, including the copilot's, now have breakover backs that convert into work surfaces and have cupholder detents. The cabin sidewall panels have been redesigned with improved stowage and better ergonomic interface, and there are now USB charging ports in the cabin.

The G3000 has two GTC 570 touchscreen controllers below the center MFD, forward of the power console. The avionics add 60/40 split-window capability on the PFDs, which allows display of synthetic vision in one 60-percent pane and a chart or other information in the 40-percent pane.

The G3000 package also adds the enhanced map HSI feature, which allows overlay of information on the HSI such as map, SafeTaxi, flight plan, Metars, Nexrad and weather radar. Other avionics features include emergency descent mode, electronic stability protection, level mode button and underspeed/overspeed protection. An Aspen Evolution backup display is mounted to the left of the pilot's PFD. Piper CEO Simon Caldecott said the company plans to cap production at 35 aircraft per year.

One Aviation Kestrel K-350

MATT THURBER

King Air A90 *Innova upgrade to King Air A90*

Privateer Industries Privateer

Construction of this single-engine, carbon-fiber amphibian has resumed after being halted in July last year and relocated to Titusville, Fla. The prototype is entering final assembly and could fly later this year. The assembly team is currently awaiting a custom MT propeller from Germany. Power for the seven-seat aircraft comes from a 714-shp Walter 601 spinning a ducted pusher propeller. Predicted performance numbers: 215-knot cruise speed, service ceiling of 25,000 feet, range of 1,000 nm fully loaded, water takeoff run of 1,300 feet over a 50-foot obstacle, and useful load of 2,000 pounds.

Plans call for the airplane to be marketed as a kit first and then as a certified aircraft. Starting price is estimated in the $1.5 million range. Privateer claims to have received order interest from prospective customers in Canada, Brazil, Great Britain, France, Indonesia, China, Chile and the Dominican Republic.

Upgrades/ Modifications Twins

Textron Beech King Air

• *Pro Line Fusion Avionics* Rockwell Collins Pro Line Fusion touchscreen avionics are now standard on all new King Airs. The suite has three 14-inch screens, high-resolution synthetic vision, full multi-sensor flight management system, presets that will reconfigure all three displays with one touch and automatic wireless database and chart uploads. The system was designed with an open and scalable architecture for future upgrades. Additionally, the cabin of new King Air 350is now has Wi-Fi and electrochromic passenger window dimming as standard.

• *Innova Aerospace GE H80 engine and BendixKing avionics STC for 90-series King Airs* Innova Aerospace is offering a pair of new modifications of interest to 90-series King Air owners. Replacing the stock Pratt & Whitney Canada PT6-135As with a pair of GE Aviation H80s is expected to yield 10 percent more range, an 8-percent improvement in specific fuel consumption, an additional 90 shp, a 4,000-hour TBO, no HSI and no recurrent fuel nozzle inspections. The H80 conversion is available now on the C90 and E90, and Innova plans to add H80 STCs for other 90-series models in next year's first quarter.

Installing the BendixKing AeroVue digital avionics system chops 105 pounds from the weight of the legacy avionics while bringing the aircraft into compliance with the latest avionics mandates. The AeroVue integrated flight deck features

Continues on page 40 ▶

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▶ Continued from page 38

all-new radios and autopilot, three 12-inch displays, cursor control device, FMS with coupled Vnav and ADS-B OUT-compliant transponder. SmartView synthetic vision will be optional. Baseline price for the King Air 90 AeroVue upgrade is $348,000, including engine instrumentation on the cockpit displays.

• *Raisbeck/Hartzell Swept Blade Aluminum Propellers* The new propellers are available for the King Air 250 along with Raisbeck's Epic performance package. The new props provide more thrust, shorten landing distances, increase cruise speed by up to 10 knots, are associated with quicker time-to-climb times and reduce noise.

Upgrades/ Modifications Singles

Cessna Caravan

Earlier this year, Texas-based Blackhawk Modifications received EASA approval for its 867-shp Pratt & Whitney Canada PT6A-140 upgrade for the Cessna Caravan and Grand Caravan (Blackhawk XP140 Performance Upgrade). The XP140 Upgrade retains many original items, among them the cowl, engine mounts and exhaust, while providing a factory-new engine and propeller, a new 325-amp starter/generator, all-new "smart" engine gauges, a new oil cooler and new engine hoses. Blackhawk has performed more than 20 conversions to date. The XP140 conversion provides gains in takeoff, climb and cruise performance over the stock PT6A-114A.

Blackhawk is also working on FAA STC approval for a Beechcraft King Air 350 engine upgrade that replaces the original 1,050-shp Pratt & Whitney Canada PT6A-60As with 1,200-shp (flat-rated to 1,050 shp) PT6A-67As. The engines and five-blade composite propellers from MT were recently installed on the company's King Air 350 testbed and initial performance has been "promising," according to Blackhawk.

In hot conditions, the company has seen climb rate more than double from sea level to the FL350 service ceiling, reducing time-to-climb to 18 minutes. Cruise speeds have also gone up by as much as 37 knots, to a maximum of 340 knots at engine power limits. The STC will include a new flight manual supplement with full performance specifications for flight-planning purposes.

Pilatus PC-12

Cessna Caravan

The company expects the initial certification to cover all Rockwell Collins Pro Line II-equipped 350s with analog engine instruments, and it is working with Garmin on G1000 compatibility on the initial STC. A separate STC is intended for King Air 350s equipped with the Pro Line 21 avionics suite. Blackhawk said the Hartzell 105-inch-diameter five-blade composite propeller will be available as an option, while Raisbeck Engineering is working to upgrade its newly certified Hartzell swept, four-blade aluminum propeller assembly to be compatible with the PT6A-67A installation.

Daher TBM 900 and 930

Beginning next year, TBM owners will have the option of a factory-installed toilet. This summer Daher senior vice president Nicolas Chabbert said that the company would renew its focus on improving the comfort of the aircraft and add a side-facing, quick-change, marine-style, electric-flushing toilet as a $35,000 option on 2017 models. Installation of the toilet requires removal of the two rear seats. It is designed with a padded surround, personal item stowage, mirror, cabin soundproofing, and a screened privacy enclosure that can be deployed. The package has been under development for 18 months, and there are plans to make it available for retrofit for older aircraft.

Chabbert said the addition of the toilet, combined with relaxed EASA charter rules governing single-engine turboprops, should make TBMs more popular in Europe. "A toilet is required for commercial charter operations. We're going to provide the best and most comfortable interior in this class of aircraft," Chabbert said. "We are going to be thinking more about the passengers. You can be in this cabin for up to five hours."

Chabbert said Daher will continue to produce both the TBM 900 and 930 to "provide customers with a choice" of avionics interface preferences. "We try not to impose our preferences on our customers. We deliver what people want." For the first half of 2016, Daher's deliveries were split 45 percent for TBM 900s equipped with the Garmin G1000 system and 55 percent with the newer G3000 touchscreen avionics.

Daher TBM 900

Pilatus PC-12 NG and PC-12

The 2016 Pilatus PC-12 NG comes with a variety of upgrades that improve passenger comfort and boosts maximum speed by 5 knots, to 285, and maximum range to 1,840 nm (four passengers). The most noticeable feature is a new five-blade, scimitar-shape, graphite Hartzell propeller that reduces interior and exterior noise as well as drag.

Pilatus also has aerodynamically cleaned up the airframe, giving the cabin door a flush handle, redesigning the flap actuators and fine-tuning the locations of external antennas. Time to climb to 28,000 feet has been reduced by 10 percent in the process, and takeoff distance has been reduced by 50 feet. The aircraft also received a minor makeover: Pilatus and BMW Designworks USA have fashioned six new interior styles and exterior paint schemes and the entry door received LED lighting.

Owners of legacy PC-12s can obtain the new propeller and its performance benefits under STC. In June the FAA approved installation by Finnoff Aviation in conjunction with that firm's engine upgrade program (P&WC PT6A-67P) to replace the standard four-blade Hartzell aluminum propeller. List price for the propeller is $83,640.

Late last year Innovative Solutions & Support (IS&S) introduced its Future Generation (FG) flight deck with PT6 autothrottle for retrofit in the PC-12. The FG flight deck consists of primary flight and multifunction displays, integrated standby unit (ISU) as well as the integrated flight management (IFMS) and electronic flight bag system. The avionics suite comes with dual flight management systems (FMS), autothrottles, synthetic vision and enhanced vision (Flir). An ADAHRS upgrade and a full-time oil-quantity sensor are optional.

The FG avionics suite integrates charts, maps, airspace depiction with low and high vector routes, satellite weather, engine instruments, IGuard engine monitoring, electronic checklists and dual satellite base augmentation system (SBAS) GPS receivers in support of the flight management system with LPV approach capability.

The IS&S-developed PT6 autothrottle allows a pilot to control the power setting of the aircraft's engines by setting a desired flight characteristic rather than manually controlling fuel flow. The system provides a maximum continuous thrust, speed hold and speed protection mode. The autothrottle system also has a torque/temperature mode, and AOA mode and protection modes will automatically activate, regardless of autopilot engagement state, in an attempt to keep airspeed, torque and temperature from exceeding predefined targets.

The integrated FMS provides coupled Waas/LPV approaches, full RNP compliance, and required-time-of-arrival fully coupled flight profile performance based Vnav, autothrottle controls, dual FMS with synthetic DME. Pilatus delivered the 1,400th PC-12 in July. ❑

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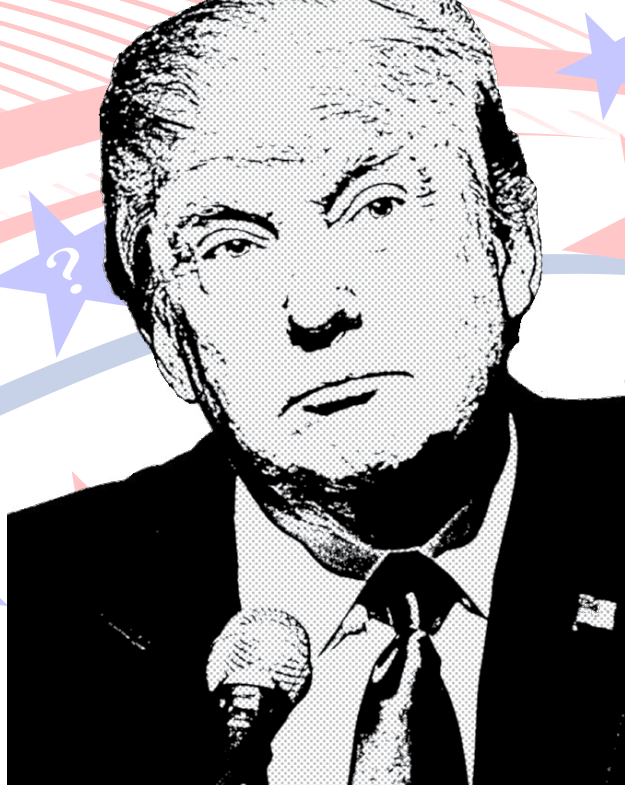

There are few clues as to where bizav stands with Trump or Clinton

by Charles Alcock

The differentiators between U.S. Presidential contenders Donald Trump and Hillary Clinton are pretty stark, both in terms of ideology and leadership style. But how are voters from the U.S. business aviation community supposed to determine which would make the better president purely in terms of industry self-interest?

The fact is that as of mid-September, the campaigns had yet to touch on any discussion of aviation policy. The industry associations have tactfully declined to express any approval or disapproval of the candidates, and would provide only unattributable comments for background purposes.

AIN spent some time browsing the candidates' policy statements looking for clues as to where they might stand on key issues such as the threat of user fees, air traffic control privatization and adjustments to bonus depreciation on business aircraft purchases. This exercise confirmed that detail on relevant policy is thin on the ground at both campaigns, and this will likely leave most voters depending on their political instincts about the positions the prospective presidents may yet take on matters critical to the industry. There is little more to go on other than a generic assessment of whether the candidate would be broadly good or bad for business.

At face value, as the proud owner of an impressively equipped Boeing 757, Donald Trump would seem to have strong business aviation credentials. But the only indicators as to where he might stand on issues affecting the industry are to be found in his position paper "Economic Vision—Winning the Global Competition."

Among the main planks of this economic strategy are pledges to limit federal taxation on businesses to 15 percent and issue a temporary moratorium on any further regulations, to be followed by the repeal of existing rules deemed not to be critical to health and safety. There is no mention of either user fees or privatizing the air traffic control system, and no particular indicator that either is on Trump's agenda.

That said, Trump's plan also calls for extensive government investment in infrastructure. He gives no specific indicators as to whether any of the new infrastructure would relate directly to aviation or how the more general development costs will be covered, while insisting that business and personal taxation will be reduced.

Few would argue that U.S. business aviation has benefitted from global trade, with emerging markets significantly expanding the customer base. Most modern aircraft programs are inherently international.

Arguably, this situation might prompt concerns about Trump's aggressive attitude on trade policy, based on commitments to abolish the North American Free Trade Agreement, to challenge trade disputes through the World Trade Organization, to confront China over allegedly anti-competitive currency policy and tariffs, and to withdraw from the pending Trans-Pacific Partnership (TPP) agreement.

Clinton has reversed her previous support for the TPP. She too has called for trade agreements to be reviewed, while specifically criticizing China for "abusing global trade rules."

As part of his high-profile calls for immigration reform, Trump proposed a complete block on all Muslims entering the U.S. from other countries. More recently, he has modified this policy aim to be limited to people traveling from countries specifically identified as being at risk from terrorist activity. Hypothetically, such restrictions could have the, presumably, unintended consequence of making it hard or impossible for some of business aviation's best customers to travel to the U.S. to buy American-made aircraft.

Hillary Clinton is doubtless no stranger to the inside of a private jet. She also enjoys the support of a high-profile business aviation advocate in the shape of Warren Buffett, chairman and CEO of FlightSafety and NetJets owner Berkshire Hathaway. But opponents have been quick to characterize her economic policy as a continuation of that of President Barack Obama, who some have portrayed as an adversary of business aviation for his opposition to the extension of bonus depreciation.

You will find no mention of user fees, bonus depreciation or air traffic control privatization in Clinton's policy papers. That said, her declarations on tax reform do suggest a predisposition to impose a higher fiscal burden on the wealthy through measures such as closing supposed loopholes exploited by Wall Street financiers and a so-called "Fair Share Surcharge" on individuals making more than $5 million per year.

Most lobbyists speaking with **AIN** off-the-record pointed to the fact that Clinton has more of a track record in government—by which they mean no more than that it may be somewhat easier to predict what she would do as president. Some questioned whether she might follow in the footsteps of her husband, President Bill Clinton, who was an advocate of running air traffic control through a not-for-profit corporation funded by user fees. Some former officials in Bill Clinton's administration, such as economic policy special assistant Dorothy Robyn, continue to advocate similar plans for ATC reforms. But Hillary Clinton has still given no indication as to where she personally stands on that issue. For what it's worth, the Obama Administration has not taken a position on the ATC privatization plans presented by Republican congressman Bill Shuster, and none of the lobbyists would predict whether a Republican president would be more receptive to these ideas (which the bizav community views as heavily tilted in favor of airlines).

It should also be noted that the Republican administration of President George W. Bush also looked at ATC reforms and user fees, so the concepts are by no means the sole preserve of Democrats. For any government pushing strongly for infrastructure investment, while at the same time promising not to increase mainstream taxation, alternative revenue streams like user fees may get put back on the table, whichever candidate wins the election.

Business and general aviation lobbyists generally referred to Trump as a wild card in terms of how he may deal with the industry. On the positive side of the ledger, they pointed to his personal preference for and knowledge of business aviation, but countered this by admitting they have next to no idea how the policies of his government might affect the industry. ❑

Report continues on page 62

Hillary Clinton's chartered Boeing 737

Donald Trump's Boeing 757

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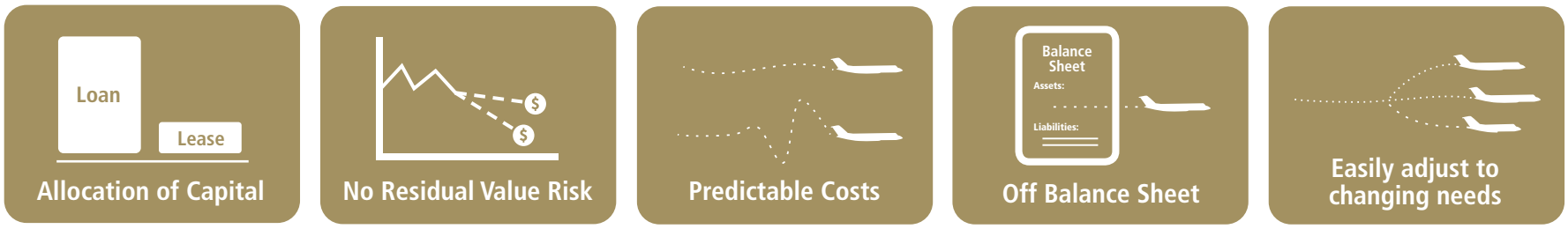

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RICARDO BECCARI

Brazil's business aviation sector files flight plan back to growth

by Richard Pedicini

Even the perennial optimists in the Brazilian business aviation community freely concede that the past year or so has been discouraging for a sector that until fairly recently had been buoyed by tangible growth. Against this backdrop, expectations for the 2016 Latin American Business Aviation Conference & Exhibition (August 30 to September 1) were always likely to be muted, and this was reflected in an approximate 13 to 16 percent dip in the number of exhibitors and aircraft on display at São Paulo's Congonhas Airport.

This year's reported total of 9,382 visitors was down on the 9,819 seen in 2015 and a further reduction on the 11,861 recorded for the 2014 event. However, Brazilian business aviation association ABAG, which organizes the show, has been seeking to increase the ratio of qualified customers among visitors by raising ticket prices to levels that would likely reduce overall attendance.

"We are facing a situation never seen before, but crisis always brings the opportunity for change," said ABAG's new chairman, Leonardo Fiuza, at the show's opening ceremony.

One aspect of Brazil's apparent crisis was unfolding in the country's Congress during LABACE week, with President Dilma Rousseff being impeached on the show's second day. The consensus among Brazilian industry executives seemed to be that, regardless of the rights and wrongs of the political furor, the impeachment and resulting new administration might at least bring a greater degree of certainty and stability to the country's economy.

Fiuza, who is also president of TAM Aviação Executiva, claimed that Brazil still has the world's second largest business aircraft fleet and, as the world's fifth largest country, has a strong need for efficient business transportation. "Of the 100 largest Brazilian companies, 62 have or use business aircraft, and those companies are responsible for 500,000 jobs," he declared, while urging Brazilian aviation officials to stop placing the sector at a disadvantage by limiting access to airport infrastructure and raising regulatory impediments.

"The ministry [of transportation] understands the importance of general aviation in all its segments," insisted civil aviation secretary Dario Lopes. He pointed out that São Paulo's Guarulhos International Airport (Brazil's largest airport), provided connections to just 30 Brazilian cities last year, while business aviation gateway Campo de Marte served 1,300.

Bizav Traffic Decline

According to the latest data on airport movements from the Brazilian air force's Department of Airspace Control (Decea), business aviation traffic (especially rotary-wing) has seen marked decline over the past couple of years. Operations have been down by nearly a third at major airports in the past two years for which numbers are available.

Decea's numbers show significant declines at the country's two busiest business aviation airports. At Campo de Marte in São Paulo traffic declined by 23 percent from 2013 to 2015. At Jacarepaguá in Rio de Janeiro traffic declined 29 percent over the same period.

At airports serving both commercial and general aviation, numbers may reflect the number of slots allocated to bizav, rather than overall demand. Congonhas Airport saw total traffic climb by 2.5 percent last year (on the heels of a 3 percent slide in 2014), but business aviation at Congonhas dropped 9.6 percent in 2014 and another 16 percent last year, for a compound decline of 24.1 percent.

At Rio's downtown Santos Dumont Airport, the decline was even sharper: 18.1 percent in 2014 and 27.2 percent last year, for a compound decline of 40.4 percent in two years. Some 15 percent of Santos Dumont's general aviation flights are to or from Congonhas.

Leonardo Fiuza, ABAG chairman

Dario Lopes, Brazil civil aviation secretary

Helicopter services to the offshore oil-and-gas sector have been particularly hard hit by both low crude oil prices and the fallout from Brazil's political scandal over alleged corruption surrounding state oil company Petrobras. Jacarepaguá Airport serves the offshore platforms, and helicopter traffic there declined by 13.4 percent in 2014 and by a further 22.7 percent last year, for a compound drop of 36 percent in two years. The airport's fixed-wing operations showed an accelerating decline also, at 6.8 percent in 2014 and 12.9 percent last year.

Airport Policy Shifts

In August, Brazil's Ministry of Transportation announced a shift in policy for development of regional airports, based on new rankings of 176 airports in terms of revenue and profitability. Other factors now being considered include the needs of the region served by the airport and the apparent appetite of both airlines and general aviation to serve them.

Lopes told **AIN** that 53 airports have been designated as priorities for development and that these sites cover 80 percent of the priority locations indicated by ABAG and airline representatives. The Amazon region has been flagged as a priority for further development, and with a few exceptions each state got at least one project. Also moved up the list for investment was the new control tower at Sorocaba Airport in São Paulo state, an important hub for business aircraft maintenance and support.

As part of an effort to improve access to remote airfields, the transportation ministry is awaiting approval from the air force's airspace control group to install more remote weather stations. The ministry is also fielding requests to equip more Brazilian airports to handle international flights, such as Porto Velho in the Amazon region. Lopes conceded that the costs associated with this, in terms of the necessary customs and immigration facilities, might be beyond current government budgets.

Stalled Development

Several São Paulo-area airport projects intended to serve the 2014 soccer World Cup tournament, and then promised for the Rio Olympic Games in August, slowed and stalled as market conditions soured. Brazil's recession has reined in airline expansion, reducing pressure on business aviation traffic at shared airports, but high costs have sent some aircraft owners and operators to more distant, cheaper airports.

The Aerovale development in Caçapava (east of São José dos Campos, where business aircraft manufacturer Embraer is based)

Bizav Rises To The Olympic Challenge, but Traffic Breaks No Records

Despite concerns about inadequate infrastructure, Brazil's airline and business aviation sectors coped admirably with the influx of traffic associated with Rio de Janeiro's 2016 Olympic Games in August. But the payback for business aviation at least was significantly less than anticipated, with traffic levels well below expectations.

With 1,000 business jets anticipated at Rio's Galeão Airport and a taxiway set aside that could hold up to 260 aircraft at a time, local FBO Lider Aviação reported that it had received 150 jets and handled a peak of 60 aircraft on the ground. The number of head-of-state and government flights flocking to the games was barely a fifth of expectations.

Other Brazilian airports also received Olympic business jet traffic. For instance, the Center for the Management of Air Navigation figures for August 22 showed 46 general aviation movements for Galeão, 48 for Rio's downtown Santos Dumont Airport and 12 for Cabo Frio Airport. Lider Aviation operations director Cynthia Oliveira pointed out that the Games left some tangible legacies of improvement for Rio's business aviation community, among them a new FBO at Galeão and a VIP lounge at Santos Dumont. ❑

The changing face of predictive and preventive aircraft engine maintenance

How P&WC is innovating in the market to reduce maintenance costs, enhance service to customers and increase aircraft availability.

Pratt & Whitney Canada's engines cover the spectrum, from the hugely popular PT6A turboprop and turboshafts for helicopters to larger turboprops for regional airliners and turbofans for business jets. The worldwide fleet of engines has achieved 700 million flight hours and clocks over 30 million more annually. The company has also taken on the parent corporation's auxiliary-power-unit business.

In maintaining its position as a world leader in aircraft propulsion, P&WC not only designs its products for high performance and reliability—"Dependable Engines" is the company's motto—but also dedicates itself to providing and continually developing integrated solutions that service and support those engines throughout their lifetimes.

Those solutions not only address regular maintenance and repair issues through ever more sophisticated diagnostics but increasingly focus on prognostics that allow potential issues to be identified, planned for and rectified with minimum impact on day-to-day operations. The company has devised innovative pay-per-hour (PPH) programs such as the **Eagle Service Plan** to provide maintenance schedules with predictable pricing, as well as guaranteed repairs and parts replacement. These are becoming increasingly popular as operators seek stable, predictable maintenance environments while increasing the long-term value of their engines and aircraft.

Cost reduction and maximizing aircraft availability for customers lie at the heart of all of P&WC's service and support initiatives. The company's heavy investment in data-driven turnkey diagnostic/prognostic solutions, such as **FAST** (Flight, Acquisition, Storage and Transmission), which delivers full-flight engine and aircraft data analysis to customers in near real time, and its new **Oil Analysis Technology** (currently in customer trials), increase engine on-wing time and performance, reduce life-cycle costs and maximize the overall asset value to the customer. At the same time, the company strives to make the day-to-day tasks of overseeing engine maintenance as trouble-free and satisfying as possible through 24-hour call centers and the new **MyP&WC Power** web portal.

PHOTO: At the heart of Pratt & Whitney Canada's customer support network are two 24/7 Customer First—or CFirst—call centers, in Montreal (pictured) and Singapore.

Right for you

P&WC's wide product range powers many types of aircraft, from small bush planes to regional airliners to ultra-long-range business jets. That means the company serves diverse customer populations, each of which has different requirements. Some of those customers operate in harsh conditions or in developing regions. For example, in the low-cost airline and offshore helicopter sectors a "one size fits all" approach is simply not appropriate.

To answer these wildly varying needs, the company offers a portfolio of service plans, from simple solutions—under which, say, a single-aircraft owner-operator buys servicing and parts on an ad-hoc basis—to integrated pay-per-hour programs and fleet-management solutions, each tailored to the particular demands of operators and how they use their aircraft.

Having never retired a product line, and with its revolutionary PT6A engine continuing to push the boundaries of innovation, P&WC is proud to fully support operators with older engines and offers solutions under which they can enjoy the benefits of newer maintenance initiatives, such as the **P&WCSMART** program. Wherever possible, technology and servicing advancements that have been devised for the latest engines are cascaded back to the older products.

The future of engine support

In 2018 the PurePower PW800 turbofan engine enters service on the Gulfstream G500 business jet, and with it P&WC is introducing its most advanced and all-encompassing service plan yet, **ESP PurePower PW800**. Based on an evolution of current ESP offerings, the new plan will provide a concierge "white glove" approach to engine support that brings a step change in the large-bizjet market.

P&WC's ESP PurePower PW800 plan reflects the increasing importance that life-cycle management plays in engine design. Working closely with Gulfstream, P&WC has crafted a high-performance engine that has a number of interesting integrated accessibility features. The cowl door has been designed with built-in ledges for technicians, and maintenance requires no dedicated tools. Even the core section access-door has been made large enough for a technician to gain entry.

For those working on the engine there is even more assistance available. Manuals are being produced in 3D, and through greater connectivity with P&WC's specialists, the opportunity for "live chat" is possible, allowing remote analysis of complex issues. Increasing use of online technology at a "tactical" maintenance level means that any time spent on the telephone is high value. Such innovations are already being cascaded to legacy engine types.

P&WC's main focus is now on driving further proactive maintenance through the increasing use of sophisticated prognostics, as exemplified by the FAST solution, and investment in its oil analysis technology currently in the final development stages. These innovations are delivering deep insight into the engine and aircraft, enabling proactive and predictive maintenance—leading to greater aircraft availability, reduced costs and ultimately increased customer satisfaction.

"The people at P&WC talk to each other. Communication is a major failing in a lot of other companies, but P&WC continues to do things right. P&WC listens, it hears and it adjusts the way it does business based on the needs of the customer."

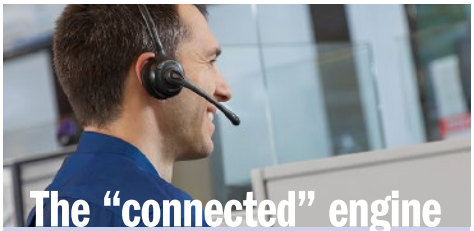
–Jerry Fussell, P&WC-powered aircraft owner and operator

Pay-per-hour plans

P&WC's pay-per-hour maintenance plans include its Eagle Service Plan (ESP) and Fleet Management Program (FMP), which cover all planned and unplanned maintenance/repair events through a simple per-flying-hour cost. Increasingly, operators and airlines are turning to this form of service plan, and P&WC already has close to 10,000 engines enrolled in its pay-per-hour programs.

The benefits to the operator are many: guaranteed service and parts from P&WC to P&WC-designated service centers; carefully managed and planned schedules that minimize downtime; life-cycle cost reductions; rapid access to maintenance; and, above all, predictable maintenance costs. Moreover, enrolling in an ESP or FMP maintenance plan significantly enhances the residual value of the asset, and the plan is transferrable if the aircraft is sold.

P&WC continues to evolve these programs as it looks for new ways to deliver value. For example, the company recently launched the ESPECIALLY for Your PT6 initiative, which provides up to the first 400 hours of coverage under the maintenance plan free to customers of new PT6A engines. The new offering represents up to $50,000 of coverage toward future engine maintenance events.



The "connected" engine

P&WC's leadership position in engine diagnostics and prognostics technologies goes back more than 15 years to when it introduced its first advanced technical diagnostics systems. With the launch of its turnkey FAST solution in 2011, P&WC continues to enhance engine and aircraft "connectivity" through its ability to provide near-real-time situational awareness about engine health, usage and trends.

Weighing just over two pounds, the FAST box is installed in the aircraft either by the OEM or as an aftermarket solution. The system automates the capture and analysis of hundreds of full-flight engine and aircraft performance parameters including speed, temperature, fuel burn, diagnostics and more, and can provide wireless access to encrypted and secure FDR data.

The data captured in FAST is automatically transmitted via cellular technology to a ground station the moment the aircraft lands. The data is analyzed and the results are sent electronically to the customer within 15 minutes, allowing rapid and informed decisions, the ability to identify potential issues early and a means to optimize performance, maintenance planning and operations.

Additionally, FAST has proprietary engine health and usage analytics enabling on-board event detection and crew alerts. It also includes power assurance checks currently in use by the AW139 helicopter and turbine blade creep counting in use on PT6A-140-powered aircraft.

Through its ability to deliver alerts and trend monitoring, P&WC is more closely engaged with the customer, not only providing early detection of possible events, but also helping the operator to extract maximum benefit from its engines with the greatest cost-efficiency. The system can also automate much of the onerous task of compiling carbon burn and other regulatory reports. Among other advantages, FAST feeds highly precise data back into P&WC's engine-development cycle.

FAST not only represents a large step in engine health monitoring and proactive and preventive maintenance, but also enables its use with other technologies and hardware to provide additional functionality, such as automatic propeller balancing for turboprop aircraft.

More than 600 FAST units are already in use; they have been selected for the Dassault Falcon 7X and 8X, and nearly half of the Bombardier Q400 fleet has been fitted with FAST boxes. Other types include the ATR regional airliners and AW139 helicopters, with further STCs being planned. New aircraft are generally wired for its inclusion.

"When it comes to our relationship with P&WC, it's almost like a family. We don't expect special treatment, only to be treated fairly, and we get well above that. It's good to know when you email or call you actually talk to a person. You don't have to wait a day or two for someone to get back to you. There's always a willingness to help; the best word for it is teamwork."

–David Eastwood,
Director of Maintenance,
UNC Air Operations

Oil analysis redefined

A key technology in the diagnosis and prognosis of engine issues is the analysis of engine oil. P&WC is investing heavily in this area, which—in conjunction with other initiatives such as FAST—is advancing the capabilities of diagnostic/prognostic health monitoring (DPHM).

P&WC's new oil analysis technology, in the final stages of development, has demonstrated in tests its potential to be hundreds of times more precise than oil analysis methods currently in use. Operators are being invited to participate in an 18-month trial to calibrate the technology across all P&WC engine models.

Oil samples are taken for inspection every few hundred hours. The technology detects minute metal traces within the oil enabling P&WC to identify deterioration of specific components hundreds of hours before a potential event occurs.

Largest global network

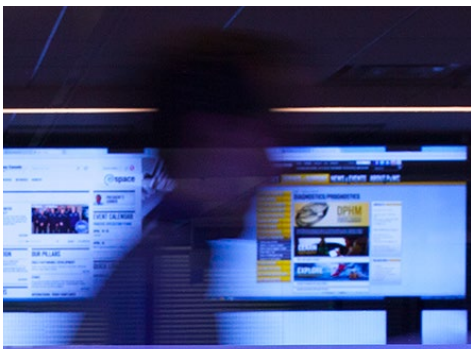
Pratt & Whitney Canada has built a worldwide support network with 30 locations—some P&WC-owned, some designated service facilities, and all offering a high level of service. Moreover, the network is expanding to meet market growth and emerging requirements.

At the heart of the customer support network are the two Customer First—or CFirst—call centers in Montreal and Singapore. Operating around the clock, these centers integrate the control of all elements of the support network, including logistics, responders and engineers. From the first minute of a call for assistance, the CFirst team can quickly arrive at a decision and implement an action plan with the aim of achieving a 24-hour-or-less turnaround time.

To back up the call centers, which offer detailed assistance in a growing number of languages, P&WC has over 100 field service representatives and 100 mobile repair teams stationed at strategic locations around the world. The company also holds a stock of approximately 850 rental engines that can replace a customer's engine while it is away for scheduled or unscheduled work.

"Today, Pratt & Whitney Canada engines power 91 of the 250 aircraft managed by Luxaviation. Our relationship with P&WC is based on a mutual commitment to delivering outstanding service and catering to the individual needs of customers. It is P&WC's winning combination of superior services, coverage and support—all tailored to our needs—and high-performance, reliable engines that sets the company apart. P&WC demonstrates time and time again they are listening to us, understand the intricacies of our business and are ready to do whatever it takes to support our success over the long term."

–David Van Den Langenbergh, CTO, Luxaviation



Powerful online service

MyP&WC Power is Pratt & Whitney Canada's new customer portal, which recently finished a progressive rollout to all customers. With full e-commerce capability on desktop, mobile and tablet devices, MyP&WC Power aims to improve the customer experience by reducing the "touch-point," but not the "touch-time" and bringing the customer closer to the product, services and support.

Through the portal customers can search and purchase parts across multiple trade publications, access their Eagle Service Plan pay-per-hour maintenance entitlements, pay invoices online, request rental engines, register warranties and more. Every aspect of its design is about creating a seamless online customer experience.

Planning smart

P&WC has introduced more than 25 P&WCSMART maintenance solutions across its product lines, aimed primarily at operators with older engine models. Initially launched for the PT6A and subsequently the PW100 series and turboshaft engines, P&WCSMART solutions provide a competitive, guaranteed fixed cost for major engine maintenance, helping to eliminate price variables and uncertainty.

Under the P&WCSMART program customers pay a flat rate and either receive another freshly overhauled engine or get their original engine back after its 40- to 45-day refurbishment. There is no additional charge for any remedial work resulting from the use of non-OEM parts, or from the effects of erosion, corrosion and sulphidation.

Already attracting repeat business from customers, P&WCSMART offerings include engine exchanges, upgrade programs, flat-rate overhauls, extended warranties and more.

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Broker Sees Mexico as Top Performer in Latin America

While aircraft broker Jetcraft believes Brazil's bizav fortunes will soon revive, it is pinning its more immediate hopes for Latin America on Mexico. According to Fabrice Roger, sales director for Latin America, Mexico is by far the main market in his territory and it has a growing economy, even if its currency is as weak as Brazil's real.

Roger—based in Mexico—told **AIN** that Brazil has the "double effect of weak currency and low confidence" whereas Mexico is "the key market for us; the fleet is growing and it has lots of buyers and sellers." This year the company has sold two Globals, a Challenger 605, a Legacy 600 and a G450 in Mexico, "and we have other contracts, so we should sell 10 aircraft there this year." ❑

was begun by construction and paving contractor Roger Penido long before the business aviation boom. Originally envisioned as an industrial condominium next to one of the major Rio-São Paulo highways and with its own runway, Aerovale received one of the first federal licenses as a private airport allowed to charge for operations.

Early last year, claimed environmental protection violations paralyzed the project, and only in December was an agreement (known as "TAC") reached that allowed the project to proceed. The paralysis of nearly a year forced the company to seek protection from its creditors.

"We're working to meet the terms of the TAC. We're seeking an investor to finish construction of the airport," Noeli Penido, a representative for the developer, told **AIN**. "We strongly believe in the logistics focus. Once the airport is finished, there will be demand for Aerovale, despite the slowdown in business aviation."

Catarina Executive Airport, 40 miles west of São Paulo in São Roque, is the centerpiece of a project by publicly traded luxury real-estate developer JHSF. While earthmoving is well advanced, JHSF's other projects have been hurt by the economic slowdown, and the group is understood to be open to proposals to invest in the airport.

Meanwhile, the São Paulo state airport authority has steadily improved Sorocaba Airport, investing state funds when federal promises failed to materialize. The runway has been lengthened to 5,347 feet and the ramp doubled in size to 159,300 sq ft. Two new taxiways have been constructed and the four existing ones widened. While the runway extension awaits certification by Brazilian aviation authority ANAC, construction of a control tower continues, with equipment expected to be installed and ready next year.

Embraer recently opened its first FBO at Sorocaba, along with a service center that this year received EASA and FAA certification. This is one of 34 maintenance shops in Sorocaba, where Pratt & Whitney Canada, Gulfstream and Dassault have similar facilities.

World-Way Aviation opened its Air Elite FBO at Sorocaba this year. Heavily capitalized startup CB Air, after 20 years as the flight department of retail giant Casas Bahia, received its Part 135 charter certificate in January last year, and its 107,600-sq-ft facilities at Sorocaba now include an FBO.

Brazilian Bank: Finance Deals Have Suddenly Picked Up

Bradesco, Brazil's biggest bank and largest aviation lender, says it has seen a sudden uptick in demand for financing business aircraft. According to management team member Francisco de Assis Bernardi, the bank financed no aircraft in this year's first half but in July and August started working on 12 finance contracts that it fully expects to close. "I hope that the market will return; it's already possible to feel a difference," he told **AIN**. The whole process of aircraft acquisition is conducted in dollars (though the final transaction is converted to reals). With the returning strength of the real, the bank now has financing for several imported aircraft under way.

Bradesco is also seeing more interest on pre-owned aircraft sales within Brazil. Asked whether Embraer receives special treatment as a domestic manufacturer, he noted that a government program that offered fixed interest rate loans on domestic products had been suspended in January, depriving the Brazilian airframer of that advantage. But he added that "the company's new factory in [Melbourne] Florida puts it on the same competitive footing Cessna." ❑

Progress at the Aerovale development in Caçapava stalled while the developer addressed environmental concerns.

Despite economic uncertainty, bizjet OEMs in Brazil for long haul

by Charles Alcock & Ian Sheppard

The day before this year's LABACE show opened, Marco Túlio Pellegrini, president and CEO of Embraer Executive Jets, told **AIN** that Embraer's aircraft offer Brazil a powerful facilitator of economic development. Speaking at Embraer's new São Paulo offices, he said the country is feeling that it has reached the bottom of the current recession and that its currency feels more stable, having recovered somewhat against the U.S. dollar.

"Brazil is a large country, not well served by air, but the bizjet can help a lot to speed the recovery," he said, adding that Brazil's entrepreneurs are largely unaware of the potential time savings for their companies. Business aviation would allow them to visit several cities in a day when such a trip by airlines would take several days, if possible at all. He gave the example of a journey starting in São Paulo, with whistle stops in the capital Brasilia, Recife and Curitiba, then back to São Paulo.

Embraer's ambition is to see more charter companies and FBOs emerge. A business model involving expanded use of business jets, many of them leased, could be a powerful catalyst to see the sector develop rapidly, with knock-on economic benefits, Pellegrini maintained.

"Today the charter business and traffic is low, but this could be an opportunity for everyone," said Pellegrini.

He concluded that business aircraft unit sales overall this year will likely end up around the same as last year's. However, he lamented the fact that margins on sales do not appear to be holding up.

Dassault presented its new flagship Falcon 8X for the first time in Brazil at the LABACE show. The long-range jet will enter service in Brazil during the fourth quarter of this year if certification by the country's aviation regulator, ANAC, proceeds as expected.

The 6,450-nm 8X has the range to connect São Paulo to destinations as far afield as Moscow, which means it can also make all of Europe and the U.S. nonstop from the Brazilian city. "Feedback from the operational trials—cabin comfort, air conditioning and in particular cabin noise—was excellent, and indicates the aircraft is poised for a flawless service entry," said Dassault senior vice president Olivier Villa. "Moreover, new innovations in aircraft insulation will allow us to further lower cabin noise compared to the Falcon 7X." Production of the 8X is continuing to ramp up to meet growing demand. Serial number 429 is in final assembly at Dassault's Mérignac production plant near Bordeaux in southwest France, and 15 aircraft in all are in the final completion phase.

"Brazil has shown strong demand for the 8X since we announced the program two years ago, with four of the first 20 aircraft scheduled to be delivered there," commented Dassault Falcon president and CEO John Rosanvallon. "That's a great sign of a Brazilian market that might be turning the corner for the better," he commented.

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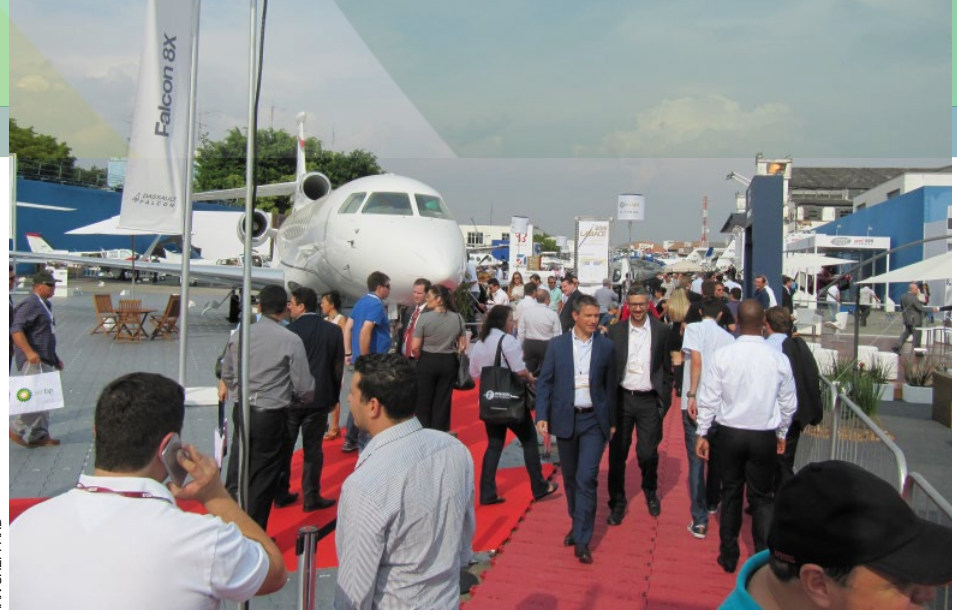

IAN SHEPPARD

The three-day 2016 LABACE show opened at São Paulo's Congonhas Airport on August 30 with a slightly lower turnout than last year, but OEMs still see promise in the region. All the major manufacturers were on hand, including Dassault, which showed its flagship Falcon 8X in Brazil for the first time.

IAN SHEPPARD

▶ *Continued from preceding page*

The manufacturer believes that its Dassault Aircraft Services subsidiary in Sorocaba is "key" to Falcon success in Brazil. To meet the needs of South American customers, it recently added $3 million to the parts inventory there (taking the total beyond $7.5 million), and has continuously added repair capabilities since 2009.

Bombardier sees demand for 790 new business aircraft in Latin America over the next decade. According to the Canadian airframer, Latin America, which will see an average economic growth of 2.3 percent a year, is the third largest market for business aviation and a relatively mature market for business jets, with Argentina, Brazil, Mexico and Venezuela accounting for 80 percent of the existing fleet of 2,015 aircraft.

Bombardier's Latin American fleet consists of 570 aircraft. The manufacturer noted the Challenger 350 and Global 6000 are its best selling aircraft in the region.

"Latin America received 10 percent of the world's business jet production last year," a company spokesman told **AIN**. "Deliveries in Latin America are expected to remain steady over the next few years as the region's economy continues to improve."

Of the 790 predicted aircraft deliveries, 80 percent will be in the light and midsize class, with an overall value of $20 billion, Bombardier's forecast stated. The light category will account for 50 percent of all Latin American deliveries over the 10-year period with 390 aircraft valued at $4.5 billion, while 275 midsize jet deliveries are forecast over the same period, with a value of $8 billion.

Transaction Times Drag

It's not that aircraft aren't being sold today in Brazil and other parts of Latin America, but that transactions are taking longer to conclude, according to Gulfstream Aerospace. "We haven't seen a big decrease in discussions about [new] aircraft; the difference has been that customers are taking longer to make a decision," said Fabio Rebello, regional senior vice president for sales in Latin America. "There are still factors that make it uncomfortable to make a decision [to purchase] but we are now looking at a better horizon that will allow us to move on."

Gulfstream showed the G280, G550 and G650ER at LABACE. "We want to show that the G280 is a regional aircraft that can reach the whole of Latin America nonstop, or the U.S. with one stop," Rebello told **AIN**. Gulfstream believes that Latin America's vast geography plays to the strengths of its products. Two of

Continues on page 53 ▶

‘Father of Boeing 747’ flies west

by Ian Goold

Joe Sutter, “father of the Boeing 747,” died on August 30 at the age of 95 after a career of truly jumbo proportions. He joined Boeing Commercial Airplane aerodynamics group in February 1946, “debugging” the 377 Stratocruiser, which provided engineering, flight-test and regulatory experience, before heading 367-80, 707, 727 and 737 aerodynamics. Sutter originated the latter’s flush wing/engine mounting and shared in the twinjet’s design patent.

Joe Sutter

In 1965, taking a rare week off at his holiday cabin, Sutter received a phone call from Boeing Commercial chief engineer Dick Rouzie inviting him to lead studies for a new design “much larger” than the 707. Uncertain if it was a good career move, he agreed because “it meant a program of my own.” Designing a large long-range airliner was precisely what Sutter had dreamed of “ever since I was a kid.”

He cut short his holiday and began assembling a team. Sutter believed he was picked to lead development because engineers his senior were designing the supersonic 2707: “I was simply at the right place at the right time.”

Sutter tells the story, culminating in appointment as executive vice president for engineering and product development, in his autobiography, *747*. After retirement in 1986 he remained a consultant on Boeing’s senior advisory group, maintaining an office at Boeing for another 20 years, while keeping a close eye on industry developments.

This writer met him first while working for **AIN Singapore Airshow News** in 2002. As we watched the A340-600 display, it was impossible to gauge from Sutter’s expression and vocal tone whether he felt any disappointment that it was not a 747 performing. With the elegant European widebody going through the signature Airbus routine that culminates in the pilot selecting landing gear down during a negative-g pushover, he turned and said almost plaintively: “I wish they wouldn’t do that.”

Sutter closes his account of life at Boeing relating how often, during 15 or more years of consultancy from the mid-1980s, he returned from Tokyo to Seattle following overseas business. In a couple of hours’ aircraft watching at Narita airport, he would count as many as 55 of the big quad-jets passing through.

“The last time I did this, I had the strongest feeling that the guys who helped me design the 747 were standing there with me,” he recalled. “So many members of our team are gone, of course, but I found myself wishing we could have a reception at Narita. There would be no need for entertainment—just seeing all those 747s touch down, one after another, would have been enough. It would have shown how we changed the world.” ❑

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NBAA PREVIEW

Winging to Orlando

by Matt Thurber

It's no surprise that this year's NBAA Business Aviation Convention and Exhibition (November 1 to 3) will be held at the Orange County Convention Center in Orlando, Fla. After all, the show is ranked sixth largest in the U.S., and there are not many places with a large enough facility and a nearby airport for the static display. For the next few years, the show will bounce back and forth between Orlando and Las Vegas.

Visitors will notice one big difference this year: the host FBO is still the same facility at Orlando Executive Airport, but it is now owned by Atlantic Aviation, which purchased the former Showalter Flying Services FBO early last year.

Dozens of aircraft are expected at the static display at Atlantic Aviation, and this includes some unusual candidates such as a SPAD XIII World War I biplane at the Dassault Falcon display (a young Marcel Dassault designed its propeller) and the first NBAA appearance of the Pilatus PC-24 light jet. Gulfstream is bringing seven aircraft this year, including the new fly-by-wire G500, which is making its first appearance at an NBAA show. Joining the SPAD at the Dassault Falcon display are five jets, including the Falcon 8X, and the 5X mockup. Bombardier will also bring seven jets, including two Learjet 75s, two Challenger 650s and a 350 and a Global 5000 and 6000. Textron Aviation is bringing the most airplanes from one manufacturer, 10 turbine-powered airplanes ranging from the Caravan EX turboprop to the Citation X+ jet, as well as cabin mockups for the in-development Citation Hemisphere large-cabin jet and Cessna Denali single-engine turboprop. The convention center will also host more aircraft at the indoor static display.

At this year's show more than 1,100 exhibitors and 27,000 attendees are expected. Before and during the show, more than 50 education sessions are on tap, ranging from operational and regulatory issues to taxation, small flight departments, security issues and fatigue management among maintenance professionals.

This year will again feature the Innovation Zone on the floor of the convention center exhibit hall with unique presentations on technology-related issues. "This includes discussions about protecting airport air traffic from unmanned drones; possible industry uses for emerging consumer technologies; and how to be a leader in your company, even if you aren't in management or a supervisory role," according to NBAA. Before the show opens on November 1, the popular NBAA Single Pilot Safety Standdown will focus on owner/operator flight safety issues.

Leadership Lessons

Attendees will have the opportunity to hear from FAA officials on November 2 at the annual Meet the Regulators session, scheduled at 3 p.m. The session will feature Peggy Gilligan, FAA associate administrator for aviation safety, and other senior officials discussing the agency's new compliance philosophy, the ADS-B OUT equipage deadline and other operational issues.

MARIANO ROSALES

David McCullough, author of *The Wright Brothers*, will deliver a keynote address on "Lessons in Leadership" during the opening general session on November 1. "As everyone knows, the Wright Brothers were visionaries, and like any visionaries, they confronted many challenges in their work to achieve their dream of powered flight," said NBAA president and CEO Ed Bolen.

"One true measure of their leadership is how they responded to those challenges, and we are excited to hear David McCullough's perspectives on how the brothers worked together, each with his particular strengths, to overcome challenges and make history."

Also on tap for the opening session is U.S. Customs and Border Protection (CBP) Commissioner Gil Kerlikowske. Sworn into office in March 2014, Kerlikowske has been lauded for his efforts to collaborate with the business aviation community on key access issues. He has repeatedly met with NBAA president and CEO Ed Bolen on these issues, and the CBP has established a working group to focus on general and business aviation.

Kerlikowske had been set to address the session during last year's NBAA show but was forced to cancel in the wake of the Paris attacks in November.

"Commissioner Kerlikowske views business aviation as a security partner and has demonstrated his willingness to work with industry to reduce delays, streamline operations and facilitate entry into the U.S. without compromising CBP's primary mission of security," said Bolen.

"We look forward to having the commissioner at our convention and hearing how the efforts of the past year, such as the formation of a CBP working group focused specifically on general aviation, have furthered the agency's service to our aviation segment," he added.

Among the topics that will be addressed at the convention and the opening session, ATC privatization is a strong candidate. Speaking at the NBAA regional forum at Westchester County Airport in White Plains, N.Y., on September 15, Bolen said, "This is not a fight that is going to go away."

The second-day opening session on November 2 promises to be a fascinating dive into the U.S. political scene as the countdown accelerates to the November 8 presidential election. Political veterans, husband and wife James Carville and Mary Matalin, both on opposite sides of the political spectrum, will once again highlight the topical political issues facing voters.

"This has been an extraordinary year in American politics," said Bolen. "We look forward to having James Carville and Mary Matalin at our convention, and hearing their insights and predictions, just a week ahead of election day." ❑

ATC PRIVATIZATION FIGHT NOT OVER, BOLEN SAID AT FORUM

With the general elections next month, the business aviation industry should expect a continuing debate on the possibility of ATC privatization. That was the message from NBAA president and CEO Ed Bolen as he opened the association's regional forum at Westchester County Airport in White Plains, New York last month. "This is not a fight that is going to go away," he said. Indeed, at the Airlines for America (A4A) summit in Washington, D.C., earlier in the week, A4A chairman and American Airlines president and CEO Doug Parker warned of "myths and distortions" by "corporate jet lobbyists who accuse the commercial airlines of plotting to take over the air traffic control system through privatization."

Meanwhile, Bolen called the event a "celebration of business aviation," noting the jobs and economic development it fosters. Westchester County executive Robert Astorino acknowledged the industry's impact, stating, "Whatever it is that we can do to make your life easier, we will try to do, because we want you here."

The one-day forum featured 184 exhibitors, housed for the first time at a regional forum in a purpose-built pavillion, and 50 aircraft on static display bringing it close in size to NBAA's co-organized annual ABACE show in Shanghai. The show attracted more than 2,800 visitors.

The session concluded with the presentation of the association's Order of the Silk Scarf to Westchester Aviation Association's John Johnston, the former director of flight operations for Verizon and McGraw-Hill. He is currently a contract corporate pilot. *–C.E.*

MIKE NICHOLS/NBAA

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As ever, you can count on **AIN** for full coverage of the 2016 NBAA Convention. Our team will publish three of our award-winning daily **NBAA Convention News** editions at the show on November 1, 2 and 3. We will also have comprehensive real-time reporting of all the top news at **AIN**online.com and in our daily e-newsletters. If you are an exhibiting company that wants to share news or propose pre-show interviews and briefings please contact show editor Matt Thurber at mthurber@ainonline.com. ❑

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M600

Piper's Best Performer

by Matt Thurber

PILOT REPORT

Piper's new M600 single-engine turboprop, while not a clean-sheet design, is a logical addition to the Vero Beach, Fla. manufacturer's product line and delivers a big boost in performance for a competitive price. Now the top of the line in Piper's M-series, the $2.853 million M600 also expands the range of products offered by Piper and pushes it closer in performance and capability to competing airplanes while retaining the comfort and easy flying characteristics that are a Piper hallmark.

During the EAA AirVenture show in Oshkosh in July, I flew the M600 with Piper chief test pilot Bart Jones. Piper positioned the M600 at Appleton International Airport, where the flying is more flexible than in Oshkosh, with its busy runways and airspace. Our flight wasn't too long because of a slow-moving thunderstorm approaching the airport, but we were able to climb to 16,000 feet and evaluate performance and handling characteristics.

Subtle changes mark the physical difference between the M500 and M600; most noticeable is probably the M600's slightly upturned winglets, which add 0.16 inch to the wingspan. The wing is new and strengthened to accommodate the higher maximum takeoff weight of the M600, which is 6,000 pounds, up from the M500's 5,092 pounds, and the increased fuel capacity, now 260 gallons, up from the M500's 170 gallons. Also new is the radar pod on the right wing, now more streamlined and more aligned with the leading edge.

The M500's 1,000-nm NBAA IFR maximum range (100-nm alternate), while sufficient for a single-engine airplane, has long been on Meridian/M500 owners' wish lists for improvements, and the M600 boosts that number significantly to 1,484 nm. The M600's maximum range, in fact, ended up 284 nm better than originally projected. With a standard equipped weight of 3,650 pounds, about 200 pounds higher than the M500, the M600 can carry a payload of 645 pounds with full fuel; under the same conditions the M500 has a payload of 550 pounds. The added fuel capacity of the M600 allows much more loading flexibility for trips requiring maximum range.

The M600's maximum cruise speed is now 274 knots, 14 knots higher than the projected 260 knots (which is also the max speed of the M500). The performance gain is attributable to the Pratt & Whitney Canada PT6-42A engine, the same as the M500's but flat-rated to 600 shp instead of the M500's 500 shp. "Now, rather than pulling 1,313 ft lbs of torque at max power," Jones said, "it's going to pull 1,575."

For pilots, the big improvement is the upgrade to the Garmin G3000 integrated flight deck, from the G1000 system in the G500. The G3000 is controlled by two GTC 570 touchscreen controllers mounted in a tilt panel below the center multifunction display (MFD). This required moving some switches around, but also allowed Piper to remove items that cluttered the cockpit, such as the Garmin GCU 476 keypad and the audio panel. All these functions now reside in the much simpler to operate touchscreen controllers.

In the M600, all three cockpit displays now measure 12.4 inches, an improvement on the M500's two 10-inch primary flight displays (PFDs) and single 12.4-inch MFD. The larger displays make the cockpit look more consistent and add to the less cluttered feel.

One of the switches that was updated is the flap control, which is a solid white flipper-type switch flush with the panel instead of the M500's black flap-shaped vertically operated switch. The flaps in the M600

Compared to the M500, the M600's main landing gear is six inches wider and mounted to a new, stronger wing with 50 percent more fuel, subtle winglets and a redesigned radar pod.

The M600 features the Garmin G3000 with three 12.4-inch displays. The Electronic Stability Protection system, also available on the M500, has the additional benefit of an emergency descent mode in case of pilot hypoxia.

Piper M600 Specifications and Performance	
Price (base)	$2.853 million
Engines (1)	Pratt & Whitney Canada PT6A-42A, flat-rated at 600 shp
Avionics	Garmin G3000
Passengers (typical)	1 crew + 5 pax
Range (w/NBAA reserves, 100-nm alternate)	1,484 nm
High-speed cruise	274 ktas
Long-range cruise speed (intermediate cruise)	250 ktas
Fuel capacity	260 gal/1,742 lbs
Max payload w/full fuel	645 lbs
Ceiling (certified/non-RVSM)	30,000 ft/28,000 ft
Cabin altitude at certified ceiling	10,650 ft
Max takeoff weight	6,000 lbs
Takeoff field length at mtow (sea level, standard)	2,635 ft
Landing distance	2,659 ft
Length	29.7 ft
Wingspan	43.16 ft
Height	11.3 ft
Cabin	
Width	4.125 ft
Height	3.92 ft
Length (instrument panel to rear bulkhead)	12.3 ft
Baggage capacity	20 cu ft/100 lbs
FAA certification (basis, date)	FAR Part 23, 6/17/16

are larger and extend down farther, to 41 degrees instead of 35, and the flap switch has only three positions: up, takeoff and down, while the M500 switch has four positions. The fuel system is unchanged, with the same on-off fuel selector and no need to switch between tanks.

A welcome benefit of the G3000 flight deck is the ability to display multiple panes on the PFDs. An example of the 60/40 split pane capability is display of synthetic vision in one 60 percent pane and a chart or other information in the 40 percent pane. The G3000 system also adds the enhanced map HSI feature, which allows overlay of information on the HSI such as map, SafeTaxi, flight plan, Metars, Nexrad and weather radar. While both airplanes feature Garmin's Electronic Stability Protection (ESP) with level mode button and underspeed/overspeed protection, the M600 adds an emergency descent mode. While flying above 14,900 feet, this monitors pilot response to message prompts to detect whether the pilot is affected by hypoxia, and if the pilot doesn't respond properly within a certain time the emergency descent mode will drop the nose and take the M600 first to 14,000 feet then 12,500 feet. The ESP feature allows the M600 (and M500) to fly coupled missed approaches.

The M600's maximum altitude is 30,000 feet, but it would require RVSM approval to fly above 28,000 feet, and this is not available for now. At 28,000 feet, the 5.6-psi cabin pressure differential provides a cabin altitude of 9,600 feet.

ADS-B OUT is standard on the M600, as is the automatic flight control system with ESP and emergency descent mode. Optional are ADS-B IN, Sirius XM Weather, GSR 56 Iridium satcom, L-3 WX500 Stormscope and Taws-B. Flight into known icing is included, too, but that system isn't scheduled for certification until December.

Cabin Comforts

Inside the cabin, the M600's seats have been redesigned with premium leather. Passenger side panels have a new interface along with multiple cupholders. Among the other interior appointments are USB charging ports, folding executive tables and folding seats. There are four seats in the aft cabin, with two forward-facing seats in the rear and two rear-facing seats behind the cockpit. The cabin measures 49.5 inches at its widest and is 47 inches high. The entry door is 24 by 46 inches, and baggage space behind the aft seats encloses 20 cu ft. Maximum weight allowed in the baggage compartment is 100 pounds.

Starting the M600's PT6 is a simple automatic process. The engine won't start unless certain items, including the Garmin GIA 63W integrated avionics modules or the landing gear's three green lights, pass their self-test. With fuel pumps and ignition set on manual and the start mode switch in auto, after pushing the start switch, wait for at least 13 percent NG, then move the condition lever to run and watch to make sure the ITT doesn't exceed 1,000 degrees C for more than five seconds.

The reversible Hartzell four-blade propeller can be operated in beta mode to keep taxi speed down, which is helpful because at the 1200-rpm idle, the M600 moves a little too quickly on the ground. The M600's mainwheels sit six inches farther outboard than the M500's, which should make a strong crosswind

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WHERE DOES THE M600 FIT IN THE MARKET?

The M600 makes it apparent that Piper recognizes the changing general aviation landscape. It used to be normal for manufacturers to make the same airplane year after year with few changes. But rapid developments in technology and a market that has shifted to buyers who appreciate regular introductions of new features mean that manufacturers can't sit still.

The M500 has proved popular, and adding the M600 to the mix was a smart move on Piper's part, achieving both a higher-performance upgrade that will keep many M500 owners in the Piper fold and offering an airplane that will also attract buyers moving into their first turboprop. That the M600 is so easy to fly and brings new technology that is a step up in ease of use—the G3000 flight deck—to the owner-flown market makes even more sense. Passengers will appreciate the smartly outfitted interior, too.

The single-engine turboprop is one of the stronger market segments; in the next few years, Textron Aviation's Cessna Denali and Epic's E1000 will join the dominant players (the M500, TBM 900/930 and Pilatus PC-12), offering buyers a range of price and performance from which to choose.

The M500 remains the lowest-cost entry-level pressurized turboprop, starting at $2.26 million, with range of 1,000 nm, top speed of 260 ktas and full-fuel payload of 550 pounds. For about half a million more, the M600 adds range (1,484 nm), speed (274 ktas), full-fuel payload capability (645 pounds) and the benefits of the touchscreen-controlled G3000 flight deck.

The only other sub-$3 million offering is the Epic E1000 ($2.95 million), which is expected to receive FAA certification early next year. The E1000 has a much larger engine (1,200 shp PT6A-67A), longer range (1,650 nm), the second-highest top speed in its class (325 ktas) and a hefty full-fuel payload (1,120 pounds). Avionics are the G1000 system.

TBM buyers now have two choices for new models: the $3.66 million 900 with the G1000 flight deck and the $3.9 million 930 with G3000. Both offer similar class-leading performance, with range of 1,730 nm, 330-ktas max cruise speed and 891-pound payload with full fuel.

Currently the most expensive in its class, the $4.055 million PC-12 has dominated the market for large-cabin single-engine pressurized turboprops for many years. With range of 1,840 nm, top speed of 285 ktas and 1,209-pound payload with full fuel, the PC-12 remains the best performer with a cabin that can seat up to six in the executive-configured cabin for a total of eight occupants. The other airplanes in this class seat up to six occupants, except for the Denali, which can also seat eight occupants in an executive layout, and which also features a large aft baggage door like the PC-12's. The $4.5 million Denali will offer range of 1,600 nm, top speed of 285 knots, full-fuel payload of 1,100 pounds and G3000 avionics, and it is expected to fly in 2018. Textron Aviation hasn't released the planned certification date yet.

For buyers in the market for a single-engine pressurized turboprop today, the choices remain the two Pipers, the two TBMs and the PC-12. For the time being the M600 is the lowest-cost new turbine-powered airplane offering the G3000 flight deck (the $2 million Cirrus Vision single-engine jet, which may be certified by the time this story is published, also is equipped with G3000-based avionics).

The M600 was certified on June 17, but Piper plans to build just 35 M600s per year to prevent a surge in initial orders and deliveries followed by a flattening out of production, which is difficult to manage. "We've already sold out this year, and we're taking orders for next year," said Piper president and CEO Simon Caldecott. "The M600 is the big thing for us." ■

M600

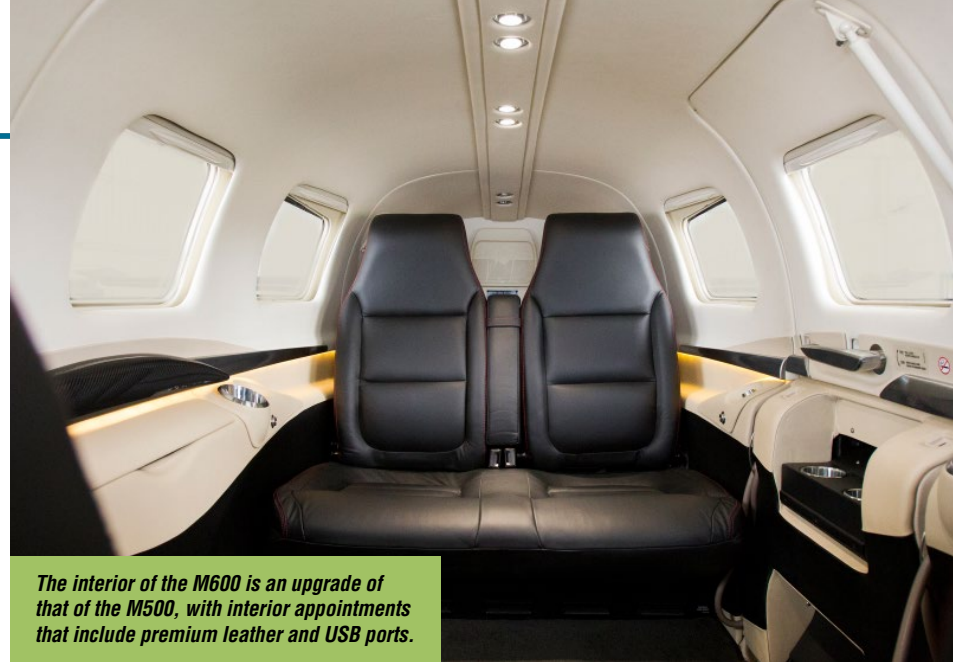
▶ Continued from preceding page

easier to handle. Demonstrated crosswind velocity is 17 knots.

With Jones and me on board and about 1,100 pounds of fuel, the M600 weighed just over 5,000 pounds. This is likely a typical load for the M600, about the same amount of fuel that the M500 can carry. If we were going somewhere, we would be able to fly about 600 nm at normal cruise speed of 257 kias at 20,000 feet and land with a 300-pound fuel reserve, plenty for more than an hour's flight time at cruise power settings.

The temperature was nearly ISA +10 degrees C, which should mean a ground roll of 2,000 feet and takeoff distance of 2,600 feet, but after I pushed the power to near maximum torque and lifted off from Runway 30 below 90 knots, we climbed into the air short of using 2,000 feet of runway. I lowered the nose after cleaning up the gear and flaps and accelerated to 140 kias instead of the 122-knot best rate of climb speed, and the M600 was climbing at 1,700 to 1,900 fpm then up to 2,500 fpm as we gained altitude.

Turning to the east to avoid the looming thunderstorm, I climbed directly to 16,000 feet, which took about 10 minutes, almost two minutes less than the number in the manual, and I wasn't even flying at the recommended climb speed. At that altitude and ISA +7, we had a choice between a maximum cruise speed of 250 kias and fuel flow of 358 pph or an intermediate cruise at the next lower setting of 241 kias and 332 pph. Piper recommends flying at max cruise, and it's easy to see why; the lower speed doesn't save much fuel. Slowing to the lowest intermediate cruise setting, however, would give a speed of 168 kias and 206 pph, which could be worthwhile given a strong tailwind or if needing to remain aloft for a long time.



The interior of the M600 is an upgrade of that of the M500, with interior appointments that include premium leather and USB ports.

Single-pilot Friendly

We didn't have too much time to work with because of the thunderstorms, but I managed to squeeze in some slow flight and handling evaluation. I'm used to the ESP nudging the controls when a turn steepens, and it didn't detract from the pleasure of flying the M600. It's a solid, stable aircraft with zero surprises. Of course, the ESP can be switched off using an option on the G3000 touchscreen controllers during a particular flight, but it resets for subsequent flights.

Descending from 16,000 feet, Jones had me keep the power up and I let the airspeed climb to the 251-kias (250-kcas) VMO so I could see how the ESP raises the nose to keep the speed within limitations, which it did, conveniently as we were passing through 10,000 feet and had to slow down to below 250 knots anyway. I continued descending and headed back toward Appleton, where we were directed on a base leg to Runway 3. The thunderstorm was getting closer but we could see that it was still well away from the airport on the M600's Garmin GWX 70 digital radar.

What I like about Pipers in general and the M600 in particular is that they never make me feel like I'm in a hurry, and there is plenty of time to manage all the tasks involved with flying single pilot. The G3000 suite does make this easier, but on the M600 it's easy to kill speed when needed or keep the speed up until close to the airport and then decelerate promptly, which makes it highly flexible. Gear operating speed is 170 kias, and once the wheels are down the M600 doesn't take long to reach 147 kias for the first notch (15 degrees) of flaps. Flap speeds in the M600 are lower than in the M500 because the surfaces are larger.

Passing through 112 kias, I set full flaps and turned final and reduced the speed to below 100, crossing the threshold at 85. Throughout the speed regime, the M600 handled perfectly and remained stable at the desired attitude. The landing was perfectly smooth, and we slowed down quickly enough to take the first turnoff less than a quarter way down the 8,000-foot runway. ❑

▶ Continued from page 46

its key markets, the São Paulo region and Mexico, are separated by a flight of 10 to 11 hours, prime territory for larger, longer-range aircraft.

There are now around 200 Gulfstream jets based in Latin America. In June 2014, the manufacturer boosted its customer support network for the region by opening a service center in Sorocaba, Brazil, to supplement facilities in Venezuela and Mexico. It has four field service representatives in Brazil and Mexico.

For the first time, at this year's LABACE Brazilian aviation services provider TAM Aviação Executiva displayed the full Textron Aviation product line. The São Paulo-based company was appointed as the country's designated Beechcraft dealer in February since then it has sold examples of all the airframer's offerings, including the Baron, Bonanza and King Air. TAM has been a Cessna distributor for three decades, and added Bell helicopters to its product lineup in 2004.

Maintenance Options

In February, Brazil's civil aviation authority (ANAC) certified TAM AE's new maintenance center at Aracati in the northeastern State of Ceará. It began operations as the largest business aircraft maintenance park in Latin America, capable of servicing up to 30 aircraft simultaneously. Combined with the company's operations in Belo Horizonte, Brasilia and Jundiaí, near São Paulo, it brings the company to 500,000 sq ft of shop space. Last year, Textron appointed the company an authorized service center for the King Air.

Brazil generally, and São Paulo in particular, have long represented a true hotspot in the global rotorcraft market. Demand may have cooled of late but that didn't deter Bell Helicopter from bringing a trio of its latest models to LABACE: a VIP-configured Bell 429, the latest 407GXP and a mockup of the new 505 single.

Speaking to **AIN** after signing another 429 contract with an undisclosed Brazilian customer, Jay Ortiz, Bell's v-p for Latin American sales, indicated that the local market might now be in recovery mode. "We've seen sales activity picking up in the last month. We normally see an uptick at this time of year. There has been concern about the state of the economy but the concerns were not well founded."

That said, Ortiz did acknowledge the demand-suppressing effect of the continued weak oil price and the resulting reduction in offshore exploration and production activity. At the same time, plans for government investment in new helicopters has also slowed but, according to Bell, has merely been delayed rather than cancelled. "The VIP market continues to be robust and in some cases people are looking to upgrade," he said.

For Bell, Argentina has been a bright spot in the continent since the country's December 2015 election, which brought a more business-friendly government to power.

A customer support facility is now under construction in the Argentinian capital Buenos Aires. ❑

Embraer touts its Phenom 300 as ideal for the charter market in Brazil.

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Strong U.S. market boosts mixed results at Gama

by Charles Alcock

Strong performance in the U.S. market offset declining demand in Europe, the Middle East and Africa, as business aviation services group Gama Aviation reported interim results last month for the first half of 2016. Gama also pledged to double the size of its operations over the next two years. For the period through June 30, group profits fell by 7.9 percent, from $30.3 million to $27.9 million on revenues that increased by 13.2 percent from $185.3 million to $209.8 million.

Gama revenues in the U.S. climbed by 40.8 percent to $116 million. However, the European market saw a decline of 16.5 percent, to $74.2 million, and the Middle East and Africa dipped by 9.2 percent to $10.8 million. In Asia, where the aircraft management, charter, FBO and maintenance provider began operations only fairly recently, Gama boosted its revenues from $1.4 million to $8.5 million.

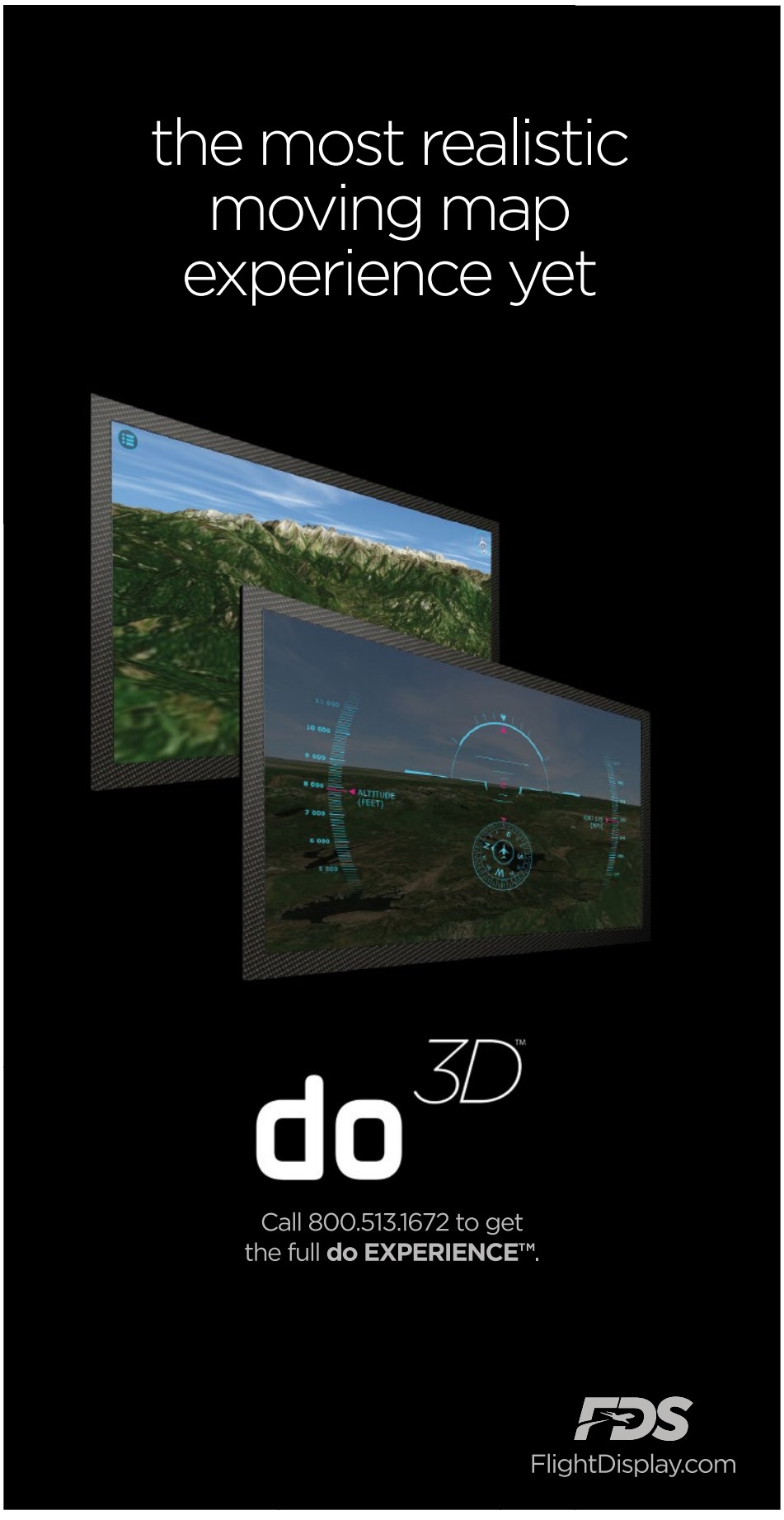
"Our growth strategy is on track," commented Gama Aviation CEO Marwan Khalek. "Organic growth will continue apace through the expansion of services and geographies, and we have a clearly defined path to continue our acquisitive growth in a highly fragmented global business aviation services sector. Our strategic goal is to double the scale of our business over the next two years."

Gama now has 153 aircraft under management worldwide, up by 10 percent from 2015. Much of the growth has come in the U.S. market through contracts such as its operating partnership with membership program Wheels Up.

In the U.S., aircraft management and charter accounted for most of the revenue growth in the first half of 2016, with the total rising by 44.1 percent to $109.8 million, while ground services, such as maintenance and FBOs, increased by just 0.2 percent, to $6.2 million. In Europe, ground services saw a 6.7-percent boost in revenues, to $18.6 million, but aircraft charter and management declined by 15.2 percent, to $55.6 million. Profits for aircraft charter and management in Europe dipped by 41.9 percent, which Gama said was due to a decision to terminate a number of underperforming legacy contracts, mostly involving flights operated in Africa but serviced from Europe.

Gama Aviation provides maintenance and mod services, as well as management and charter.

According to Gama, the second half of 2016 will see further growth for its activities in the U.S. market and also improvement in the Middle East. Some improvement also is anticipated in Europe, based on income from longer-term contracts for ground services and cost reductions in aircraft operations. The company indicated that market conditions are especially challenging in the area of discretionary items, such as aircraft modifications. ❑



JSSI Business Aviation Index: 'new normal' in utilization

Business aviation flight hours worldwide climbed by 4 percent in the second quarter of the year, according to the Q2 2016 Business Aviation Index released by maintenance support and financial services company Jet Support Services (JSSI). The index tracks business aircraft flight hours by region, industry and cabin type. According to the report, business aviation exhibited the typical uptick in activity over the first quarter but declined by 1.2 percent compared to last year's second quarter, a drop that could be attributed to caution about the Presidential election next month. It could also indicate what the company describes as a "new normal" of modest but prudent business aviation usage.

"Businesses are using private jets in a disciplined manner today," noted JSSI president and CEO Neil Book. "Q2 2016's flight activity, while slightly up over last quarter and down from last year, reflects a flat U.S. economy."

While usage by the healthcare sector was up by 17 percent quarter-over-quarter, that was largely cancelled out by retrenchment in other industries. "Over this quarter, oil prices rose to $48 from $38, but we saw a major slide in flight hours in the power and energy sector as many energy companies have taken cost-reduction measures to manage the significant decline in the price of oil," said Book.

During the first quarter JSSI saw growth in Asia-Pacific, Europe, the Middle East and North America. Of the four, only North America backpedaled year-over-year. Europe and South America recorded growth year-over-year. According to JSSI, since 2013, flight hours for most of the regions have become more stable with the exception of Africa, which continues to decline after peaking in 2011.

Overall, newer aircraft (zero to five years old) have seen a steady decline in average utilization over the last 20 quarters, JSSI noted, with several factors driving this trend: the breaking-in period for new owners necessitated by entry into service of new aircraft models, deliveries of new aircraft to emerging markets with lower utilization, and the immediate remarketing of newly delivered aircraft.

Older aircraft (six to 10, 11-15 and 15-plus years old) continue to see improvement from the lows of 2009, the result of broader availability of older aircraft on the resale market and depressed sales prices, JSSI determined.

Broken down by cabin size, only the small-cabin segment saw improvement in JSSI's 2Q index, up more than 7 percent over this year's first quarter and nearly 4 percent from a year ago.

"Flight hours in the large-cabin segment have seen a steady but gradual decline since Q2 of 2011, and after experiencing its lowest first quarter since 2009, Q2 saw more declines, hitting all-time lows in average flight hours," said Book. —*C.E.*

GE Honda Aero Engines

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AIN's

PRODUCT SUPPORT SURVEY

Part 3: Engines

GE leads in turbofans, Honeywell tops among turboprop OEMs

Data compiled by David Leach; text by Nigel Moll

GE CF34-3B1

AIN readers rank GE as the top provider of product support among turbofan makers this year, a distinction the company earned once previously in the past 10 years when it shared the top spot with Rolls-Royce in 2012. Williams has been king of the hill for eight of the past 10 years (sharing that honor once, with Rolls, in 2014). Rolls-Royce takes third place among turbofan makers this year, followed by Honeywell, Pratt & Whitney Canada and CFE. It should be noted, however, that the top four placers this year are each separated by only one tenth of a point.

By a much wider margin, Honeywell takes the top spot among manufacturers of turboprops and turboshafts, outscoring second-place finisher Pratt & Whitney Canada by 1.2 points. Safran Helicopter Engines (née Turbomeca) takes third place. Rolls-Royce (manufacturer of the ubiquitous 250 helicopter turboshaft) did not receive enough responses to qualify for inclusion in the survey report.

Among turbofans, the engine with the highest overall average score this year is the Rolls-Royce AE3007, besting the Williams FJ44, with which it tied for first last year. The GE CF34 ranks highest in overall reliability this year with a score of 9.6.

Among turboprops, the Honeywell TPE331 takes top honors in every single category, bar none.

General Electric

GE says that in the past year it has revitalized its Business & General Aviation (BGA) Customer Centric Technical Training, which is available to all GE customers and authorized service centers. The company has conducted six classes, two-thirds of them at customer locations, and says it received 100-percent satisfaction ratings from all attendees. A new web portal, myGEAviation.com, is now live. Operators now have direct access to all their related documents such as technical publications, fleet highlights and diagnostics reports. The new diagnostic reports provide a summary highlighting actions to be addressed. Compared with its predecessor, the new portal requires only half the number of clicks and relies on a "proven, stable digital backbone for 80 percent less downtime." Much of this simplification can be attributed to the greater rigor that GE has invested in customer engagement and listening sessions, according to the manufacturer.

In the past 12 months, GE has swelled the ranks of its field service representatives worldwide by 20 percent and now has 38 authorized service centers in its network; the last 15 additions to the network have been outside the U.S. "This year we welcomed several international ExecuJet locations to the network. We have also partnered with Lufthansa Technik Aero Alzey (LTAA), which provides maintenance support and mobile repair team capability into Russia, Europe, the Middle East and Africa. To date, they have been effective covering AOG and heavy maintenance

2016 Category Ratings of Engines		Overall Average 2016	Overall Average 2015	Ratings Change 2015 to 2016	Factory Service Centers	Auth. Service Centers	Parts Availability	Cost of Parts	AOG Response	Warranty Fulfillment	Technical Manuals	Technical Reps	Cost per Hour Programs	Overall Engine Reliability
Turbofan														
Rolls-Royce	AE3007	**8.5**	**8.3**	0.2	8.5	8.8	8.5	**7.9**	8.6	**9.1**	7.2	8.6	8.3	9.4
GE	CF34	8.4	8.0	0.4	8.1	8.1	8.5	7.1	8.2	8.5	7.8	8.6	**8.5**	**9.6**
P&WC	PW600 series	8.4	7.9	0.5	8.4	8.2	8.6	6.8	8.0	8.8	8.3	**9.0**	8.4	9.1
Rolls-Royce	Tay	8.4	8.2	0.2	8.7	8.2	**8.9**	7.4	**9.0**	**9.1**	8.0	8.4	7.1	9.4
Honeywell	HTF7000	8.3	8.2	0.1	8.8	**8.9**	8.0	7.0	8.3	8.2	8.0	7.9	8.4	9.3
Williams	FJ44	8.3	8.3	0.0	**9.0**	8.1	8.4	6.8	8.2	8.0	**8.5**	8.0	**8.5**	9.2
Rolls-Royce	BR700 series	8.1	8.0	0.1	8.2	8.3	8.1	6.6	8.2	8.4	7.4	8.6	7.5	9.4
P&WC	PW500 series	8.0	8.0	0.0	7.8	7.9	7.6	6.5	8.4	8.0	**8.5**	8.7	7.6	8.9
Honeywell	TFE731	7.9	8.0	-0.1	7.6	8.3	8.2	6.5	8.2	8.2	7.7	8.0	7.7	8.8
P&WC	PW300 series	7.8	7.7	0.1	7.5	7.9	7.8	6.7	7.9	8.5	7.9	7.8	7.5	8.7
CFE	CFE738	7.6	7.7	-0.1	7.6	8.0	7.4	6.2	7.9	8.2	7.5	8.5	5.6	9.1
P&WC	JT15D	7.5	7.8	-0.3	7.6	7.1	7.5	5.9	7.2	7.5	8.2	8.1	6.8	9.0
Turboprop/Turboshaft														
Honeywell	TPE331 turboprop	**8.9**	**8.6**	0.3	**9.3**	**9.3**	**8.4**	**7.6**	**9.3**	**9.1**	**9.0**	**9.3**	**7.8**	**9.8**
P&WC	PT6T/B/C turboshaft	8.0	7.8	0.2	8.4	7.4	7.8	6.8	8.0	8.5	8.7	8.3	7.3	9.0
P&WC	PT6A turboprop	7.6	7.8	-0.2	7.2	7.6	8.0	5.8	7.3	7.7	8.3	8.3	6.6	9.0
Safran	Arriel	7.5	7.3	0.2	8.0	7.4	7.6	6.4	7.4	7.0	7.4	8.1	6.7	8.2

** Companies are listed in order of their 2016 overall average. Ties are listed alphabetically.*

events across nine countries."

GE's CF34 is the high scorer for overall reliability in this year's survey, which underscores GE's claim of 99.99-percent reliability. "We continue to expand the scope of coverage and benefits of OnPoint for BizJets, GE's engine maintenance and support program. The coverage provides complete program management by an OEM expert, scheduled and unscheduled maintenance, line maintenance, transportation, loaner engines and diagnostics." Nearly half of all GE-powered business jets are now enrolled in OnPoint, compared with 20 percent five years ago, as customers heed GE's message that aircraft valuation companies place up to $2 million more residual value on aircraft covered by the engine program.

GE Honda

GE Honda Aero Engines (GHAE) is the 50/50 joint venture between GE Aviation and Honda Aero that developed, produces and supports the HF120 engine that powers the HA-420 HondaJet. The aircraft entered service only late last year and is therefore not included in **AIN**'s 2016 Product Support Survey. However, GHAE enters the ring with grand ambitions for product support, and it is included here to show operators of the new engines what they should expect from the manufacturer.

"From day one," says GHAE's Mike Tarantino, "we had key support goals we wanted to provide to our customers: make it easy to do everything; allow the engine to go anywhere and receive consistent high-quality support regardless of geographical location; and provide state-of-the-art engine diagnostics/management. To accomplish these, we developed a worldwide support network, web-based systems and digital engine health monitoring."

GHAE has partnered with 11 factory-trained authorized service providers (ASPs) to support the HF120. Each ASP provides owner/operators with line maintenance, parts, authorized service program and warranty work and technical support. GHAE has provided each ASP with access to any engine's data so the facility can manage any HF120 that requires support regardless of location and the engine's home base.

"GHAE has worked hard to be ready for entry into service and to provide 'no stress' support for the engine from day one. We have deployed dedicated field technical managers (FTMs) to support any technical need of owners and ASPs. Each ASP has a dedicated Customer Team Manager (CTM) to help manage logistics and commercial items such as warranty. GHAE has launched a support center to handle any support needs 24/7/365. A full support website was developed allowing owners full access to technical documents, AOG support and ASP contacts with one click. We have full capability to monitor engine health trends, with alerts and automated notifications. Our maintenance training facility has a fully functional HA-420 mock-up to provide as realistic a training experience as possible," added Tarantino.

GE Honda is offering a by-the-hour engine maintenance plan for the HF120 called Engine Maintenance Care: EMC Comprehensive (EMC2) is a full program that covers all line and shop maintenance (labor and parts) as well as training, engine health, rental engines, Service Bulletins, training and tech pubs; EMC Basic caters to customers that want a materials-only program.

"The GHAE support program is differentiating itself as a premier engine supplier to the industry, making support as easy as possible and providing unsurpassed engine availability to our customers. The GHAE support network has been operational since the fall of last year, ahead of EIS. All aspects of the support systems and functions have been tested and exercised; the results are exceeding our goals," concluded Tarantino.

Highlights of HF120 product support: ASP network in place; support website launched; 24/7 support center operational; Engine Maintenance Care (EMC) program available; MRO is established and co-located with new engine production; parts warehouse established; online warranty/EMC claim process established; online 3D manuals linked to aircraft maintenance manuals; support/field personnel in place; engine health and trend monitoring in place; rental engine pool established; LRU rotable pool established; co-located—new spares, MRO, rotable LRUs and rental engine pool; training facility with aircraft mock-up; online parts ordering; and mobile repair teams in place.

Overall Average Ratings	Overall Average 2016	Overall Average 2015	Ratings Change 2015 to 2016
Turbofan			
GE	**8.4**	8.0	0.4
Williams	8.3	**8.3**	0.0
Rolls-Royce	8.2	8.1	0.1
Honeywell	8.1	8.0	0.1
P&WC	7.9	7.9	0.0
CFE	7.6	7.7	-0.1
Turboprop/Turboshaft			
Honeywell	**8.8**	**8.5**	0.3
P&WC	7.6	7.8	-0.2
Turbomeca	7.3	6.8	0.5

**Companies are listed in order of their 2016 overall average.*

Williams

Occupying second place in this year's survey, Williams focuses on "ensuring proper maintenance practices are followed, responding quickly to our customers' needs, and providing the highest value for our engines," according to the company's Steve Shettler. "All authorized service centers are required to have technicians trained by us at our facility so we can be sure the people working on our engines know the correct maintenance procedures. We have recently added to our website various training videos and answers to common questions to help maintainers refresh themselves on specific maintenance actions before accomplishing them."

To supplement training of authorized service center mechanics at Williams's facility, the company has developed a training course to familiarize owners and operators with the

Continues on next page ▶

GE CF34

SURVEY RULES AND METHODOLOGY

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

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

The survey website was open from May 2 to June 15. Respondents were asked to rate individual aircraft and provide the tail number, age (less than 10 years old or more than 10), primary region of service and whether they used factory-owned or authorized service centers, or both. Respondents were also asked to rate, on a scale from 1 to 10, the quality of service they received during the previous 12 months in the following categories:

- **Factory-owned Service Centers**–cost estimates versus actual time, on-time performance, scheduling ease, service experience.
- **Authorized Service Centers**–same as above.
- **Parts Availability**–in stock versus back order, shipping time.
- **Cost of Parts**–value for price paid.
- **AOG Response**–speed, accuracy, cost.
- **Warranty Fulfillment**–ease of paperwork, extent of coverage.
- **Technical Manuals**–ease of use, formats available, timeliness of updating.
- **Technical Reps**–response time, knowledge, effectiveness.
- **Cost-per-Hour Programs**–cost versus benefits, ease of administration.
- **Overall Product Reliability**–how the product's reliability and quality stack up against the competition.

Respondents were also asked to recognize individuals who have provided them with exceptional product support and service. The full list of these people is available online at www.ainonline.com/above-beyond-2016.

The 2016 **AIN** Product Support Survey results for aircraft were published in the August issue, and the avionics results were featured last month. ■

Williams FJ44-3

▶ *Continued from preceding page*

maintenance requirements of their engines. "Educating owners and operators helps ensure maintenance is completed at appropriate intervals, and gives owners and operators confidence in what is being done to their engines, which minimizes expenses and downtime," said Shettler, adding that in the past year "we have reduced AOG downtime by 3 percent. Average hold time of customers waiting to talk to an advisor has been reduced by 9 percent, to the point that most callers experience no hold time."

The company says its TAP Blue maintenance program provides not only "reasonable and predictable operating cost to our customers" but also raises the resale value of the aircraft, providing peace of mind for owners on two fronts. "TAP Blue simplifies ownership, and enables owners to operate our engines confidently and with no surprises. Some key program coverage: major and minor scheduled inspections; unscheduled repair; all Service Bulletins (mandatory, recommended and optional); foreign object debris (FOD) damage; corrosion; and forgiveness of minimum annual utilization."

Rolls-Royce

Rolls-Royce created the Corporate Customer Council, an initiative that links customers directly to R-R Customer teams responsible for delivering services. The Council engages in "focused discussion on how to evolve and optimize customers' service experience. This drove improvements, including the following global developments for lease engines, spares parts, On-Wing Care, EHM, 24/7 Operational Service Desk, Rolls-Royce Care, and 3D Technical Publications."

R-R augmented its pool of lease engines to 150 for the BR710, AE3007A2/C2, BR725 and Tay 611-8C. "As the fleet grows, R-R will continue to add engines to ensure it meets demand. We also established lease engine storage locations in four sites across the USA in Los Angeles, Atlanta, Savannah and Indianapolis, and we have engines in Amsterdam, Dubai and Singapore," said Andrew Robinson, senior v-p services for business aviation. "Additionally, we significantly streamlined the leasing process, enabling us to respond to customers' needs more efficiently."

To return customers' aircraft to service faster when an event occurs, R-R added parts locations to complement existing U.S. and UK stores. The company opened its facility at Los Angeles LAX in 2013 and brought Dubai, Frankfurt and Singapore on line last year. It has plans to add "a significant number of additional sites globally in the coming year.

"Engine-specific expertise is required around the globe, which is why we increased our investment in factory-trained technicians and specialized tooling to more than $2 million." This investment includes capability to perform engine manual repairs, boroblending techniques and video borescope equipment. The On-Wing Care team expanded its international capability to Luton, Dubai and Singapore and now employs 55 technicians worldwide.

Last year R-R worked with OEMs to develop an automatic download capability for engine health monitoring data. "This removes the burden of manually downloading and transmitting data monthly," said Robinson, "while allowing us to be more proactive in monitoring engines, and enabling us to identify trends before they may cause operational issues."

Rolls-Royce BR725

Launched in September 2013, the 24/7 operational service desk has "significantly reduced AOG recovery times. Progress has been excellent—three years ago, averted missed trips were at 56 percent and AOG resolution time was 256 hours," Robinson said. "Today we are at 98 percent averted missed trips and resolve AOG issues within 24 hours."

Replacing Aeromanager, the Rolls-Royce Care portal was launched in June last year to address frustrations customers voiced regarding access to critical customer communications and other online services. "R-R will continue to develop and add features to Rolls-Royce Care throughout the year."

"We assembled a focus group to gain crucial insights and preferences to develop content in our technical publications," Robinson said. "We emphasize publications that offer the user a simple layout of instructions, required materials and tools. R-R customers can look forward to integration of current 3D pubs technology with the ability to access multiple operating systems in the near future."

Honeywell

The company introduced Aerospace Remote Connect (ARC), a screen connect tool that gives Honeywell engineers remote access to the computers of operators' technicians for maintenance support anywhere the Internet is available. ARC enables remote viewing and control of PCs, which allows for instant and accurate technical support and large file transfers. The ability to see and control exactly what is displayed on a customer's screen allows Honeywell engineers to diagnose issues and reconfigure systems without the need to be on site.

The 1,400 HTF7000-series engines now in service have logged 2.6 million hours and achieved 99.9-percent dispatch reliability, according to Honeywell. Cessna chose the HTF7700L to power the Citation Longitude.

This year marks the 40th anniversary of MSP, Honeywell's by-the-hour engine maintenance plan implemented by 180 service centers across 30 countries. The plan has provided coverage for 80 aircraft types. Honeywell chooses not to reveal how many aircraft are currently enrolled, citing "anti-trust and competitive" issues.

The HTF7000 was designed to achieve lower operating costs than previous generations of engines by the adoption of on-condition maintenance with no hard intervals. "Periodic inspections are performed on wing, so we stay on wing longer and avoid aircraft down time. LRUs can be changed without specialized tools."

As the number of aircraft powered by the HTF7000 series grows, Honeywell continues to expand its regional support of the engine. Dallas Airmotive was recently authorized as an HTF line service center to support engines in Brazil. In addition, StandardAero has been authorized by Honeywell as an HTF7000 major and minor maintenance provider for repair and overhaul services. StandardAero's facility in Augusta, Ga., will offer major overhaul, beginning in March next year, for HTF7000s on the Challenger 300/350, Legacy 450/500, G280 and the future Citation Longitude. StandardAero's support of the HTF7000 extends internationally to Europe, the Middle East and Africa with minor repair capabilities.

Honeywell Aerospace recently selected FlightSafety as its exclusive training provider. The two companies are working to certify engine courses for the HTS900 and LTS101 under Transport Canada and will also add EASA-approved engine maintenance training courses.

"Garrett grown and Honeywell honed," the TPE331 turboprop recently turned 50 and now comes in 18 models and 106 configurations. North of 13,500 engines have

Continues on page 60 ▶

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▶ Continued from page 58

been delivered to date, and Honeywell (facing new competition in the segment from GE) says it is focused on what advancements the next 50 years will bring.

"As an example, we recently added the capability to upgrade older TPE331s to the TPE331-10 configuration to expand engine power while saving customers money on fuel and operations. The entire turbine section is replaced with new-generation hardware. The -10 conversion improves time-to-climb by 10 percent, cruise speed goes up by an average of 25 knots and hourly total cost, including reserves, can be reduced by as much as 11 percent. It adds value to the aircraft that nearly matches the cost of the conversion. HSI and TBO are extended to 2,500 hours and 5,000 hours, respectively, contributing to a significant reduction in cost of ownership."

On the CFE738 (a joint Honeywell GE engine program), Honeywell says it has worked with Dassault to extend the under-cowl inspection interval (to 1,600 flight hours from 1,200 flight hours to coincide with other scheduled checks), reduced turn-around-times for repair events, continues to participate on the Dassault Customer Advisory Board to align priorities important to Falcon 2000 operators, and "continues to collaborate with GE on the CFE Company to make sure we are accurately forecasting spares needs maintaining appropriate stock level. We have a pool of 32 rental engines stationed at various locations across Europe and North America, providing worldwide AOG support. Rental assets can be stationed in Africa, Asia and South America as market conditions warrant."

Honeywell CFE738

Pratt & Whitney Canada

P&WC says it is making "step-change progress in preventive maintenance through its advanced diagnostics and prognostics solutions that provide near-real-time situational awareness about engine health, usage and trends." Today, P&WC's Fast (flight, acquisition, storage and transmission) system is installed on 600 P&WC-powered aircraft (including those operated by 20 regional airlines) and downloading 120,000 files per month—providing "critical data for deep analytics that are sent electronically to the customer within 15 minutes of landing." The Fast system automates the capture and analysis of engine and aircraft parameters and can provide wireless access to encrypted and secure FDR data. "It is helping customers move toward fully planned and predictive maintenance such as on-condition programs, thereby increasing availability, lowering costs and optimizing operations."

P&WC's "oil analysis technology program" provides on-wing monitoring for preventive maintenance. With 2,000 engines already enrolled in a customer trial since its launch in May this year, "the new technology has demonstrated in tests its potential to be hundreds of times more precise than oil analysis methods currently in use. The highly sensitive technology detects minute particles within engine oil, providing early and precise exposure of the deterioration in oil-wetted components well before a potential event occurs."

The company says its "first-call" resolution rate now consistently surpasses 80 percent and first-call technical recommendations are delivered in less than one hour. "We have also added 100 new rental engines to what is considered the largest rental inventory in the industry, with more than 850 engines deployed worldwide. Additionally, having made significant increases in our parts inventory over the past year, P&WC is able to respond to customer needs swiftly and effectively through its seven parts distribution centers around the world."

P&WC this year completed the progressive rollout of a new service portal, MyP&WC Power, to 20,000 users. "MyP&WC Power delivers several time-saving improvements over the previous portal, including full e-commerce capability on every device. Using MyP&WC Power, customers can easily search for and purchase parts across multiple trade publications, access their Eagle Service Plan (ESP) pay-per-hour maintenance entitlements, pay invoices online, request rental engines and register warranties."

The company says it has "transformed and enhanced its warranty services to increase the speed and agility in claim processing. To ease the claim submission process, every new P&WC engine warranty is now automatically activated, and we have reduced the authorization time for warranty exceptions 10-fold for special commercial support eligibility."

The company has added 12 new P&WCSmart features for general aviation, regional airlines and turboshaft customers, taking the number of offerings under the program beyond 30. P&WCSmart "simplifies engine maintenance and extends the life and value of aircraft while reducing operators' direct maintenance costs." The program offers engine upgrades, exchanges and flat-rate overhauls. "As a testament to the program's value, the number of customers has tripled in the past year, driving a two-fold increase in transactions. Given that guaranteed pricing is a business imperative for operators, the P&WCSmart program will expand, and we expect customer adoption to double in the next 12 months."

In July this year, P&WC launched a new pay-per-hour Eagle Service Plan (ESP) offering—called ESPecially for Your PT6—that provides up to the first 400 hours or two years of coverage under the maintenance plan at no cost to customers of new PT6As. "The new offer represents a value of up to $50,000 of coverage toward future engine maintenance events (depending on the PT6A model)."

P&WC is extending the basic TBO for PW210 turboshafts by 500 hours, to 4,000. The new TBO applies to both the PW210A and PW210S and represents a cost saving of 10 percent. P&WC also recently extended the basic TBO for the power section of the PT6B-37A by 50 percent, to 4,500 hours from 3,000, and extended the clutch inspection interval for the PT6T-9 by 60 percent, to 2,000 hours from 1,250. The company also extended the fuel nozzles inspection interval on the PW206/PW207 to 900 hours from 800.

PW307 turbofan customers operating with Fast can take advantage of an on-condition ESP rate for all engine maintenance that costs 10- to 20-percent less than what ESP customers without Fast pay. For PW308 customers operating with Fast, hot-section inspections are performed on-condition, allowing for more time on wing and reduced costs.

Pratt & Whitney Canada PT6A

Safran Helicopter Engines (formerly Turbomeca)

The company formerly known as Turbomeca says its 24-hour AOG service rate is at 98 percent for the fourth consecutive year. The parts service rate is over 95 percent for the third consecutive year, "although we now base the service rate on a five-day routine delivery period, instead of 15 days." Average repair turnaround times are now at 65 days for the Arriel and Arrius (down by 30 to 53 percent since 2013) and the repair service rate for engines, modules and equipment is now better than 95 percent. Pool availability has risen to an on-time dispatch rate of 98 percent for engines, Fadec and fuel pumps (FCU and HMU).

"We have reduced direct maintenance costs (DMC) and direct operating costs (DOC) by many TBO increases. Since last year, the TBO for the Makila 2 has been pushed to 4,000 hours, the Arriel 2S2 to 3,850 hours and the Arrius 2B2 HMU to 3,850 hours. Many reliability improvements have also been achieved: the Arriel 2 MTBF has increased by 25 percent since 2013 and on the

Makila 2 the mean time between unscheduled removal (MTBUR) rate is now 50 percent better than it was in 2011.

"Last year and early this year, we have reduced the maintenance burden of the Arrius 2F, Arrius 2B2 and Arriel 1D1 by implementing 3-D printing (for injector nozzles, for example) and new repair processes (for the Makila 2 gas generator turbine ring, for example)." Boost, Safran Helicopter Engines' online engine maintenance management service, went live this year, and the company launched Cap 2020, "a major expansion project at our Tarnos plant to improve customer support capabilities."

The company has 48 field representatives and 50 customer support managers (CSM) deployed at 12 "front offices" worldwide. "We endeavor to strengthen our proximity with all customers through our network of certified maintenance centers and distributors. Over the past three years, this network has grown by 40 percent and now counts partners worldwide, serving customers as closely as possible to their operational bases."

The company held 10 Customer Councils worldwide last year, during which interactive and working sessions were conducted with operators. Agenda topics are driven by operators' difficulties; "solutions are found together, and the operators regularly participate in the subsequent analyses and trials. The main concerns of our customers, whether they are related to products or services, are brought to the attention of Safran Helicopter Engines top executives through a specific process called the 'Top 5 irritants process.' Dedicated resources and budgets are allocated to eradicate these concerns as quickly as possible.

"Last year we solved several product and service irritants, among them Arrius 1 fuel HP pump resolver failure, cracks on Arriel 2S2 torque and temperature conformation cards and spurious fire detections on the Makila 2. We also extended warranty coverage and simplified the process for documenting claims. Since the launch of the 'Top 5 irritants process' in 2013, some 15 service irritants and 30 product-related irritants have been successfully addressed."

Last year Safran established a process, relying on a dedicated team in daily contact with operators, under which specific key performance indicators (KPIs) are calculated "using our front offices' perception of customer satisfaction and our specific performance measurements for each customer (technical events, service rates, treatment of complaints, warranties and so on). If a trend changes, even slightly, we try to be as proactive as possible by putting into place specific action plans to recover the situation."

Other new services introduced in the past year: a program that offers services for engines throughout their lifecycle, such as warranty extensions and pre-buy inspections; a pickup service that provides transport for engines and components requiring repair or overhaul; "5Star plans" tailored for small fleet operators; and an upgrade of the Tools customer web portal with a personalized dashboard that allows each customer to track the status of all requests and simplifies order requests (AOG, warranties and so on). ❑

PHILIPPE STROPPA

Safran Arrius 2R

Crunching numbers to find business aviation's best friend

by Charles Alcock

Looking for answers as to what November's U.S. elections might mean for business aviation, **AIN** sister publication *Business Jet Traveler* interviewed leading political analysts Mary Matalin and James Carville—both of whom have distinguished careers working for, respectively, Republican and Democratic administrations. Despite their diametrically opposed ideologies, Matalin and Carville are happily married and they also are enthusiastic private aviation consumers. (Read the article at www.bjtonline.com/CarvilleMatalin.)

Among many contentious comments in their respective interviews, Carville (who ran Bill Clinton's 1992 Presidential election campaign and was an advisor for Hillary Clinton's unsuccessful primary campaign in 2008) confidently asserted, "I bet business aviation has always done better under Democrats." This bold claim piqued **AIN**'s interest, prompting us to search for evidence that might substantiate it.

The task of quantifying business aviation's success or failure over the years is a thankless one, so **AIN** opted to keep it simple by analyzing general aviation aircraft shipment figures published each year by the General Aviation Manufacturers Association (GAMA). For the sake of consistency, we focused on annual shipment totals for U.S.-made aircraft from 1946 through 2015.

Across this 70-year period, the U.S. had a Republican president for 36 years and a Democratic president for 34 years. The total number of U.S.-made aircraft delivered during the Republican administrations was 191,318—making an annual average of 5,314. The total number of U.S.-made aircraft delivered during Democratic administrations was 242,648—making an annual average of 7,136.

However, the exceptional total of 35,000 deliveries reported by GAMA for 1946 appears to have been a statistical anomaly—perhaps attributable to an abnormal number of former military aircraft reassigned to civil duties after World War II. Removing this apparent blip reduces the Democrats average to 6,292, but still gives the party the edge over the whole period.

What's more, GA aircraft deliveries alone do not tell the whole story of the industry's fortunes over the past seven decades. The raw numbers do not take account of factors such as billing value and drilling into these quickly reveals statistical complexities that do not make for true like-for-like comparisons.

Most business aviation analysts point to factors such as gross domestic product (GDP) as one of the more solid indicators of underlying economic conditions. Analyzing GDP annual growth rates since 1972 (the start of the Nixon administration) shows that the rankings are between the two parties, with Republican presidents averaging 2.8 percent and Democrats 2.9.

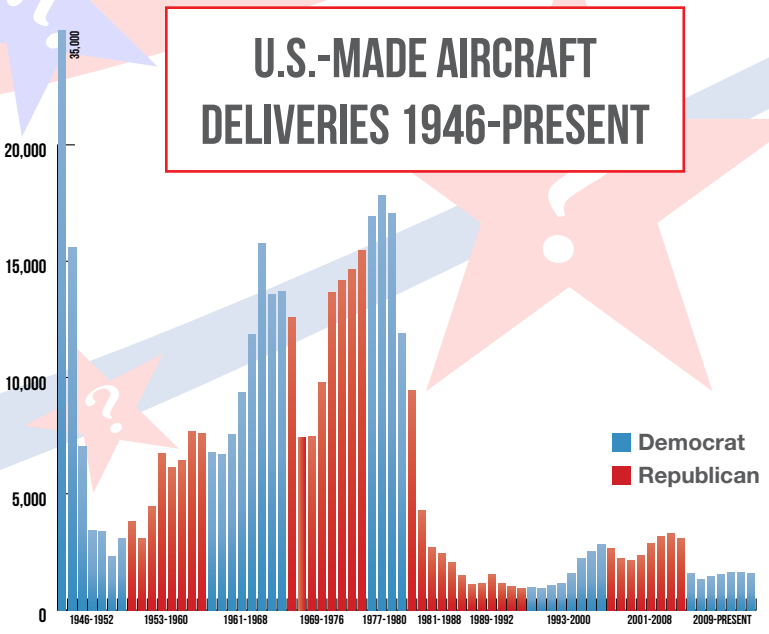
However, what the GDP averages do not reveal is the wider economic context. For instance, President Ronald Reagan—hailed by many Republicans as a shining-light advocate of American free-market economics—inherited GDP that was declining by 0.2 percent from his beleaguered Democratic predecessor, Jimmy Carter, and managed to finish his second term with 4.2-percent growth. However, this included fairly extreme fluctuations between minus 1.9 percent in 1982 and plus 7.3 percent in 1984. Whether Reaganomics alone explains this turnaround is something that economists likely will never agree on.

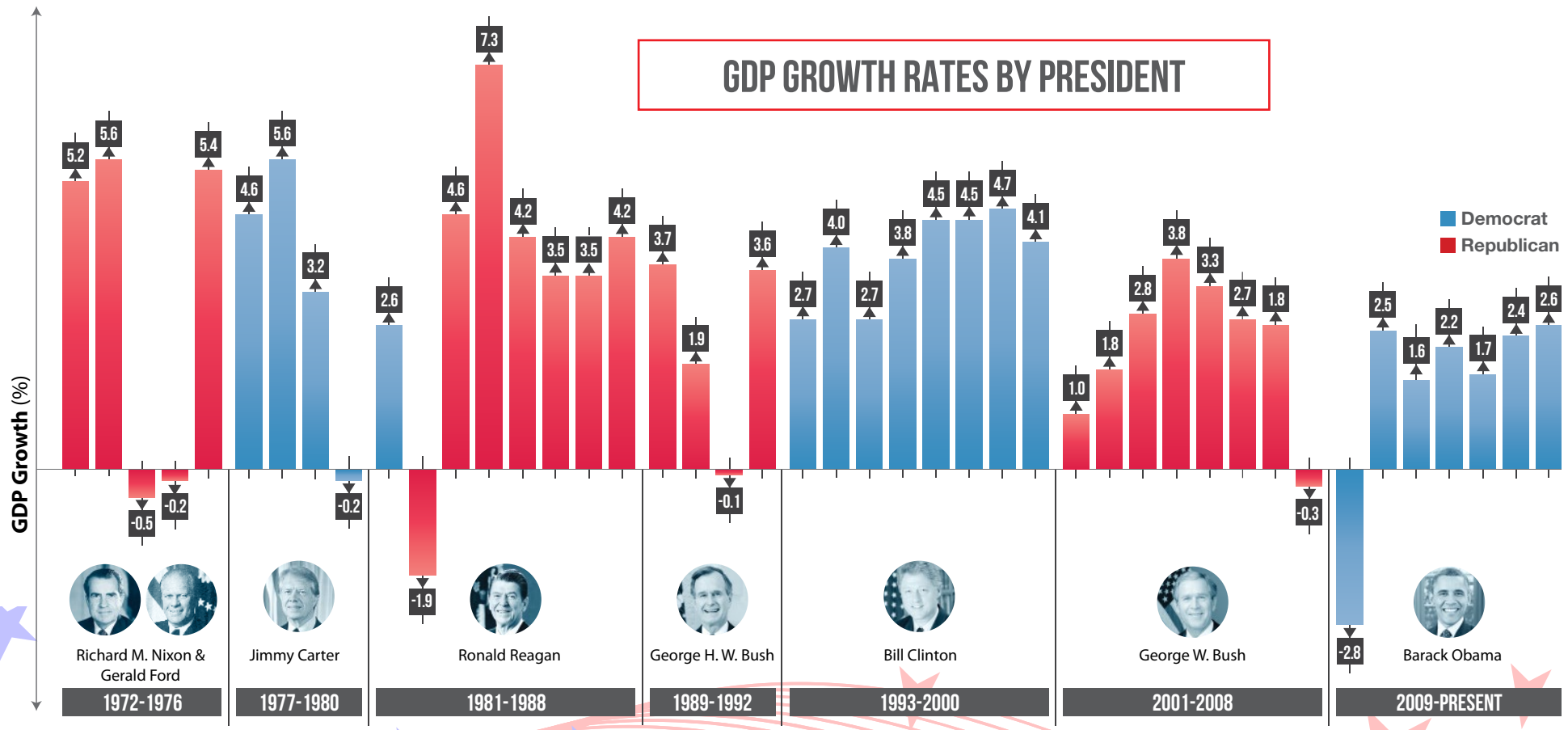
Similarly, President Obama inherited GDP of minus 0.3 percent from George W. Bush and by last year this had been reversed to positive 2.6. However, the Obama administration also has the questionable distinction of the lowest average annual GDP growth (1.5 percent) of the last seven administrations (going back to 1972).

All of this begs the question of whether U.S. GDP alone is the dominant driver of the fortunes of the country's business aviation industry. For instance, the financial crisis of 2008-09 had its origins in the sub-prime mortgage fiasco and resulting credit crunch, which hardly any economists foresaw and which had hardly anything to do with the core drivers of GDP. In so far as political blame for this can be attributed, there seems to be fairly clear consensus that the structural flaws in the financial system that allowed the crisis to occur did not have their origins in the policies of any one administration.

The fall-out from the calamities of 2008-09 is still reflected in GAMA aircraft deliveries, which remain at little more than half of the 2008 total of 3,079 aircraft. In so far as the industry has recovered from this setback, much of the credit would have to go to the temporary economic booms for the years 2011 to 2014 in key emerging economies such as China, Russia, the Middle East and Latin America. Conversely, softening rates of growth in these markets since early last year have clearly contributed to the continuing deceleration in business aviation growth that remains a drag on the industry despite relative stability in the U.S. economy (as evidenced by a largely strong stock market).

With the foundations for business aviation's prosperity now more global than ever, it is harder to argue that the sector's destiny rests squarely in the hands of even the world's most powerful head of state. That said, the global industry definitely still looks to the U.S. as its still dominant marketplace for inspiration and so will be hoping for a higher degree of certainty over business conditions once the seemingly interminable 2016 election season is over. ❑





Power balance might shift, but the same issues loom

by Kerry Lynch

The November elections are expected to bring some notable changes to the U.S. Congress with the control of the Senate possibly up for grabs and some key lawmakers at risk of losing their seats. But many lawmakers familiar to aviation circles are expected to return, and along with them, most of the same issues, including FAA reauthorization and air traffic control reform.

Many political insiders believe the Senate is the chamber to watch with 24 of 34 seats up for election currently held by Republicans. The numbers alone increase the possibility for a shift in control; Democrats would need to capture an additional four to five seats to win control, depending on the outcome of the presidential race.

A shift in power would alter the committee structures, including a change in the numbers of members from both parties on the committees, as well as a swap in chairmanships.

This means that Sen. Bill Nelson (D-Fla.), who is currently the ranking Democrat on the Senate Commerce Committee, would be in line to become chairman should the Democrats take control. The current chairman, Sen. John Thune (R-S.D), who is running for re-election, would then become the ranking Republican, should he win his race as expected.

Practically speaking, such a change might have little effect for aviation policy, aviation lobbyists say. Nelson and Thune are widely credited with working in a bipartisan fashion on many of the issues, including air traffic control reform. Nelson has taken a harder line opposing such reform. Thune has remained open to the concept, but has been unwilling to push forward a proposal that he believed had little chance of survival.

Nelson also has pushed more on the consumer advocacy front, and Democratic control could raise the visibility of the effort to increase the passenger facility charge (PFC). But as with ATC reform, the effort to raise the PFC has been ongoing for a number of years to little avail. Nelson has had concerns about reforms with the third-class medical but worked with backers to alleviate concerns and allowed a bill to progress.

Working closely with Nelson and Thune on these issues has been the aviation subcommittee leadership, including chairman Kelly Ayotte (R-N.H.) and ranking Democrat Maria Cantwell (D-Wash.).

Like Thune, Ayotte is running for re-election this year. But while Thune is considered "safe" by election prognosticators, Ayotte does not enjoy the same degree of certainty. Various polls have shown Ayotte both leading and trailing the Democratic challenger, Gov. Maggie Hassan. Aviation groups have credited Ayotte with supporting a number of their efforts, including certification reform.

"She understands the importance of general aviation not only in New Hampshire but its impact across the country. She is a very strong proponent in moving general aviation issues in the Senate," said James Coon, senior v-p of government affairs and advocacy for the Aircraft Owners and Pilots Association. "We're really watching that one closely."

Another seat that is being scrutinized is Pat Toomey (R-Pa.), a pilot who has teamed with Sen. Pat Roberts (R-Kan.) to push through an extension of bonus depreciation. Polls have had him narrowly trailing Democratic candidate Katie McGinty, a 2014 gubernatorial candidate who had been an environmental advisor in the Clinton Administration.

Downstream Effects

The races of Ayotte and Toomey are being widely watched not only from aviation circles, but also from a national level, with pundits questioning whether they will lose votes from the Presidential election. Political experts are questioning whether this year's race may translate in traditional Republican votes swinging Democrat, or keep some Republicans home altogether.

"Political pundits consider the 2016 Presidential election one of the most unpredictable ever and House and Senate members are taking the possible down ticket implications very seriously," said Bill Deere, executive v-p of government and external affairs for the National Air Transportation Association. "While control of the Senate in particular is certainly in play, I think the discussion about wrapping up work on a bill to fund the government into early December and then adjourning is indicative of the fact all members want to return to their states and districts [to campaign] as soon as possible."

While it is possible the House leadership could change, it is more likely the Senate leadership will flip. But the margin between Democrats and Republicans in the House is expected to narrow from the most recent breakdown of 246 Republicans to 186 Democrats (with three vacancies). As with the Senate, few think a change in the balance of power would bring much change in the debate on key aviation issues. But such a shift could result in a more difficult path for House Transportation and Infrastructure chairman Bill Shuster (R-Pa.) to push forward on his proposal to create a user-funded, independent not-for-profit organization to run air traffic control. House Democrats have been strong opponents of the effort.

Shuster, while considered safe in his bid for re-election at this point, has the unusual circumstance of facing the same opponent he ran against in the primary. The lawmaker squeaked by Tea Party candidate Art Halvorson with a 1,200-vote margin out of 97,500 cast. But Halvorson had enough write-in votes in the Democrat primary that cleared a path for him to run as a Democrat. Few believe the switch in party will enable him to capture the seat.

The general aviation associations are also keeping a close eye on several House races. A couple of key advocates appear safe but with closer margins. These include Rick Nolan (D-Minn.), who has fought for Part 23 reform, among other issues, and General Aviation Caucus member Jeff Denham. The General Aviation Caucuses array has grown to a record 320 members in the House and Senate, providing strength on certain positions and assistance in educating other members on more controversial issues. This will provide a strong base of institutional knowledge about general aviation, easing the education effort that usually takes place after every election.

But the caucuses will certainly suffer casualties, with as many as 20 members either retiring or running for other offices. This number does not include losses resulting from potentially unsafe seats.

Regardless of the outcomes of the races, or the shift in power, aviation advocates stress that their issues tend to be less partisan and are more of an education effort. "We work with both sides," said Coon. But, he added, "We're watching as many [races] as we can."

This education process will come as air traffic control reform takes center stage again in the new Congress. The FAA is set to once again face reauthorization at the end of next year. Airline CEOs have made clear plans to continue to fight, and view the new Congress as a fresh opportunity to make their case for an independent organization funded by user fees to run the nation's air traffic control system. They hope to bring many of their "hundreds of millions" of passengers along for the fight. "We absolutely are not giving up on this," said JetBlue Airways CEO Robin Hayes. "We will continue to work very hard to get the message across to our elected leaders." ❑

AIN READERS CAST THEIR VOTES

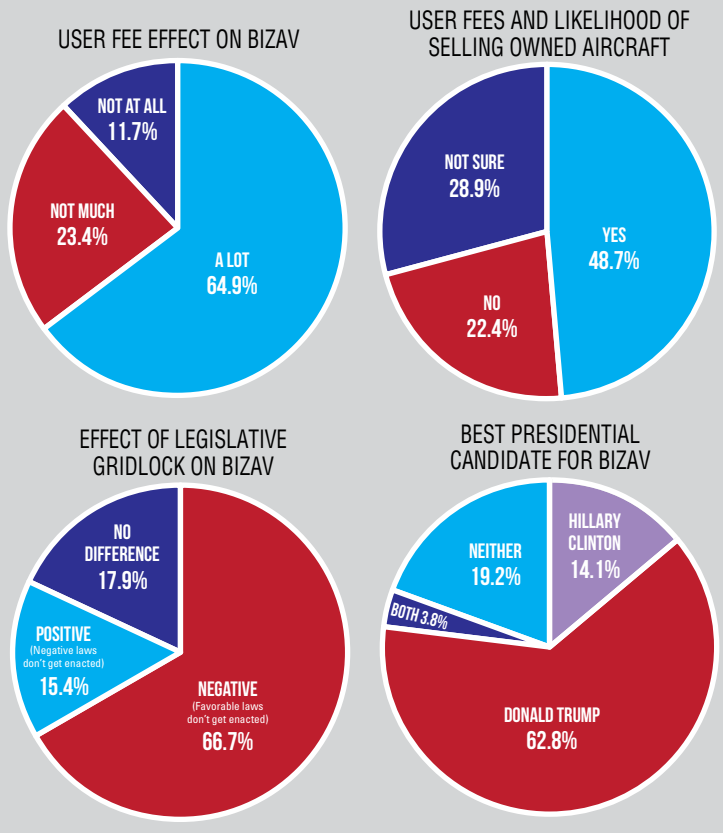
According to an **AIN** reader survey, nearly 65 percent of respondents said the amount of business aircraft flying they do would be affected "a lot" if aviation user fees were implemented under the proposed privatized ATC system in the U.S. "Look at how privatization of ATC has affected Europe," one reader commented. "Many people around the world have to come to the U.S. to learn to fly due to the ridiculous fees elsewhere."

Only about 12 percent said user fees wouldn't affect the amount they fly at all, while 23 percent said these charges would have a minimal effect. Almost half of all survey takers said such fees could potentially lead to the disposal of their business aircraft.

Sixty-seven percent of respondents said that a flat or variable user-fee structure would be equally detrimental to business aviation, while about 12 percent said a flat-segment charge would be worse and 14 percent said a variable fee based on location and type of approach would be more harmful.

More than 66 percent said the gridlock in U.S. Congress is harming business aviation, with about 70 percent saying they expect this logjam to continue even after the November elections. One reader comment summed it up perfectly: "Washington is a mess, with little hope for improvement."

Looking at the Presidential slate, 63 percent believe that Donald Trump would act in the best interests of business aviation, while only about 14 percent feel the same about Hillary Clinton. Another 20 percent said either candidate would be good for business aviation, and 4 percent believe neither will help the industry. —*C.T.*



ARGUS-RATED OPERATORS, BROKERS GET BREAK ON AOG PROTECT

Through a new partnership with Argus International, Mountfitchet Risk Solutions will offer discounts and other incentives for its AOG (aircraft on ground) insurance program to Argus-rated operators and charter brokers. AOG Protect limits financial losses associated with charter flights that have been grounded for mechanical or other issues.

Traditionally, the operator, broker or flight department has been responsible for covering the sub-charter or reposition of a replacement aircraft in an AOG situation. With AOG Protect, an insurance claim can be filed, "virtually eliminating the costs associated with an AOG incident."

Under the partnership, Argus Gold-rated operators and registered charter brokers will receive a 7.5 percent discount on the AOG Protect annual premium. This discount rises to 12.5 percent for Gold Plus-rated operators and 20 percent for Platinum-rated operators, certified brokers and certified corporate operators, in addition to a 10- to 25-percent contribution toward the cost of their next Argus audit. —*C.T.*

MROs seek access to mx manuals

▶ *Continued from page 10*

is in charge of managing OEMs and making sure they meet the requirements of type certificate holders, including 21.50(b)."

ARSA's MacLeod explained that its members are not looking for free information from OEMs, and that reasonable but not outrageous fees for ICA are acceptable. "I'm trying to balance the tables," she said. "ARSA has never tried to get maintenance manuals for free. We're just trying to get the FAA to uphold its responsibilities. Just read the plain language of the FAA regulations since they began. I didn't write the rules. I would just like them to be enforced evenhandedly."

MacLeod compares the ICA issue with pilot manuals, which airframe OEMs provide in specific detail to pilots, with some OEMs even placing them online for free access to anyone who wants to learn more about their products. Maintainers, she said, "are given the least amount of information, and they are responsible for performing their work properly. The pilot just has to fly the aircraft. If I screw up in maintenance, I make that pilot's job…a lot more iffy. They can't fly without the information in the pilot manual. How did we get the short end of the stick?"

Because the Part 145 rules require the maintenance provider to have maintenance data, the MRO provider faces a dilemma because if it can't get the ICA, it can't perform maintenance, so then the FAA can't certify the repair station. But the OEM doesn't have to provide ICA until the repair station is certified. MacLeod therefore asks the FAA: "If you make me have the data as a maintenance provider and the rule says the OEM is supposed to make it and provide it, but won't provide it, how are you maintaining safety?"

International Concern

This is not just a problem in the U.S. but also in Europe, according to ARSA. The solution, at least until these issues are resolved, appears to lie in expanding the ability of repair stations to make repairs that they develop using their own engineers. The OEM has little influence over the approval process for these repairs. But developing the repairs not only costs money, but it also sucks up valuable regulator resources. "We don't want the agency's time taken up approving repairs that should be in the overhaul manuals," she said. "Or holding repair stations hostage because [the FAA] refused to help."

The FAA's most recent attempt to clarify the ICA dilemma was a draft advisory circular issued last year. But after soliciting comments on draft AC No: 20-ICA late last year, the agency has taken no further action. ❑

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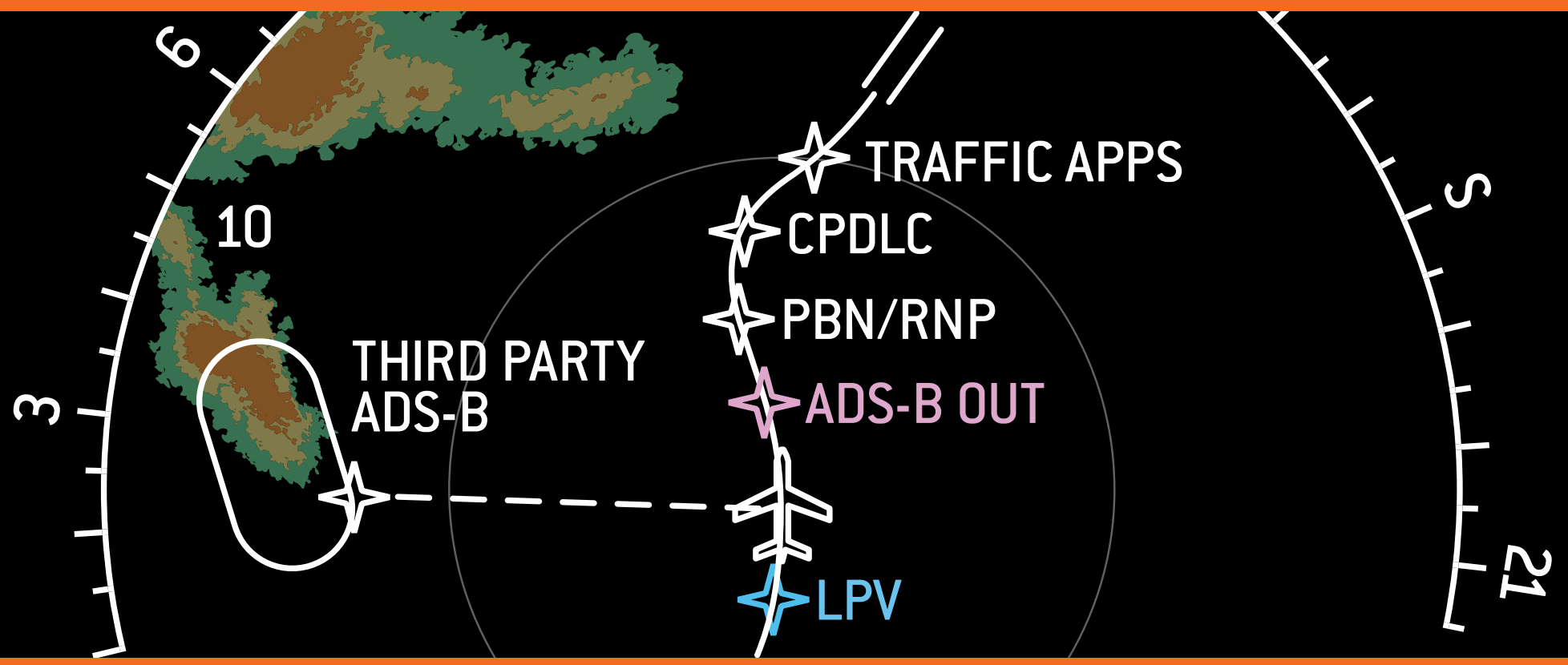

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Building trust every day

U.S. East and West come together, as drone advisory committee meets

by Bill Carey

The U.S. East and West Coasts converged on September 16 as the new Drone Advisory Committee (DAC) that will make recommendations to the Federal Aviation Administration on integrating drones into the national airspace system held its inaugural meeting in the nation's capital.

BILL CAREY

Intel CEO Brian Krzanich and RTCA president Margaret Jenny preside at the first Drone Advisory Committee meeting.

Present at the table were the leaders of several aviation trade associations based in the Washington, D.C. area, sitting alongside senior executives of companies including online retailer Amazon of Seattle and California-based Google and Facebook. Brian Krzanich, CEO of Santa Clara, Calif.-based Intel Corp., is chairman of the committee, which also counts as members San Francisco Mayor Ed Lee and Deborah Flint, CEO of Los Angeles World Airports.

FAA Administrator Michael Huerta announced the plan to establish a drone committee representing industry and other "stakeholders" at the Xponential 2016 conference in New Orleans in May. In late August, the agency named 35 members to the DAC from the 400 people who expressed interest. Plans call for the committee to meet three times a year for two years; much of its detailed work will likely be done in smaller working groups.

FAA Participation

The DAC is modeled on the FAA's NextGen Advisory Committee, which has advised the agency in setting priorities for its long-running, multibillion-dollar effort to modernize the U.S. ATC system. Standards organization RTCA, which has official status as an advisory body to the FAA, administers both of the committees.

In basic terms, the DAC represents a confluence of the innovation in unmanned aircraft systems (UAS) coming in large part from California's Silicon Valley and the Pacific Northwest, with the regulatory and political interests of the mainstream aviation industry centered in Washington, D.C.

Giving opening remarks at the first meeting, Huerta noted that some members of the committee hail from the traditional aviation community where safety is a paramount focus; others come from "the entrepreneurial community, where

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taking risks and making bets is in your DNA."

Huerta added: "We intentionally brought these distinct cultures together, and I'm not asking any of you to change your views." Instead, he asked the group to agree on recommendations for the further integration of drones into the airspace system, and in the process "infusing it with the safety margin that the public expects and deserves."

At least at the outset, the FAA appears committed to the effort. Joining Huerta at the table were several top FAA executives, including acting deputy administrator Victoria Wassmer, Air Traffic Organization chief operating officer Teri Bristol, associate administrator for aviation safety Peggy Gilligan, assistant administrator for policy, international affairs, environment and energy Jennifer Solomon, senior advisor for UAS integration Marke "Hoot" Gibson, and Earl Lawrence, director of the UAS Integration Office.

Lawrence briefed the committee on the immense challenge the FAA faces in regulating potentially hundreds of thousands of commercial drones and in maintaining safety with potentially millions more being flown by hobbyists. Some 12,000 people have applied to the FAA to operate drones commercially since the agency's new Part 107 regulation took effect on August 29, and more than 500,000 have registered hobby drones through the agency's on-line system. "It's more than our traditional aviation profile," Lawrence said. "The community is much larger and more diverse. What's really unique is the sheer volume of operations and [their] personal nature."

For example, Lawrence noted that the "follow-me" capability of some drones is not typical for aviation. "How do we deal with that? That's not a Point A to Point B operation," he observed.

Krzanich, who is a licensed pilot, said his goal as DAC chairman "is to make sure that every voice is heard…and that at the end of the day we make a recommendation to the FAA." When Huerta asked him to lead the committee "it took all of less than 10 seconds to say 'yes' because I believe in this industry wholeheartedly," he added. ❑

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DRONE WORLD SHOW BUILDS ON ASCENT OF COMMERCIAL UAS APPLICATIONS

The August 29 introduction of the FAA's new Part 107 regulation making it easier to use small unmanned air systems (UAS) weighing less than 55 pounds on a commercial basis was a momentous move toward the more widespread business use of drones. More evidence of this dynamic industry sector's rapid ascent will be found at the second annual Drone World Expo being staged on November 15 and 16 in San Jose, Calif., which has quickly developed as a key focal point for companies pioneering commercial applications of UAS technology.

Applications represented at Drone World include imaging, construction, photography and video, precision agriculture, security, public safety, mapping and surveying, inspections, research and conservation, communications, parcel delivery and humanitarian efforts. The show's detailed conference will feature more than 100 industry experts and is curated by an industry advisory board.

Organizer JD Expo is expecting between 3,000 and 4,000 visitors for the 2016 event, which would be around twice that in 2015. **AIN** is a media partner for the show as part of its expanding coverage of the UAS industry. —*C.A.*

A4A denies anti-GA bias on user fees

by Kerry Lynch

Those who oppose a privatized U.S. air traffic control corporation funded by user fees found themselves in the crosshairs at last month's 2016 Airlines for America Commercial Aviation Industry Summit in Washington, D.C. Doug Parker, chairman of Airlines for America (A4A) and American Airlines president and CEO, said objections to the air traffic control privatization include "myths and distortions [by] corporate jet lobbyists who accuse the commercial airlines of plotting to take over the air traffic control system through privatization to drive up costs for general aviation and squeeze them out. The notion that there is a hidden agenda to harm general aviation is pure fiction…We are huge supporters of general aviation."

He also stressed the plan would not increase costs on GA. He disputed other arguments, including that the system's complexity makes the sort of reform achieved by international counterparts more difficult to accomplish in the U.S. Rather, Parker stressed, the complexity of the U.S. system underscores the need for change.

"There is simply nothing radical nor unusual about this concept," he said. "There is little debate that we need to advance from World War II processes and technology," he noted, pointing to support ATC reform has received from past FAA administrators, controllers and administrations. "The question is, how soon can we get there."

At the summit, airlines outlined their hope to reach out to millions of passengers for help in their fight for air traffic control reform, JetBlue Airways president and CEO Robin Hayes insisted that airlines will continue to campaign for an independent organization to run the nation's ATC system and that airline customers could play a role in the debate.

"We absolutely are not giving up on this," he said. "We have to do a better job as airlines in engaging our customers and fliers and letting them know that the thirty-minute delay they just experienced or that canceled flight…is going to get worse… and the economic value that aviation brings to this country will start to get jeopardized by our inability to have a state-of-the-art air traffic control system."

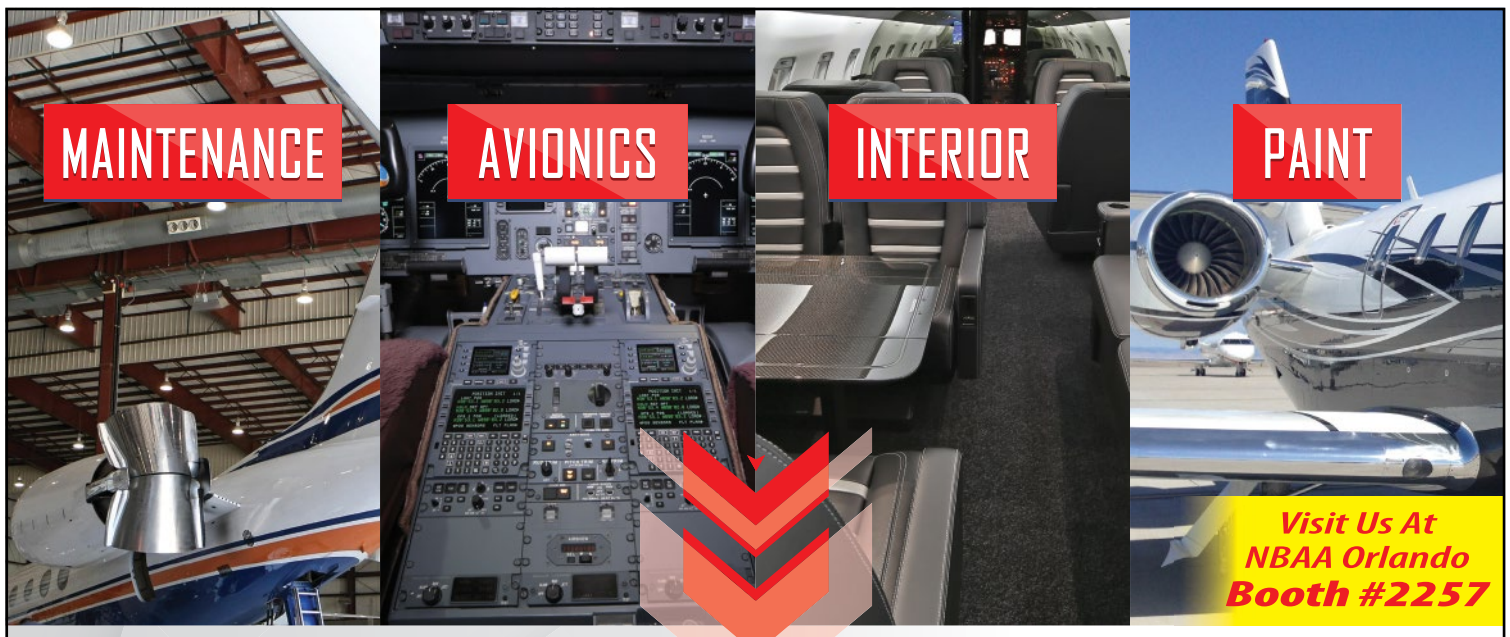
Airline executives agreed that although the airline industry has reached one of its strongest and most competitive points in history, the future of the system remains hampered by outdated ATC systems that are inferior to those operated by other countries.

Block Times Expanding

Hayes noted the block time to travel between New York and Washington has risen to 80 minutes, compared with 60 minutes some 10 to 20 years ago. "There is this big con going on," he said. "We have to fix the system. We are going to mobilize and engage our customers."

A4A president Nicholas Calio said increasing block times to accommodate delays does not signal improvement. "Absent modernization, we will most certainly face a shrinking system despite the increasing demand for air travel" he said.

National Air Traffic Controllers Association president Paul Rinaldi characterized the status quo as "unacceptable" and said he supported any change that would help encourage ATC modernization, short of a "for-profit" corporation. ❑



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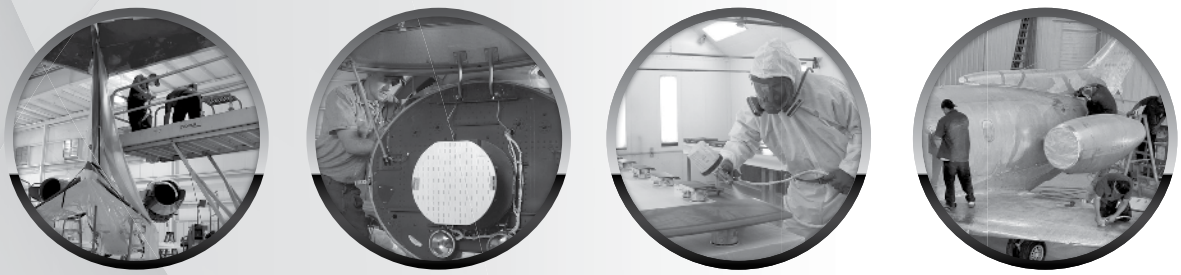

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Av groups seek action on Ex-Im

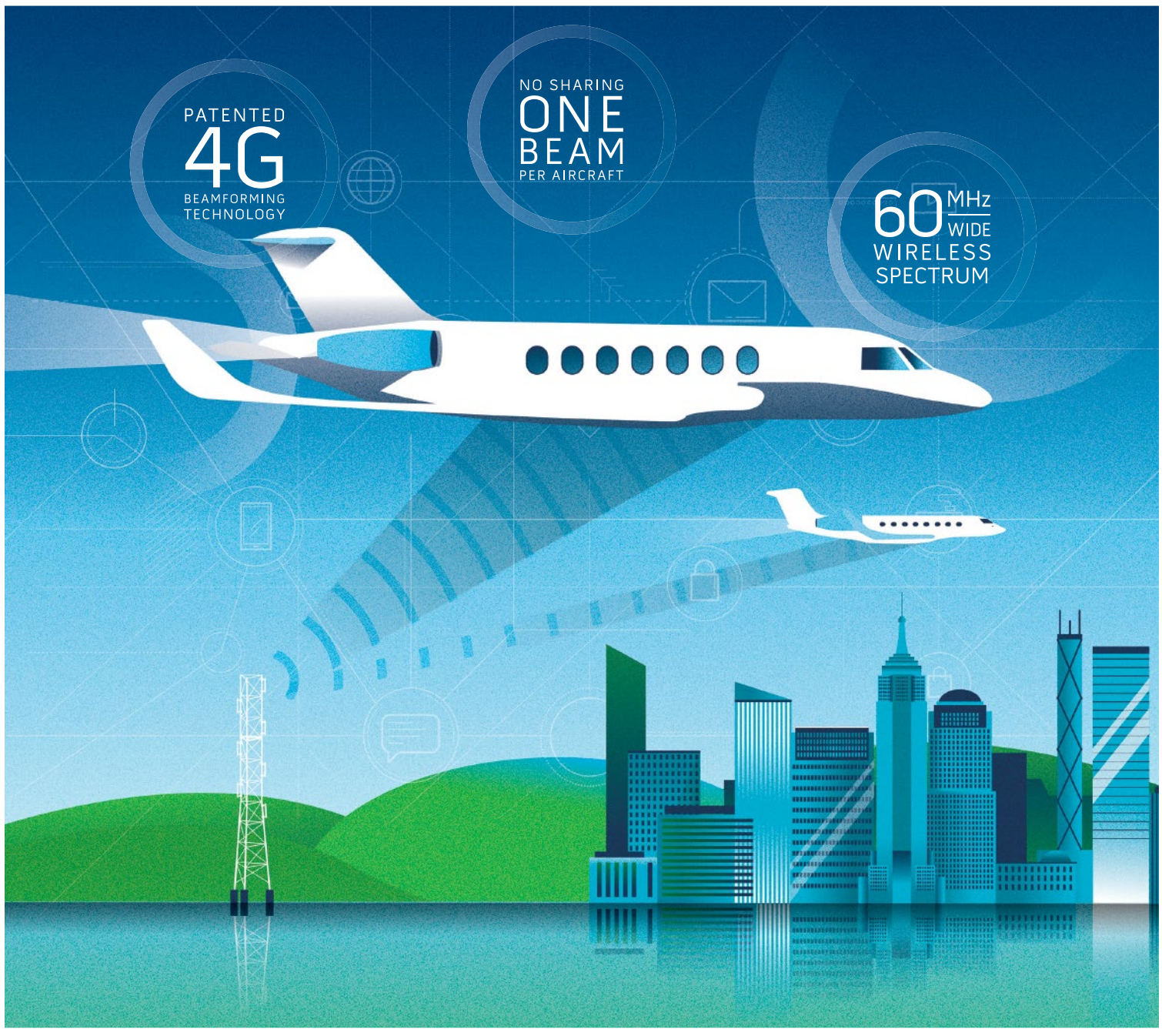
by Kerry Lynch

A broad spectrum of manufacturing organizations are urging lawmakers to support language that would enable the U.S. Export-Import (Ex-Im) bank to approve transactions that are greater than $10 million. In a September 12 letter to House and Senate leaders, 15 organizations, including GAMA and the Aerospace Industries Association, noted that despite last year's multi-year renewal of the Ex-Im bank, the bank's governing board does not have the required number of directors to approve transactions of more than $10 million.

The organizations urged congressional leaders to support language in an upcoming stopgap government funding measure that would modify the bank's quorum requirement to enable larger transactions.

"Continuing to leave the agency handicapped not only harms the large manufacturers that will lose projects to foreign competitors with better access to financing, it also harms the small and medium-sized companies in their supply chains," the letter stated. "With every passing day, businesses from the U.S. are missing out on new business opportunities overseas, to the detriment of local economies and American jobs."

The Ex-Im language has been included in both the House and Senate version of foreign operations appropriations, but it is unclear whether those bills will receive consideration this year. Congressional leaders, meanwhile, have been negotiating a potential extension of government-wide funding through December 9 with hopes to bring such a measure to a vote shortly. ❑



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Management fees stymie operators

▶ *Continued from page 16*

to halt enforcement of the tax assessments and suspend further tax audit findings until more permanent guidance is released. That guidance has been placed on the U.S. Treasury Department's priority list, but churn at the agency and other higher-priority issues such as the Affordable Care Act and international tax reform have slowed progress, O'Brien noted.

"There have been times when a lot of energy is devoted to this and times when it has been quiet," O'Brien noted. He added that he believes a draft has gone back and forth between the IRS and the Treasury Department. Potentially further hampering progress is the upcoming changeover in the administration, which could spell turnover in the agencies and another education effort on the issue. In the meantime, though, both IRS agents and management companies have remained in limbo with the potential of future tax bills still looming.

The IRS does not appear to be "actively looking for management companies to audit on this issue," O'Brien said. But the treatment of management fees could still come up for companies that are under audit for other reasons. In these cases, the management companies are asked to sign a statute of limitations extension agreement that would enable the IRS to revisit the issue later.

This is frustrating for the companies involved, which do not know how to budget for or set aside taxes on management services, as well as for the auditors who lack the guidance on how to approach the audits, O'Brien said. ❑

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Long-term FAA funding delayed

by Kerry Lynch

U.S. lawmakers were set to delay funding decisions until after the November elections under a short-term funding bill that was working its way through Congress last month. As this issue went to press, the House and Senate were set to approve a continuing resolution (CR) that would extend government funding at current levels through December 9. Lawmakers were hoping to tie up the funding bills quickly so they could go home to campaign.

The CR first headed to the Senate even though funding bills typically begin in the House. Senate lawmakers decided to move forward after House Republicans were split on the length of time the CR should cover. Many House Republicans had pushed to extend government funding into the new Congress next year. Others, however, hold out hopes of passing full appropriations bills in the lame-duck session following the elections.

While a CR freezes budgets at current levels, a full appropriations bill would provide for increases and/or adjustments in budgets of the various agencies. The full transportation funding bill, which would include the FAA's Fiscal Year 2017 budget, is considered among the least controversial bills this year and could be among the first batch of funding bills that would be considered in a lame-duck session.

The FAA would be set for a small increase in its budget under a full funding bill. House and Senate versions of full FY2017 FAA funding bills also include various measures to address certification reform and inspector staffing, as well as continuation of the mandate for the agency to honor requests to block access to registration information on real-time flight-tracking programs.

While CRs tend to have few provisions beyond a simple funding extension, some lawmakers last month were pushing to include a measure that would address Export-Import Bank funding limits. The CR also was to address Zika relief funding.

Call for Privatized ATC

Notably, a CR averts the prospect of another government shutdown. Without such a measure, government funding would have lapsed on September 30, since the government's fiscal year begins on October 1.

During an Airlines for America (A4A) summit in September, A4A president and CEO Nicholas Calio raised the specter of a government shutdown as another reason to reform the nation's ATC system. *(See article on page 68.)* A4A is pushing for a not-for-profit organization to run the nation's ATC system.

"Do I think the government will shut down? No, but I've said that before and I was wrong because logic doesn't always prevail," Calio said. "But there is the exhausting potential for it to happen again…This cycle of dysfunction in funding perfectly underscores the critical flaws in the current system, which is why A4A is advocating for air traffic control modernization."

Calio also warned of long-lasting ramifications of a government shutdown for industry. "For airlines a shutdown is not an abstract Washington event. It is a major business issue that disrupts our entire organizations by canceling flights [stranding passengers and cargo] and causing loss of revenue both for the airlines and, more important, for the economy as a whole." ❑


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Wichita evolves

▶ *Continued from page 1*

Aboulafia also credited the company's continued investment, which he called "the lifeline of business."

Also feeding the success will be a strengthening in the North American market. While emerging markets fueled growth at the top end of the business jet market, "the growth we're seeing now is a return of the North American model," he said. "In the past year we are starting to see little signs of life at Cessna."

Looking industry-wide, Pete Bunce, president and CEO of the General Aviation Manufacturers Association, added, "The fact that we have had some consolidation and the industry was able to keep moving forward is a testament to its resiliency."

Beyond the big manufacturers are a base of suppliers that had been dependent on the livelihood of the manufacturers. The lesson learned from the downturn, Aboulafia said, was diversification. "In Wichita you did have a dangerous level of reliance," he said. But many of those companies adapted. "You still have a lot of companies with strong niche capabilities that started looking outside of Wichita and looking more globally."

Franson agreed. "When things started to really deteriorate, there were obviously some concerns, some consolidations and some real difficulties," he said. "But we have some pretty capable and clever companies here." Franson pointed to Cox Machine, a company that has been at the forefront of additive manufacturing. "Cox Machines has done a great deal in terms of staying ahead of the technological curve. It was doing things that were considered 'gee whiz'…before other companies."

He also pointed to McGinty Machine which made sure it was available and could do what was necessary when it was necessary. Just outside Wichita, GlobalParts.aero has expanded into manufacturing, he added.

Workers Shift Positions

These companies have been able to absorb some of the jobs lost, he said. Others have attempted to retain talent by shifting workers. Bombardier, which has been undergoing a series of layoffs as it tries to turn around its cash flow issues, also has been transitioning some of the workers from Learjet programs to other programs. These workers have been moved to other areas of Bombardier, where space could accommodate them.

Bombardier spokesman Mark Masluch said the transfers are part of an effort to "manage production costs" and remain disciplined. Similarly, Bombardier has leveraged its capacity in Wichita to expand other areas of its work, including last year's expansion of global support in Wichita.

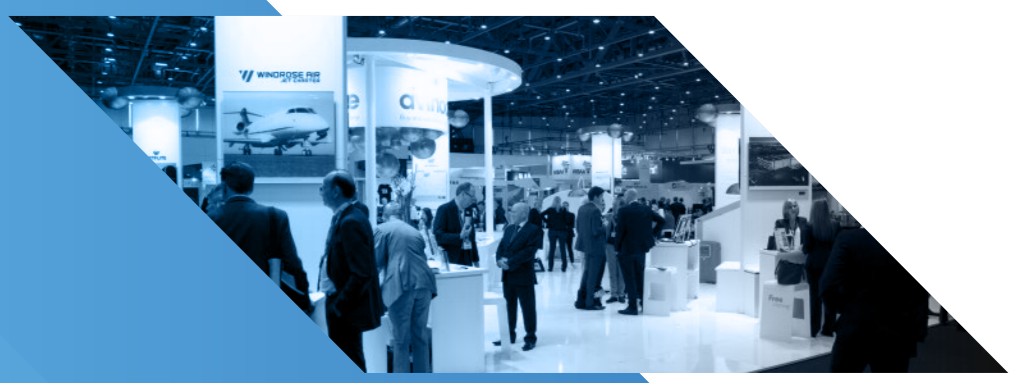
"They are not sitting on their hands," Franson said. "They have the facilities, they have the capacity, they have expertise and they have a lot of good folks who know what they are doing." Franson also pointed out the support they brought in that will service a range of aircraft. "They are not wringing their hands. They are using their hands."

As with additive manufacturing (a k a 3D printing), new technologies are adding jobs not only in Wichita, but throughout the industry, and emerging technologies such as hybrid or electrical propulsion have the potential to be a job enhancer, Bunce added.

Franson noted many new jobs have been created to replace lost jobs, "but they are different kinds of jobs. There are different roles being played over at the Learjet factory."

The aerospace community in Wichita has remained active in solidifying its future, Franson said, pointing to the National Center for Aviation Training (NCAT). The Sedgwick County

Continues on page 80 ▶



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Renamed Houston airport expands services for bizjets

by Curt Epstein

Change is in the air at Texas's Lone Star Executive Airport (CXO), which is in the process of changing its name to Conroe-North Houston Regional Airport. The change becomes official in March. The airport opened in 1939 and was promptly taken over by the U.S. Navy for flight training and drone research. After World War II it returned to civil use as Montgomery County Airport until 2003, when it became known as Lone Star Executive.

Conroe-North Houston's newly inaugurated U.S. Customs service will provide another gateway option for international operators in the Houston metroplex.

The airport is changing its name to give potential users a clearer indication of its location. "It was evident at trade shows and marketing the airport that the name Lone Star did not give a good geographic identity, because those who we would market it to would guess it was in Texas, but that's about it," said airport director Scott Smith. The airport serves the northern suburbs of Houston, the major economic driver in the area, so that part of the new title was easy, but airport planners also wanted to tie it to the growing city of Conroe, which they believe could become a destination unto itself over the next 20 years. A new entrance under construction at the airport will provide a direct path to Interstate 45, and that road will pass through a new industrial park and technology park. The operator expects the airport's proximity to attract tenants and customers to both.

CXO, itself, has seen steady growth in traffic over the past several years, now averaging 62,000 operations a year. "What's interesting within those numbers is the continuing gap between itinerant traffic and local traffic," Smith told **AIN**. "That used to be more or less 50-50, and we're finding out, now, our itinerant traffic is in the 60th percentile." That growth has manifested itself in an uptick in annual fuel flowage at the airport, 1.5 million gallons today compared with 600,000 gallons a decade ago.

More Amenities for Business Jets

Last year, CXO completed a long-anticipated expansion of Runway 14/32, its main runway. The additional 1,500 feet brings the runway to 7,500 feet, making it possible for most business aircraft to take off without weight restrictions during the scorching Texas summer heat. "What we wanted to do is have a runway where 95 percent of business aircraft could go out at 90-percent maximum takeoff weight at 94 degrees Fahrenheit," said Smith. "You look around at a couple of other general aviation airports in the Houston Metroplex, and that tells the story. David Wayne Hooks [Memorial Airport] has a 7,000-foot runway and Sugarland Regional has 8,000 feet. Six thousand feet in this climate, at our elevation, was insufficient."

With a runway now able to accommodate larger business jets, U.S. Customs service opened at the airport last month. The 3,300-sq-ft facility, built to CBP specifications at a cost of $2.5 million, was paid for by a partnership among Montgomery County, the City of Conroe and private investment firm Black Forest Ventures, which operates Galaxy FBO on the field and donated ramp space to accommodate the building. It will operate under the federal user-fee airport program, which reimburses CBP for all operating costs via fees collected from arriving aircraft. The addition of customs service will allow long-range business jets to fly direct from Central and South America, Canada and Europe, bypassing the congested metro-Houston airspace. The results of an economic study commissioned by airport authorities suggest to Smith that the airport will see 5 percent more traffic annually as a result of Customs' presence, along with approximately $5 million more a year in economic activity at CXO.

In another development, the number of service providers at the airport recently shrank to two, after Galaxy FBO acquired and consolidated Wing Jet Center's assets into its own facility. Investment firm Black Forest Ventures, Galaxy's parent company, had purchased Wing's aircraft charter and management operation, Wing Aviation, in 2012, and included in this latest transaction are a small terminal, which will be shuttered, and four hangars totaling 70,000 sq ft of space at CXO capable of sheltering aircraft up to a G650. These will now be known as Galaxy North, and the company says it hopes to use them to entice an MRO provider to set up shop as a tenant. The acquisitions will bring the FBO to 160,000 sq ft of hangar space.

Black Forest, which purchased Galaxy Air Service in late 2012 and moved into a newly built FBO complex in 2014, also just broke ground on two more hangars, which, when completed by year-end, will add 35,000 sq ft of aircraft storage space.

General Aviation Services, the other remaining FBO on the field, changed hands this summer when it was sold to the Herd Air Group after 34 years under family ownership. According to pilot Chad Herdrich, who bought the seven-acre facility, he has plans to attract more transient jet traffic to the facility while doubling its 50,000 sq ft of hangar space and adding an aircraft arrivals canopy. The location has a 3,000-sq-ft terminal with two conference rooms, pilots' lounge and cinema, shower facilities and kitchen. One of the longest tenured Avfuel dealers, it will be offering bonus Avtrip points on fuel purchases through the end of next month. ❑

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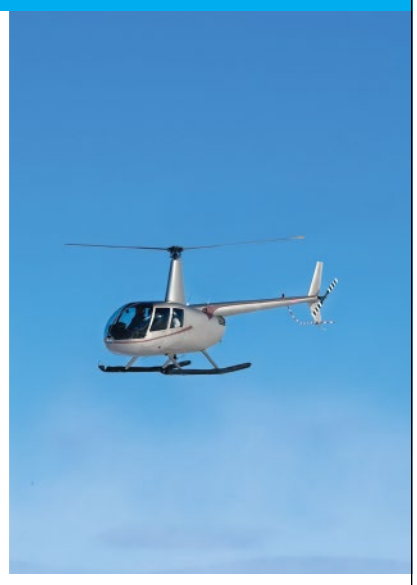

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* Respondents were asked to choose all that apply, so totals do not add to 100%.

Astronautics to study cyber-security threats

The FAA has selected Astronautics Corp. for a research project that will help establish methods for evaluating cybersecurity threats in aircraft electronics systems, specifically related to aircraft certification and ongoing maintenance.

The research will be done in three stages and involves "the development of an efficient, timely and repeatable process that identifies system security vulnerabilities, threats and safety risks, including risk-mitigation information," according to Astronautics. The FAA will use the research to support "development of aviation policies, regulations and training requirements to ensure flight safety and the security of aircraft network systems from cyberattacks."

"We've been active in this area," said Astronautics president Chad Cundiff. "There is a lot more effort going into cybersecurity, and research needs to be prepared to instigate actions that are getting taken. What we're doing is working with the FAA to try and develop the methodology to come up with the right model to do an analysis of whether something is cyber secure or not. We'll do a safety risk assessment, then here's the methodology and let's apply this to the system. We're finding out where the vulnerabilities and risks are, and then how to address them."

Astronautics has a long history of cyber-security development with airborne electronics, including with its own Nexus electronic flight bags and development of a network server for the Airbus A400M. "A lot of cybersecurity went into that," he said.

The three-stage process includes first developing "a mature safety risk assessment framework," the company explained. This involves adapting Astronautics's own cybersecurity processes "to support the implementation of the FAA aircraft system information security/protection and safety risk assessment framework."

In the second stage, Astronautics will study the application of the safety risk assessment methodology on a model of the aircraft communications addressing and reporting system (ACARS) digital datalink. The FAA will use the results of this to refine the safety risk assessment technology.

The third phase will apply "the refined and approved methodology to a second safety risk assessment model that will be defined at a later time."

The entire contract is expected to take less than a year, and Astronautics will assign current employees to work on it at its Milwaukee, Wis. headquarters. The work is expected to begin in October.

According to Cundiff, the research will benefit the entire aviation industry. "Astronautics is already involved in areas of cybersecurity," he said, "and has been for over a decade. This keeps us at the forefront, and the more you do, the smarter you get. We'll ask some challenging questions, take advantage of our experience and move the ball forward regarding the methodology and safety risk assessments." Astronautics is also a member of the Aircraft Systems Information Security/Protection working group, which is charged with making recommendations on cybersecurity.

As more people expect to stay connected to the internet while airborne, cybersecurity issues will become more critical in aviation. "The more that happens, the more you open up access for more people to potentially see if they can find vulnerabilities in the system," Cundiff said. "Aviation is very safe, but as we open up the aperture on connectivity, we need to stay in front of that. We have to have the right rigorous method to assess vulnerabilities.

"This is an opportunity to stay deeply involved," he concluded. —*M.T.*

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EPA urged to act on leaded avgas

by Kerry Lynch

The environmental group Friends of the Earth (FOE) is turning up the pressure on the U.S. Environmental Protection Agency to take action on leaded avgas, releasing a new report charging that lead emissions at 20,000 U.S. airports threaten community health. The FOE report, "Myths and Realities of Leaded Aviation Fuel," notes that aviation fuel accounts for 50 percent of all airborne lead emissions and cites EPA estimates that 16 million people reside near these airports.

FOE has filed legal action and at least two petitions for the EPA to make an endangerment finding about leaded avgas. The EPA has indicated plans to release a notice of proposed rulemaking next year covering such a finding and then issue a final rule in 2018. This timeline coincides with the FAA's schedule for transition to a drop-in replacement for leaded avgas.

Alternative Options

Through its Piston Aviation Fuels Initiative (PAFI), the FAA selected candidate unleaded replacement fuels earlier this year from Shell and Swift Fuel for Phase 2 testing. The second phase involves full-scale engine and aircraft testing to evaluate suitability across as much of the existing fleet as possible. The testing is looking at performance in engines ranging from carbureted four-cylinder to turbocharged/fuel-injected six-cylinder. The testing is intended to develop data packages to support an ASTM production specification and FAA wide-scale approval by the end of 2018.

However, FOE is hoping to bring the timeline forward, or at least keep full pressure on the agencies to take action. "The EPA should make an endangerment finding on leaded avgas as soon as possible," the organization said in the report, adding, "Once that finding has been made, the EPA should work with the FAA to facilitate the phase-out of leaded avgas over a reasonably prompt time frame."

FOE has long contended that alternatives are available and points to actions in Europe to facilitate use of those alternatives. But in the most recent report, FOE also acknowledged, "it is important to note that the needs of aircraft in the U.S. and in Europe differ in that high-performance engines requiring high-octane fuel make up a larger portion of the U.S. fleet. Nonetheless, the EASA's regulatory steps can provide a useful framework for bringing existing unleaded fuels to market here in the U.S."

The aviation community has concerns about the ability of higher-performance aircraft to use existing alternatives. "Avgas has many qualities necessary to control adverse outcomes in our aircraft and engines," officials involved in the PAFI say. "Evaluating the impact of completely new fuel chemistry on the full history of aircraft production is an immensely complicated undertaking." ❑

News Note

Air charter company **Air Partner is expanding its New York City office to support continued growth in the U.S. market,** with particular emphasis on the NYC metro area. The company believes there is "strong demand" in the area for its private aircraft charter offerings, particularly its JetCard product. Air Partner also has U.S. offices in Fort Lauderdale, Fla.; Los Angeles; and Washington D.C., in addition to 16 other locations in the rest of the world. ■

Wichita evolves

▶ *Continued from page 74*

Technical Education and Training Authority developed the $50 million, 224,000-sq-ft facility, providing capacity for training at least 1,500 students in day and night classes. The community broke ground on the center just as the market was collapsing in 2008 and classes began in August 2010. The aviation community also donated surplus technology and equipment to fill out the training centers, and the GWEDC notes, "Between NCAT's aviation building and advanced manufacturing building, an entire business jet could be made from design to finish."

This has had real implications, Franson said, noting that the Wichita Aero Club recently awarded a scholarship to a person laid off in the downturn who now is working toward an Airframe & Powerplant license.

"We've got quite a few people moving through the education opportunities," he said. This enables them to remain in Wichita and be trained for opportunities with the companies once they become available.

But Wichita has lost a talent pool. "We couldn't keep all of the workers," Franson added. That includes not only those on the factory floor, but also at the executive levels, with many companies seeing new upper level management in recent years, Aboulafia added.

This talent pool is a focal point for the entire industry, added Bunce, who notes that companies such as Disney often lure away top prospects coming out of aviation schools such as Embry-Riddle Aeronautical University. Aboulafia expressed concern that the industry could face a "skills gap" with longer-term, older employees remaining and younger people coming in at the entry level. What's been lost are the people in between, creating a need to ensure that there is a bridge in the skills gap.

Overcapacity Concerns

While resilient, the industry isn't completely recovered, the executives agree. In fact, Bunce notes, "The situation now is we have had a number of companies announcing workforce reductions." He expressed concerns about the struggles of the so-called BRIC nations (Brazil, Russia, India and China), which were heavily relied upon to help recover from the downturn. "None of them right now are good for business aviation," he said.

Bunce also is concerned about overall overcapacity in the global business and general aviation marketplace. "We've got too many airplanes out there chasing too few customers, which is driving residual values down," he said. "When you have overcapacity and you are looking at too many airplanes, then you decide you don't need to pump that many airplanes into the system and have workforce adjustments."

Looking at the possibility of more consolidations, Bunce said, "I don't like consolidations, but we have an overcapacity out there. We want stability and steady growth for the industry."

Aboulafia also noted the possibilities of the future of Learjet, saying the Wichita community could survive another consolidation resulting in a "duopoly" of major players in the light end of the market. "That's one way of rationalizing in times [of] overcapacity," he said. "Maybe industry will come back with lower costs and in a nimble way."

And despite fallout of the downturn, Aboulafia believes Wichita retains a claim to the title of Air Capital of the World. "It would be hard for anyone else in the general aviation market to take that title."

"Until someone tells me there is a new Wichita, I'm not too concerned we are going to lose the title," Franson added, reiterating, "But there is a new normal…We have to realize there's a lot of work to do to maintain a leadership position." ❑

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NEWS UPDATE

FAA ADS-B Rebate Program Goes Live

The FAA has begun accepting applications for $500 rebates for installation of ADS-B OUT equipment on single-engine piston airplanes. The FAA plans to issue 20,000 rebates, and they are available on a first-come, first-serve basis for one year or until all are claimed for owners of U.S.-registered aircraft, the agency stated.

"By equipping now, operators will be able to enjoy ADS-B benefits such as enhanced surveillance, greater situational awareness and free in-cockpit traffic and weather immediately, as well as avoid the long installation lines expected as the mandate nears," said GAMA president and CEO Pete Bunce.

Gogo Adds New Router Options

Gogo Business Aviation is adding a new option that will allow customers to choose a router from an approved provider instead of having to choose only Gogo's router option. Gogo has already begun the process of testing and approving routers that interface reliably with its air-to-ground connectivity systems.

Jeppesen Previews SID/Star Chart Improvements

NBAA and Jeppesen recently held a webinar to give a preview of changes to the company's SID (standard instrument departure) and Star (standard terminal arrival route) charts. The improvements are intended to help enhance pilots' situational awareness, according to Jeppesen. Improvements include introducing colors to identify what pilots consider to be the most pertinent information. For example, altitude restrictions will be in blue, while airspeed restrictions will be in magenta.

The new chart design also incorporates graphics for key topographic features, such as a blue tint for water and shaded areas for mountains. It also enables use of an "own ship" symbol on STAR and SID charts when connected to a GPS.

Jeppesen plans to begin rolling out the new charts by year-end, starting in Europe.

FAA Warns Pax About Samsung Galaxy Note 7 Phones

The FAA is warning passengers not to turn on or charge Samsung Galaxy Note 7 mobile devices due to multiple cases of lithium-ion battery fires. The FAA's statement was issued on September 8: "In light of recent incidents and concerns raised by Samsung about its Galaxy Note 7 devices, the Federal Aviation Administration strongly advises passengers not to turn on or charge these devices on board aircraft and not to stow them in any checked baggage." There have been no reports of Samsung Galaxy Note 7 incidents on board aircraft.

Samsung has begun a "global replacement program for the Galaxy Note 7 as a precautionary measure due to a battery cell issue." The company noted that there had been 35 cases globally as of September 1 and that it stopped selling the Galaxy Note 7.

Pilots, business aircraft operators and airlines that are concerned about the risks of lithium-ion-powered devices have a variety of choices of fire-containment systems, including heavily insulated bags with insulated gloves as well as cases. *—M.T.*

Inmarsat clears JetWave for GX Aviation takeoff

by Kerry Lynch

Inmarsat in late August announced final type approval certification for the Honeywell JetWave hardware that provides a connection to its GX Aviation in-flight wireless broadband service. The approval, which follows earlier certification by the FAA and EASA covering safety, environmental and installation standards, confirms that JetWave works as designed and completes the process necessary for the equipment to enter service on business aircraft and airliners.

The certification covers operation of the GX Aviation hardware in all environmental conditions with Inmarsat's Global Xpress Ka-band satellite network, which comprises three satellites that have been operational since last December. According to Honeywell and Inmarsat, GX Aviation will deliver broadband service at speeds and reliability comparable to those available on the ground. It is the exclusive hardware provider for Global Xpress business aviation and airliner applications.

Installations of JetWave are already under way on 26 different aircraft models and types. Honeywell develops specific STCs covering installations on particular models, working with operators, OEMs and installation centers.

According to Carl Esposito, Honeywell's v-p of strategy, marketing and product management, the company has received multiple STCs on a range of aircraft and work continues with the airlines, OEMs and installation centers on aircraft ranging from business aircraft to large airliners. Honeywell's own Dassault Falcon 900 test aircraft has the equipment installed, he said, adding that Bombardier has received Transport Canada approval for the equipment on the Global 5000 and 6000.

Installations are limited to larger business aircraft that can accommodate the requisite tail-mounted antenna: "If the aircraft is big enough for a tail-mounted antenna, we're probably doing it," Esposito said. "Business aviation operators are often early adopters, so we see a huge interest in this because they want to stay connected. They were early adopters of satcom, and we've seen business aviation customers upgrade their systems two and three times."

Honeywell continues to work with Kymeta, which has expertise in flat-panel antennas, for equipping smaller business aircraft to tune in to Global Xpress, he said. Esposito noted that when traditional L-band equipment was released, it was available only for large aircraft but is now accessible even by small general aviation aircraft.

The Ka-band service promises connectivity that is as much as 100 times as fast as the legacy L-band systems at one-twentieth of the cost. The system is also expected to be more reliable than existing Ku-band satellite connectivity services, since that service uses signals from satellites originally designed for fixed receivers, which can cause interruptions when aircraft transfer from one satellite to another.

Inmarsat has launched three geostationary satellites for the Global Xpress network that are designed for mobility and uninterrupted service everywhere. The satellites are operational and provide essentially global service. Launch of a fourth satellite that will add capacity is anticipated before year-end. The extra capacity will be allocated to areas most in need, said Frederick Van Essen, v-p of aviation strategy for Inmarsat.

Honeywell, which also has a master distribution agreement with Inmarsat for the business aviation services (known as Jet ConneX), believes that existing services, such as L-band and other ground-to-air options, will continue to serve a purpose. But the improved speed, coupled with greater reliability, will open the door to an array of services that extend beyond the passenger.

Esposito maintained that more reliable connectivity will enable flight crew to tap into data locked in computers and cited as an example the ability to download weather data gathered from its RDR-4000 weather radar and "crowdsourcing" that information to provide a more complete weather picture. He also pointed at efforts to gather maintenance data from the aircraft. ❑

ForeFlight Mobile v8.0 goes live

by Matt Thurber

Version 8.0 of the ForeFlight Mobile iOS app with a new aeronautical maps feature is now live on the Apple App Store. The new data-driven aeronautical maps eliminate delays in reloading and refreshing map elements when panning and zooming, and dynamic "always-up" labels and adjustable text sizes make reading text labels easier. Each zoom level displays information appropriate for that level, and for more detail the user just needs to zoom in more. With the new version, ForeFlight airport diagrams are integrated into the map and can be viewed by zooming in until the airport's details are visible, eliminating the need to open a separate airport chart.

Dynamic mapping also allowed ForeFlight to offer more user-selectable settings, such as light, dark or classic views and on-off buttons for terrain depiction on aeronautical maps, airways, ARTCC boundaries and place labels. A subtle but visually welcome new feature is hill shading on the Hazard Advisor terrain.

The ForeFlight team has been working on the mapping engine for the past two years. Basically, ForeFlight moved all the mapping functions to the graphics processing unit on the iPad, which speeds up the re-rendering every time the user changes the zoom level or pans the map to a different area. Another benefit of the new mapping engine is that third-party developers can add their own layers to the map to show their own content. For example, airshow organizers could add a layer for the airshow layout, airport buildings, parking areas and so on, and this could reside within the ForeFlight map temporarily, until the show ends. A static display, for example at the annual NBAA show or regional forums, could show each aircraft's location and details.

ForeFlight introduced other features with v8.0, including TFR alerting, with visual and aural alerts when approaching or entering an active TFR, and new web flight-planning capabilities and logbook functions such as flight sharing, remote signatures, progress tracking and Logbook Connect, which allows third parties access to ForeFlight logbook APIs for developing their own functions.

When choosing an airway in a flight plan, the new Smart Airway Labels first shows the name of the airway when zoomed out, but zooming in reveals more information such as magnetic heading and MEA. This works no matter which map is selected (aeronautical

Researchers study digital copilot to improve safety of single-pilot ops

by Matt Thurber

In a simulation laboratory at Mitre's Center for Advanced Aviation System Development in McLean, Va., researchers are testing digital copilot technology designed to help single pilots flying complex aircraft in busy airspace. The team's goal is "to bring several of the safety benefits of Crew Resource Management to single-pilot operations," according to Mitre. The research is done in Mitre's Integrated Demonstration and Experimentation for Aeronautics (Idea) lab.

Co-project leaders John Helleberg and Matthew Pollack are experienced general aviation pilots (Pollack is also an instrument flight instructor), and they have been working on the digital copilot for a year. Testing has been done in lab simulators and also in a Cessna 172.

The idea behind the digital copilot is to create foundational technology that runs on a mobile device, which is easy to bring into any aircraft, rather than software or hardware that must be permanently installed. As a federally funded research and development nonprofit corporation, Mitre doesn't create the end product but develops the concept into something that can be demonstrated, then offers it to industry. An example of this is the Idea lab's work on mobile-device-based software to help prevent runway incursions. App developer ForeFlight used those concepts in its Runway Proximity Advisor, which warns pilots audibly and visually when they are approaching a runway while taxiing and when they enter a runway.

"Our goal as a research organization working in the public interest is to do our best to improve general aviation safety and to transition these ideas out to industry where they can do the most good," said Helleberg. "ForeFlight incorporated the idea as close as it was to the version that we had been testing in our labs. They took some of the concepts that we had developed and put their own flavor on it."

Easing Single-pilot Workload

The digital copilot concept evolved from work done by the General Aviation Joint Steering Committee's Issues Analysis Team, to identify areas of concern and interest and "issues they wanted addressed," according to Pollack. Industry research also found that accident rates for single pilots flying turbine aircraft are significantly higher than in dual-pilot aircraft. "That helped spur the direction we were headed," Helleberg said.

The digital copilot research focused on the pilot's workload when flying alone, such as weather and traffic awareness and searching for information, all while maintaining control and communicating with controllers.

The research began with brainstorming sessions with pilots of various levels of experience. From there, the team prioritized the ideas then built algorithms that could be tested to see how they might help single pilots with their duties. Human-in-the-loop testing was done in the Idea lab's transport category and general aviation simulators, which also incorporate ATC interaction. The pilots flew twice, first to get exposure to the digital copilot concept and provide feedback, then the second time to assess whether the digital copilot actually improved their workloads. Flight-tests were also done in a Cessna 172 using the digital copilot running on a mobile device mounted in the cockpit.

Although the results so far don't indicate particular features that offer a clear safety benefit, the Mitre team hopes to quantify safety benefits with more research scheduled during the organization's 2017 fiscal year. The team is also reaching out to software developers and avionics manufacturers to share the lab's work.

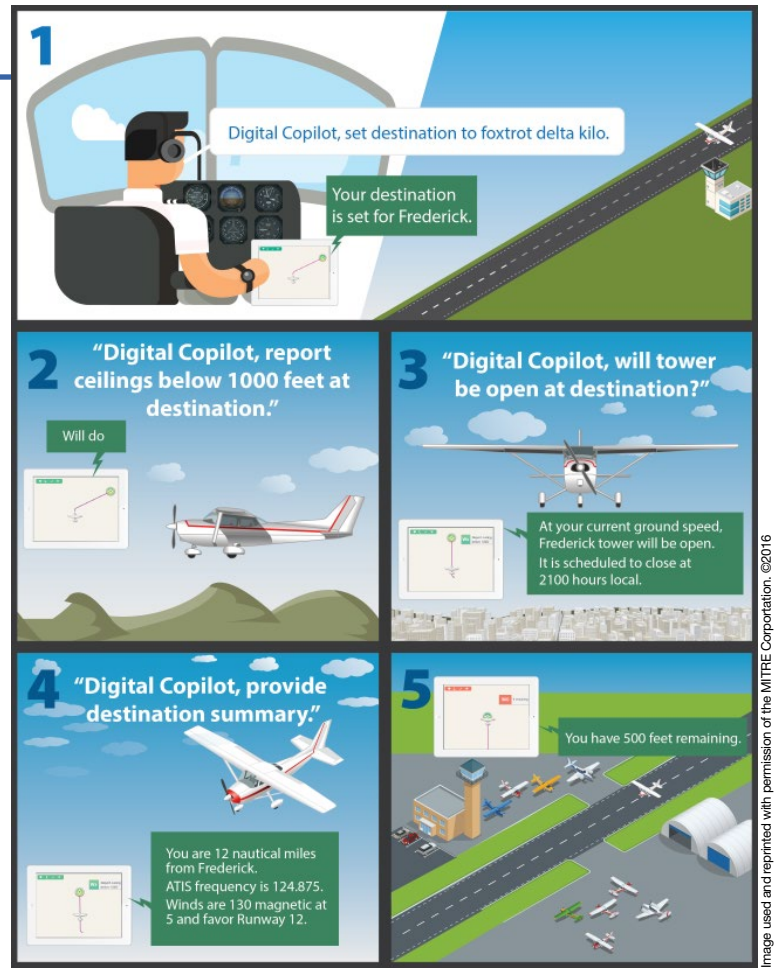
Some examples of the digital copilot in action can be seen on a video produced by the Mitre team. The focus is on anticipating the pilot's needs and providing information "at the right time and in the right format." The pilot can interact with the digital copilot with voice commands, telling it the flight-plan airport before takeoff. The digital copilot can read the checklist, then the pilot has to complete the required action and acknowledge before the next item is read. The digital copilot can call out runway remaining during takeoff. The pilot can tell the digital copilot to call out a reminder at a certain point, for example, 20 miles from destination or when to switch fuel tanks. Pilots can ask the digital copilot for information, such as the ATIS or tower frequency, and the idea here is to avoid the pilot having to look down at a chart. For the fuel tank reminder, there are some mobile apps that include a fuel timer, but a vocal reminder might be better at catching the pilot's attention.

While knowing how much runway is remaining can be useful, Helleberg pointed out that the intent is not to connect the digital copilot to any aircraft systems so it could provide guidance. For example, it will not analyze the acceleration and determine that the takeoff is not proceeding quickly enough to be continued safely. "We wanted to focus on providing information for pilots without being prescriptive and telling them to abort the takeoff," he said. "This is supplemental information. We didn't want to be giving pilots any guidance that would elevate risk. It provides the information, and pilots make their own decision.

"We've developed the core foundational algorithms that help the digital copilot predict what the pilot is trying to do, and use that knowledge to provide information to the pilot based on context. We developed some sample features, but we feel like we're just scratching the surface."

"We think there are a lot of possibilities," said Pollack. "Our goal is to figure out how to help the general landscape of single-pilot general aviation operations. We don't have a clear answer, and there are a lot of areas left for research. The eventual implementers of the technology would have to take that on, whatever is best for them and their customer base. The pilots we did run through the simulators were overwhelmingly positive."

Tyson Weihs, co-founder and CEO of ForeFlight, told **AIN**, "We haven't had a chance to look at the digital copilot in depth so we can't comment on that specifically at this point. It looks interesting. Mitre does do interesting research and thought work. For example, they deserve a lot of credit for helping get ADS-B off the ground. Their work is good 'fire starter' that industry then invests a lot in to refine and makes suitable for the market." ❑



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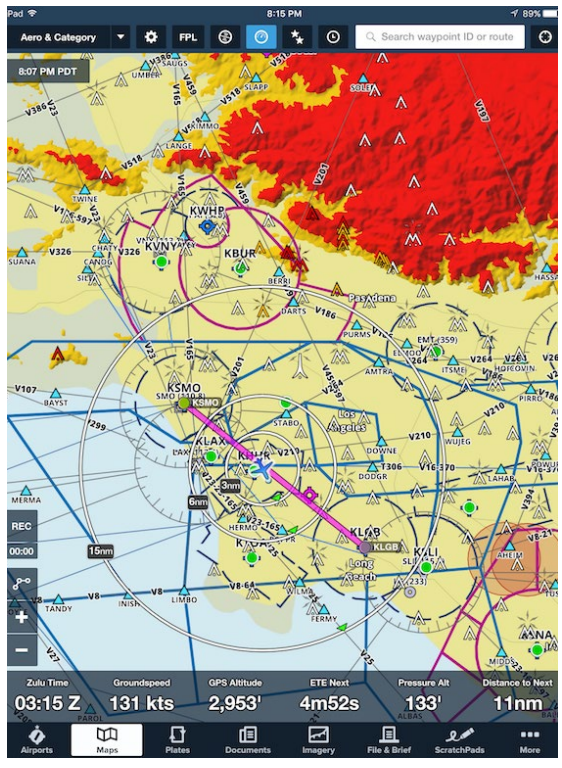
The research team at Mitre envisions the digital copilot acting as a resource for the pilot; the software issues guidance and leaves decision-making to the left-seater.

map, VFR or IFR). In the aeronautical map mode, this adds to situational awareness without cluttering the map with all the symbology found on an IFR chart.

The web version of ForeFlight has new features, too. Pilots can file, amend and cancel flight plans and use the route advisor to see suggested routing such as airways, recently cleared ATC routes, preferred routes or TEC routes. Aircraft profiles are now available in the web version, and the ForeFlight navlog does the same time and fuel burn calculations as the mobile app, with changes all synced between the two versions. Aircraft can be added with ICAO equipment and performance codes.

The logbook's remote signing feature allows students to send a draft logbook entry to their instructor, who can then review the entry, send it back with edits or sign it. Redbird Flight and Schedule Pointe are among the Logbook Connect launch partners, and the feature allows pilots "to send draft entries from their respective dashboards to their own logbook," according to ForeFlight.

The new features such as the aeronautical map and logbook require an annual Basic Plus ($149.99) or Pro Plus ($199.99) subscription to ForeFlight. ❑



The aeronautical map view in the new ForeFlight Mobile Version 8.0, with hill shading on the Hazard Advisor terrain.

NEWS UPDATE

First U.S.-made Arrius Delivered

Safran Helicopter Engines (the former Turbomeca) has delivered the first Arrius 2R turboshaft made at its plant in Grand Prairie, Texas. The 2R was certified in December last year and is slated to power the Bell 505 Jet Ranger X light single. Until now, it had been assembled at Safran's plant in Bordes, France. The 504-shp 2R has dual-channel Fadec with backup, engine data recorder and a 3,000-hour recommended TBO interval.

Bell 505 Production Costs Drop

Use of Galorath's Seer technology is helping Bell trim the 505's production costs by 50 percent compared to its predecessor, the 206B3. The two Seer cost-estimation suites allowed Bell project managers to model and track costs throughout the design process to get the most performance for the lowest design and final production costs. According to Bell, Seer was crucial in performing trade studies, which allowed Bell's project team to understand how specific design decisions would affect costs. Seer also enabled the design team to go beyond the traditional cost/hours per unit of weight metrics, using an extensive set of parametrically modeled cost drivers.

Aspen Displays OK'd for R44 A/P

Aspen has obtained FAA approval for its displays to be used as an attitude source for Genesys Aerosystems' HeliSAS stability augmentation and autopilot system on Robinson R44s. The approval covers both FAA STC SR02254LA and EASA version STC10057027.

Second Trekker Flies

Leonardo Helicopters has added a second AW109 Trekker light twin to its flight-test development program. The converted AW109S recently began flying in Italy. Leonardo says the program remains on track for EASA certification by year-end. The Trekker is a lower-cost, skidded version of the AW109S that features the IDU-680 electronic flight instrument system (EFIS) from Genesys Aerosystems.

U.S. Guimbal Fleet Growing

Midwest Helicopter Academy in Sauget, Ill., has taken delivery of its third Guimbal Helicopteres Cabri G2, bringing the total number of G2s in the U.S. to 12. Guimbal's U.S. distributor, Precision Helicopters of Newberg, Ore., has plans to import 12 more by year-end. According to Precision, by January the U.S. will be the third largest G2 importer (tied with China), behind the UK and New Zealand; it has plans to make the U.S. the largest G2 operator base by the end of next year.

Convertible Bell 407 FTD Available

The Helicopter Flight Training Center (HFTC) in Shreveport. La., has FAA certified its Frasca Bell 407 Level 7 flight training device (FTD) as a 407GX with NVG capabilities. The change allows the HFTC to convert the FTD's cockpit from analog to glass as required to accommodate students training in either a straight 407 or a 407GX. Changing out the FTD's cockpit takes about four hours. The HFTC is making the FTD available for dry lease, a set-up that allows operators to use their own instructors and training curriculum. *—Mark Huber*

HEMS operator modifies new helo delivery schedule

by Mark Huber

The largest helicopter EMS company in the U.S. posted slightly lower quarterly year-over-year net income for the quarter ended June 30 but higher income for the first six months of the year. Air Methods also reported significantly higher quarterly revenue for the period, up to $292.6 million from $263.6 million a year ago. Net income for the quarter fell to $26.98 million from $27.06 million from the year-ago period but climbed for the first six months of the year to $47.4 million from $39.9 million in the first six months of last year. While the overall financial report was good, there were hints of mild and looming turbulence.

Air Methods noted that reimbursements from insurers of patient transports continue to stretch out, to 155 days from a previous average of 131 days. *(See* **AIN**, *September, page 55.)* "Receivables were up by $13.9 million during 2016, compared to $1.6 million in 2015. Days' sales outstanding (DSOs) related to patient transports, measured by comparing net patient transport revenue for the annualized previous six-month period to outstanding open net accounts receivable, were 155 at June 30 this year compared with 131 at the same time last year.

"The increase in DSOs is attributed in part to additional time taken by private insurers to review claims and related documentation, including proof of medical necessity, before processing and to an increase in the number of accounts subjected to the extended review process by private insurers. We do not expect the claims processing times for private insurers to improve in the near term," the company said.

It also noted that it expects to receive less than full reimbursement from private insurers. "Although price increases generally drive up net reimbursement per transport from insurance payers, the amount per transport collectible from self-pay patients, Medicare and Medicaid does not go up proportionately with price rises. Therefore, depending upon overall payer mix, price hikes will usually raise the percentage of uncollectible accounts. Certain insurance companies have also not raised their reimbursement rates proportionately with recent price adjustments to the same extent they did with previous higher prices. Continued price increases may cause insurance companies to limit coverage for air medical transport to amounts less than our historical collection rates."

Scheduled Deliveries Could Change

Air Methods also noted that the Affordable Care Act (PPACA) a k a Obamacare had not produced a demonstrable increase in the number of patients it transported who had private insurance coverage. "One of the primary goals of PPACA was to reduce the number of uninsured Americans. Although we have experienced a movement from self-pay patients to Medicaid in our payer mix in prior periods, to date we have not experienced an increase in the percentage of transports covered by private insurance as a result of PPACA."

Air ambulance operator Air Methods accepted the first EMS-configured Bell 407GXP early this year during a ceremony at its Englewood, Colo. headquarters.

While it has taken delivery of 38 new helicopters during the first half of the year and expects to take six more by year-end, it also hinted that it is in the process of curtailing its massive buy of 200 Bell 407GXPs, worth almost $900 million, announced last year. Air Methods stated, "In the first quarter of 2015, we entered into an agreement to purchase 200 Bell 407GXPs totaling $882.6 million over a 10-year term beginning in 2016. We expect to take delivery of 12 aircraft under this agreement in 2016, including seven that have already been delivered.

"During 2016 we began discussions with Bell Helicopter Textron to modify the terms of the purchase agreement, including the total number of aircraft to be delivered under the agreement and application of related deposits. In the event we exercise our right to termination for convenience or are prevented from taking or decline to take delivery of the aircraft for any other reason, we may forfeit nonrefundable deposits up to $6.3 million.

"We intend to use the new aircraft for base expansion opportunities as well as to replace older aircraft in the fleet. We plan to either sell the aircraft which are replaced, use them for spare parts or redeploy them into the backup fleet."

On September 14 the company told **AIN**, "Air Methods remains committed to Bell Helicopter as our preferred single-engine aircraft provider and to the Bell 407GXP as our preferred single-engine aircraft. We rely heavily on our aircraft to support our promise of giving more tomorrows, and given the capabilities and performance of the Bell 407GXP, it continues to be the right fit for our needs. We will not receive new aircraft deliveries for the remainder of the year and have scaled back our deliveries for 2017; however, we look forward to continuing our long-term partnership with Bell Helicopter for the duration of our 10-year commitment."

Revenue and net income from the company's air tourism division declined in the quarter from the year-ago period, dropping to $32.2 million from $34.4 million and to $2 million from $3.9 million, respectively. Air Methods' United Rotorcraft modifications business posted a 66.4 percent climb in revenue for the quarter, to $7.4 million, on the strength of contracts to provide air medical interiors under a military contract, but still managed to post a narrow quarterly loss of $200,000 on external sales. ❑

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Sikorsky S-97 Raider. Researchers believe they can achieve a significant improvement in lift-to-drag ratio by modifying the dynamic air inflow.

Texas researchers study dynamic coaxial inflow

Aerospace researchers at the University of Texas at Austin and associated collaborators have received a five-year grant from the Pentagon and NASA to study the dynamic inflow of air associated with contra-rotating coaxial main rotor systems like that found on the Sikorsky S-97 Raider. Dynamic inflow refers to the control inputs to the rotor that affect the surrounding air, which in turn affects the forces generated by the rotor. The grant will fund the research and development of techniques that can measure dynamic inflow. The research team includes collaborators from the University of Maryland at College Park.

"It's mostly an experimental project, where we'll actually measure perturbations," said University of Texas aerospace engineering associate professor Jayant Sirohi. "It's one of the few times it's been done for any rotor system and we'll be doing it for the first time on this special rotor system." Last year Sirohi and his team began wind-tunnel testing the coaxial rotor design to accumulate performance data.

That data showed that the coaxial system they developed had a lift-to-drag ratio that was 1.5 times greater than that of a single-rotor helicopter. Sirohi said that the gains could potentially be even greater with rotor blades finely tuned to improve lift.

Sirohi points to the inherent advantages a coaxial system has over traditional single-stack rotors; stacked rotors turning in opposite directions boost the helicopter's speed and efficiency by canceling out forces that cause uneven lift on single-rotor helicopters. "You don't have to get rid of the extra lift on the advancing side of the rotor, because the two rotors cancel their rolling moments," Sirohi said. "So the aircraft remains in level flight, and because you can make more efficient use of the rotor disk, forward flight is more efficient," he said.

Graduate students on Sirohi's research team are building the 20-percent-scale rotor system and much of the research is necessarily focused on adapting devices and measuring techniques to the small scale. "We're doing everything on a model scale, so it gets difficult to fit everything in that small volume. And we're also spinning much faster than a full-scale helicopter rotor," Sirohi said. In addition to developing experimental tools, the team is working on fine-tuning the rotor system controls, so that variables such as pitch can be carefully adjusted. Once the measurements are collected, they will be used to make a digital model of the system scaled up to actual size. But Sirohi said it's likely that the data-collection methods could influence other research beyond helicopters. "The measurements will be used to make a full analytical model of this system, but more important we'll be developing some tools along the way. Some experimental techniques, some analytical tools that we may be able to use in other types of research, not restricted to helicopters," he said.

Sirohi acknowledged that both Sikorsky and AVX are focused on developing helicopters with contra-rotating main rotor systems as part of the Defense Department's ongoing competition for the Future Vertical Lift program, but much of their work is classified and product-specific, while his team is more focused on the basic science. "While these [industry] teams are more interested in getting a prototype flying, we are looking at the fundamental physics of these systems," Sirohi said. —*M.H.*

Certification of the twin-engine AC312E is planned for next year.

First flight for China's Avic 312e

Aviation Industry Corporation of China (Avic) has successfully flown the AC312e light medium twin for the first time. The helicopter is derived from the previous "A" model, itself a descendant of the Harbin Z-9, which was based on the Airbus Helicopters AS365 and manufactured locally under license since the early 1980s and in service since the early 1990s. A substantially upgraded model featuring Arriel 2C engines was introduced in 2002. Cumulatively, Avic has produced 200 Z-9s.

The 312e will feature improved high/hot performance thanks to the installation of a pair of Safran Helicopter Engines Arriel 2Es (1,000 shp each) and Rockwell Collins Pro Line 21 avionics to support growth for synthetic vision, helicopter Taws and EFB. Other options are the RTA-4112 MultiScan weather radar and the TTR-4100 Tcas II traffic surveillance system. The AC312e will be able to carry nine passengers, have a maximum cruise speed of 165 knots, an mtow of 9,921 pounds and a service ceiling of 19,685 feet. Certification is anticipated next year. —*M.H.*

UBS: PRE-OWNED HELICOPTER INVENTORY SHRINKS IN AUGUST

There were 1,364 pre-owned helicopters available for sale at the end of August, which equates to 6 percent of the installed base and 1 percent lower than in July, according to data released last month by UBS Global Research. This inventory is "roughly in line with recent historical average," it said.

Inventories of young pre-owned helicopters—those zero to 10 years old—are even lower, at 5 percent of the in-service fleet, marking a 3-percent decrease from July. However, this is still about 44 percent above the mid-2011 trough for young helicopter inventory and just 4 percent below the 2009 peak.

By manufacturer, UBS said that both Leonardo and Sikorsky have the largest percentage of their in-service fleets (all ages) available for sale at 8 percent. UBS said that pre-owned inventory of rotorcraft from MD Helicopters, Airbus Helicopters and Bell Helicopter is at 6 percent of in-service fleets—in line with the overall average for all helicopters.

According to UBS, approximately 6 percent of the 12,824-strong single-engine fleet was listed for sale at the end of August, compared with 7 percent of the light twin fleet (4,144 in service), 7 percent of the intermediate/medium fleet (3,913 in service) and 2 percent of the large fleet (626 in service). By weight class, pricing for single-engine helicopters rose 2 percent; light twin pricing dropped 31 percent; and intermediate/medium pricing plunged 45 percent.

The analyst firm estimates that the average age of available pre-owned helicopter inventory is 20 years, a year older than the installed fleet. By manufacturer, Bell's available inventory and in-service fleet are the oldest at 27 and 26 years, respectively, while Leonardo's available inventory and in-service fleet are the youngest at 15 and nine years, respectively.

Airbus has more than 160 young helicopters available for sale, the most of any manufacturer, while Leonardo's inventory contains the greatest proportion of young aircraft, with 40 percent of its for-sale inventory falling in this category.—*C.T.*

COWBOYS GET A LIFT

Dallas Cowboys owner Jerry Jones took delivery last month of a new Airbus Helicopters H145 medium twin. It's painted in team livery and carries the Cowboys' signature blue star on the top of the vertical stabilizer. The completion was performed by Airbus Helicopters in Grand Prairie, Texas, near Dallas. Airbus Helicopters began operations in Grand Prairie in 1969, a good year for the Cowboys: they went 11-2-1. Last year the team finished last in its conference with a 4-12 record. —*M.H.*

The U.S. Army placed an order for 31 Airbus UH-72 Lakotas in late 2014. AgustaWestland (now Leonardo) challenged that decision on the grounds that it did not include a complete competition.

U.S. claims court sides with Leonardo in Army dispute

by Mark Huber

On August 24 the United States Federal Claims Court issued a potentially far-reaching opinion (AgustaWestland North America, Inc. v. United States No. 14-877 C) in the continuing dispute between Leonardo Helicopters and the U.S. Army concerning the Army's decision to use the Airbus Helicopters UH-72A Lakota light twin as its primary training aircraft. The Army decided to use a portion of the 400 UH-72s it had already purchased and/or optioned under a $3.2 billion Light Utility Helicopter (LUH) 2006 contract and to order more helicopters under that contract to fulfill the training mission. To help bring its training operations at Fort Rucker, Ala., to full strength, the Army filed a "justification and approval" in December last year to purchase 16 more UH-72As without "full and open competition." The Army also intends to purchase another 97 training helicopters for FY18 for the training mission, subject to congressional appropriations.

While the court upheld the validity of the Army's 2006 contract with Airbus, it issued a preliminary injunction and remanded the matter to the Army for six months to: "(1) proceed with a competitive procurement; (2) reissue a new Justification and Approval For Other Than Full And Open Competition, correcting the deficiencies identified herein and conducting a new Independent Government Estimate; or (3) not proceeding with this procurement."

This basically gives the Army the choice of continuing to conduct primary training operations with a mixed fleet of aging Bell TH-67s/OH-58s and newer Airbus UH-72As; conducting training with a mixed fleet of UH-72As and some other helicopter; conducting training with all, but fewer UH-72As; or rewriting the Justification and Approval document and possibly facing more rounds in court with Leonardo.

More troubling for the Army, "the court has determined that the April 3, 2014 Executive Order 109-14, to the extent that it standardized on the UH-72A Lakota helicopters as the Army's 'only one responsible source' for Institutional Training Helicopters, violated the CICA (federal Competition in Contracting Act)."

Proceedings in the case are currently stayed during the six-month remand period, during which time the government must make progress reports to the court every 90 days. Beyond the immediate case at hand, it could set a legal precedent whenever a service branch wants to make limited inventory additions to existing systems, forcing them to competitive bid limited-quantity replacements.

The U.S. Army began primary training for helicopter pilots using the Airbus UH-72A at the 110th Aviation Brigade at Fort Rucker, Ala., late last year. The Army's plan is to transition its basic training and basic combat skills training flying from a combination of the Bell TH-67 Creek and OH-58A/C Kiowa Warrior to the UH-72A over the course of the next four years. This year, 25 percent of students will train in the Airbus and the number will climb by 25 percent annually as the fleet grows to 204 from the current 61 as the Bells are retired. ❑

S-76 rotates into Burning Man

Arriving by air at the annual counter-culture Burning Man festival in Nevada's Black Rock desert is not new; private pilots and fixed-wing charter operators have been doing it for years at the temporary airport (88NV) established there each year for the festival. What was new this year is that you could do it from Reno in a Santa Barbara Helicopters Sikorsky S-76A+ operated by Coastal Helicopters.

While some hard-core "Burners" took umbrage with this new level of luxury conveyance, posting related hostilities on social media, Santa Barbara Helicopters' Eric Haymes said the service was well received by its more affluent target audience who were willing to pay around $10,000 each way—chartering the whole helicopter—for the 40-minute flight from Atlantic Aviation at Reno/Tahoe International Airport. Haymes said round-trip customers received a slight discount. "It's the most luxurious way to arrive, but definitely not the most affordable," Haymes conceded, acknowledging a plethora of lower-cost fixed-wing, largely turboprop, options available through the ad hoc "Burner Express" online booking service.

"It was a good experience," Haymes said, "quite different from anything else we've ever been involved in. It's a pretty interesting group of people up there in Black Rock. We got in a little late in the game, getting approved to fly there only a few weeks out so we weren't as busy as we could have been."

Well heeled visitors to the Burning Man festival arrived in style: on a Sikorsky S-76 operated by Coastal Helicopters. The 40-minute flight transported attendees from Reno-Tahoe International to temporary airport 88NV for the counter-cultural festival.

Haymes said the desert conditions presented the biggest operational challenge for running a rotorcraft service. "It's very dirty out there, very dusty. We'd have the helicopter all spit-shined when it would leave and it would come back covered in dust and we'd have to power wash it and wash the engines and get it ready for the next flight. They close the airport at 6:30 p.m. so there were only daylight operations. We were up there a full week. We had people up there a few days before the event opened who were building their camps," he said. The S-76 flew with two-pilot crews. Passengers were provided with a variety of cold, non-alcoholic hydrations to steel them for the arid temperatures at their destination, which occasionally soar into the triple digits.

Coastal Helicopters is based in the Los Angeles Basin at Brackett Field (KPOC) in LaVerne, Calif., and operates the Airbus Helicopters AS350, Bell 206 and 205, and the S-76. In addition to charter, it has extensive firefighting experience. Haymes recently purchased a second S-76 that he plans to add to Coastal's Part 135 certificate by year-end. —*M.H.*

FAA appears to warm to easier Part 27 IFR regs

The industry has been working with the FAA for two years on developing more cost-effective ways to bring IFR equipment to Part 27 single-engine helicopters. The industry is urging the FAA to separate the rules governing Part 27 rotorcraft from those covering Part 23 airplanes.

The FAA appears poised to adopt 2015 industry recommendations aimed at reducing the costs and complexities associated with single-engine helicopters meeting IFR certification requirements under Part 27 of the Federal Aviation Regulations (FARs). The industry views the change as key to expanding IFR operations and improving safety. Led by the Aircraft Electronics Association (AEA), American Helicopter Society International (AHS), General Aviation Manufacturers Association (GAMA) and Helicopter Association International (HAI), the rotorcraft industry had submitted a white paper to the FAA detailing proposed alternative means of compliance for meeting these standards.

In July, Lance Gant, manager of the FAA Rotorcraft Directorate, wrote that the FAA "has begun the process of adopting some of the concepts and recommendations of the white paper into a proposed Safety Continuum for Part 27 Systems and Equipment Policy Statement." Gant noted that the proposed policy statement—which the FAA expects to release for public comment by December—will create "classes" of Part 27 rotorcraft defined by weight (up to 7,000 pounds) and passenger capacity.

"We are encouraged that the FAA not only appears to be supportive of the white paper but is adopting a much more tenable overall approach to leveraging advances in technology for safety and efficiency," said AHS executive director Mike Hirschberg.

Earlier this year Gant told **AIN**, "We've been in discussion with industry for two years now on this concept. On the certification side, industry took the position that if we lower the certification burden of getting autopilots and advanced avionics into helicopters, then IFR would be pursued more often from the certification side. They did send us their final white paper around the end of November of last year, and we made a commitment to get a response to that paper in the first calendar quarter of this year. It is outside rulemaking because industry is asking us to make a policy change and not a rule change. I don't have a good timeline on that, yet I would hope sooner rather than later. I don't want to have to commit my guys to having something done this year. We're looking at a little broader effort that would address equipage in Part 27 overall and not just concentrating on IFR. Generally we are favorable to the effort."

Industry groups have long complained that certification of IFR installations in Part 27 helicopters is based on the rules for Part 23 fixed-wing aircraft, making such installations overly burdensome, complex and costly and thereby discouraging them and impeding IFR operations in this category of helicopter. The industry white paper noted that, as a result, the "number of single-engine rotorcraft IFR certifications has dropped from several in the 1980s and 1990s to virtually none since 1999. This is in spite of technology such as [GPS] area navigation and [Waas] GPS approach procedures which make IFR flight more relevant to helicopter operations than in the 1980s and 1990s." It went on to point out that regulatory relief is needed in the form of decoupling the certification requirements for Part 23 fixed-wing avionics systems and those for Part 27 rotorcraft. "The relatively small rotorcraft market has traditionally relied on Part 23 airplane-derivative systems and equipment to achieve financial practicality. But as certification requirements for Part 23 airplane systems and equipment are reduced (especially in terms of Design Assurance Levels and equipment qualification), adapting low-cost, Part 23 technology to the Part 27 helicopter market becomes impossible in some cases, and in others, impractically costly." —*M.H.*

WWW.RUSSIANHELICOPTERS.AERO

Russian Helicopters has announced plans to more actively pursue the light helicopter market. Its 7,275-pound Kazan Ansat fits that bill.

RUSSIAN HELICOPTERS BACKLOG GROWS, INCOME SHRINKS

Russian Helicopters recently announced it has boosted its order backlog to 500 helicopters and that it intends to pursue the offshore and light helicopter segments more aggressively. CEO Alexander Mikheev said he is encouraged by the size of the order backlog even as the company reported plummeting income for the first six months of this year, down 24.1 percent to $156 million.

Russian Helicopters delivered 212 helicopters last year and claims a 15 percent share of the worldwide market for civil and military helicopters; 35 percent of military helicopters overall; and 50 percent of medium transport helicopters. In the worldwide civil market, the company claims 71 percent in the 20-ton and over segment and 69 percent in the seven- to 20-ton segment. Last year the company posted a 30 percent gain in sales of aftermarket product support services, taking this segment to $390 million. Last year it posted income of $450 million on overall revenue of $3.03 billion, with significant sales gains from clients in Africa, which accounted for almost half of all new-helicopter sales for the company. —*M.H.*

FIRST H175 DELIVERED IN THE AMERICAS

The first Airbus H175 super-medium twin has been delivered to a customer in the Americas. Mexico's Transportes Aéreos Pegaso took delivery of the aircraft, which it will use for oil and gas operations in the Gulf of Mexico. The company will take delivery of a second H175 next year. The new aircraft will provide transport services for the oil industry and support seismic exploration activities in the Mexican waters of the Gulf of Mexico.

Transportes Aéreos Pegaso has flown Airbus/Eurocopter products for three decades and currently operates 30 of them, mainly H145s and H135s but also H130s and H155s. Earlier this year, Pegaso signed a framework agreement for 10 new H145 twins. The H175 already flies for the oil and gas industry in the North Sea and Western Africa. As of today, Airbus holds orders for 100-plus H175s. The first private version was delivered earlier this summer—another is planned by year-end—and deliveries of the public-services version for SAR, EMS, law enforcement and other missions will begin next year.

Airbus plans to deliver 10 H175s this year and is rolling out planned performance improvements for flight into limited icing, a max weight increase to 17,180 pounds and capability upgrades such as synthetic vision to the Helionix avionics suite. —*M.H.*

Mexico's Transportes Aéreos Pegaso accepted the first Airbus H175 super-medium twin to be delivered to a customer in the Americas. The company, which plans to use the helicopter for oil-and-gas operations in the Gulf of Mexico, will take delivery of a second H175 next year.

NEWS UPDATE

Third E190-E2 Flies

The third of four prototypes of Embraer's E190-E2 took off for the first time on August 27 from the Brazilian airframer's headquarters in São José dos Campos. Announcing the program's latest first flight, Embraer said it will use the aircraft mainly to test flying qualities and evaluate handling in icing conditions as part of a certification program slated for completion during the first half of 2018.

Embraer said that the first E190-E2 prototype, which made its first flight on May 23, continues to conduct tests on systems, loads, aero-elasticity, external noise and crosswind handling. The second prototype joined the flight-test program on July 8 and tests systems and general aircraft performance. So far, the two twinjets have logged more than 150 flight hours.

Plans call for the fourth prototype to start flying early next year. It will feature a production-series cabin used to measure factors such as internal noise and passenger emergency evacuation.

Latam Takes Its First A320neo

Latam Airlines Group has taken delivery of its first Airbus A320neo, the airline and manufacturer announced on August 30. Airbus president and CEO Fabrice Brégier presented the airplane, fitted with Pratt & Whitney PW1100 geared turbofans, to Latam Airlines Group CEO Enrique Cueto and other Latam executives during an August 29 ceremony at Airbus's headquarters in Toulouse, France. Latam Group also received its fourth Airbus A350-900—and the first to bear its livery. The group's first A350-900 arrived in Brazil last December in the livery of Latam subsidiary TAM. It became the first A350 to enter revenue service in the Americas in January.

The airline plans to operate the first aircraft on domestic routes in Brazil initially, serving Brasília, Belo Horizonte, Campo Grande, Curitiba, Florianópolis, Porto Alegre, Recife, Rio de Janeiro and São Paulo. It expects to deploy the aircraft on international routes in South America next month.

Airbus Draws Flurry of Asian Deals

A trio of order announcements by Airbus highlighted a state visit to Vietnam by French President François Hollande last month. The contracts, consisting of a firm order from Vietjet for 20 A321s, a firm order from Jetstar Pacific for 10 A320s and a memorandum of understanding from Vietnam Airlines covering 10 A350-900s, carry potential value of some $6.5 billion at list prices.

Vietnam Airlines last year became the first airline in East Asia and the second in the world to operate the A350 XWB. The carrier is now flying four of the aircraft in revenue service and expects delivery of another 10 on firm order.

The Vietjet order covers 10 A321neos and 10 current-generation A321s. The airline plans to use the airplanes to expand its domestic and regional network. Vietjet and Airbus also sealed an agreement for the manufacturer to provide training services for flight crew and maintenance personnel at the airline's new facility in Ho Chi Minh City. Finally, the order from Jetstar Pacific—a joint venture between 70-percent owner Vietnam Airlines and Qantas—marks the first direct purchase by the airline from Airbus. The aircraft will join an existing fleet of 12 leased A320-series aircraft flying on domestic and regional routes. *—Gregory Polek*

Botched go-around led to EK 777 crash

by Gregory Polek

The pilots of the Emirates Airline Boeing 777-300 that crashed while landing in Dubai on August 3 applied full thrust only three seconds before runway impact during an attempt at a go-around, according to a preliminary report issued September 6 by the United Arab Emirates' General Civil Aviation Authority (GCAA). During the sequence of events detailed in the report, the engines did not respond until one second before impact, too late to apply enough thrust to avoid the crash.

Although the report did not explicitly blame the crew for the accident, it also did not mention technical problems during any phase of the flight.

Arriving in Dubai from Thiruvananthapuram, India, Flight EK521 carried 282 passengers and 18 crewmembers, all of whom evacuated before a subsequent explosion and fire eviscerated the fuselage. No fatalities resulted from the crash-landing, but one firefighter died while fighting the blaze.

The report summary said that during the approach, wind direction started to change from a headwind of 8 knots to a tailwind component that gradually increased to 16 knots.

While flying at 159 kias and 35 feet radio altitude (RA), the captain started to flare the aircraft. According to FDR data, the autothrottle mode moved to idle and both thrust levers moved toward the idle position. While flying at 160 kias and five feet RA, five seconds before touchdown, the wind direction started to change to a headwind.

Long-landing Alert

The right main landing gear touched down first, 1,100 meters (3,609 feet) from the Runway 12L threshold at 162 kias, followed three seconds later by the left main landing gear. The nose landing gear remained in the air. Meanwhile, the aircraft's runway awareness advisory system (RAAS) sounded the aural message "long landing, long landing." Four seconds later the aircraft became airborne as the pilots moved the landing gear lever to the "up" position. As the landing gear unlocked and began to retract, air traffic control issued a clearance to continue straight ahead and climb to 4,000 feet and the pilots read back the clearance correctly.

The aircraft reached a maximum height of approximately 85 feet RA at 134 kias, with the landing gear in transit to the retracted position. The aircraft then began to sink back onto the runway. Both crewmembers recalled seeing the airspeed decreasing and the copilot called out "check speed." Not until three seconds before impact with the runway, did the pilot flying move both thrust levers from the idle position to full forward. The autothrottle moved from idle to thrust mode, and about one second later, a ground proximity warning system (GPWS) aural warning of "don't sink, don't sink" sounded.

Both engines began to respond to the pilots' thrust lever movement just a second before impact, when the aft fuselage struck the runway at 125 knots and at a rate of descent of 900 feet per minute. The engines then hit the runway as all three landing gear moved toward the retracted position.

As the aircraft slid along the runway, the number-two engine-pylon assembly separated from the right wing, from where an intense fuel-fed fire erupted. As the aircraft continued to slide down the runway, an incipient fire started under the other engine.

After the airplane came to rest, all the occupants evacuated via escape slides. The report listed injuries to 22 passengers and three crewmembers. About nine minutes after the airplane came to rest, a firefighter sustained fatal injuries when the center fuel tank exploded. ❑

Two Bombardier C Series CS100s have flown 600 hours for Swiss International Airlines.

ENGINE SUPPLY DELAYS TO SLOW C SERIES DELIVERIES

Delivery delays of PW1500 geared turbofans from Pratt & Whitney have prompted Bombardier to lower its forecast for C Series shipments to seven from 15 for this year, Bombardier announced last month. It did not reveal the source of the delivery delays, but emphasized that the engine has performed well once it enters service. "We are working closely with Pratt & Whitney to address this supplier ramp-up issue quickly and to ensure we have a strong supplier base to support our long-term growth objectives," said Bombardier Commercial Aircraft president Fred Cromer. "We are confident in our production ramp-up plan, including our ability to meet the production goal of 90 to 120 aircraft per year by 2020."

For its part, Pratt & Whitney would offer no explanation beyond a short written statement that appeared to point to difficulties with the supply chain. "In terms of production, we've made significant headway in the supply chain, but there is some pressure on new engine deliveries for this year," said Pratt. "We are working closely with our customers on the delivery schedule, and we are keeping them apprised of the progress being made."

A Pratt & Whitney spokeswoman insisted that the delays in no way relate to technical problems early in the PW1500G the program, nor do they bear any relationship to the extended restart intervals involving the PW1100G for the Airbus A320neo. "That issue is completely behind us," she said.

As of the middle of last month, the first production C Series CS100 had flown for launch operator Swiss International Airlines for six weeks. Bombardier confirmed that the two airplanes so far delivered to the Lufthansa subsidiary had flown 400 revenue flights and logged 600 hours. Delivery schedules call for the larger CS300 variant to enter service with AirBaltic in the fourth quarter.

Bombardier said the delivery adjustment will result in lower revenue at Commercial Aircraft for the year without "materially" affecting EBIT. The company now expects to close the quarter at the lower end of its $16.5 billion to $17.5 billion revenue guidance range, while EBIT finishes at the upper end of the $200- to $400 million range. The Canadian airframer added that it expects to end the year with a strong liquidity position and achieve both its 2018 cash flow neutral goal and its 2020 turnaround plan objectives.

Separately, Bombardier received the second and last $500 million installment of the government of Quebec's investment in the C Series program on September 1. The total $1 billion investment gives Quebec a 49.5-percent share in the new entity called the C Series Aircraft Limited Partnership (CSALP) while Bombardier continues to own a controlling stake. *—G.P.*

ANA Boeing 787s have experienced three engine-related "irregularities" this year.

FLICKR: CREATIVE COMMONS BY BRIYYZ

Rolls-Royce to replace turbine blades early on all Trent 1000s

by Gregory Polek

Rolls-Royce will replace all Trent 1000 intermediate pressure turbine blades with a new design over a period of three years to address fatigue cracking resulting from sulfidation corrosion, the engine maker acknowledged in late August. The program covers 169 Rolls-Royce-powered Boeing 787s.

The decision comes after consultations with Japan's All Nippon Airways, which has experienced such "engine related irregularities" with three Trent 1000-powered Boeing 787s since February. The most recent case, on an August 20 domestic flight from Tokyo Haneda to Miyazaki, forced ANA to extend a Rolls-designed program to replace the blades on its internationally operated 787-8s to the Dreamliners it uses for domestic operations, forcing the cancellation of some 20 flights in the following days.

The first two instances of what ANA termed engine irregularities—one on February 22 and the other on March 3–forced the return of two international flights to their departure airports. Those incidents prompted Rolls-Royce to recommend replacing the engines operating on international flights earlier than indicated in their design specifications. Because international operations involve flight through airspace with higher atmospheric concentrations of certain corrosion-producing chemical compounds and the airplanes' engines run hotter, those engines would more likely generate fatigue cracks, the thinking went. Boeing has delivered 169 Rolls-Royce-powered 787s.

However, the same engine "irregularities" found on the airplanes that returned to their departure airports earlier in the year also developed during the August 20 domestic flight between Haneda and Miyazaki. As a result, ANA also decided to apply the early replacement program to its domestically operated 787s. ANA flies fifty 787s in all.

Until Rolls-Royce re-equips new engines with improved, corrosion-resistant blades as a permanent fix, ANA will fit engines removed from existing aircraft with brand new or "minimally used" turbine blades now in use. "We would like to emphasize that this current type of turbine blade does not pose any safety concerns when in brand new or minimally used condition," said ANA in a statement.

Rolls-Royce, meanwhile, said it would continue to "manage the situation" with all operators through a service maintenance program involving like-for-like replacements. "We are producing blades now for like-for-like replacement to support the ongoing service maintenance plan for the fleet," it added. "We will introduce a new improved blade design by the end of the year."

While Rolls-Royce said it agreed with ANA's decision to extend its replacement program to airplanes operating domestic flights, the airline's accelerated service management program "does not change [its] assumptions with regard to the rest of the Trent 1000s in operation."

Although ANA's program will take about three years to complete, Rolls stressed that airlines with smaller fleets will not take as long, and that it will work with every customer to speed the process. —*G.P*

IATA PRESSES EGYPT TO RELEASE BLOCKED AIRLINE REVENUE

The International Air Transport Association (IATA) is urging the Egyptian government to relax restrictions on foreign currency transfers that have prevented international airlines from repatriating income from ticket sales. The restrictions, imposed in March this year, have blocked $275 million in foreign-exchange transfers from Egypt.

According to IATA, negotiations among some of its member airlines, the Egyptian Civil Aviation Authority and the Central Bank of Egypt produced agreement to release some $240 million, but the terms under which the remaining amount could be released are still in question. "Talks continue toward establishing a realistic and achievable payment schedule to settle the amount remaining," said IATA in a written statement.

IATA, which represents 265 airlines accounting for 83 percent of air traffic, has told Egyptian authorities that aviation is an essential component in the country's efforts to overcome its continuing economic difficulties. It estimates that aviation supports a million jobs in Egypt and generates $13.1 billion in annual social and economic benefits to the country.

"Airlines struggle to provide vital connectivity if they are not able to recover revenue essential to covering their costs," said the association. "IATA, the airlines serving Egypt and the government of Egypt are working closely to find a solution that will comply with international obligations and facilitate effective air links in support of Egyptian trade and tourism."

In June, IATA criticized the governments of Nigeria and Venezuela for blocking the repatriation of international airline revenue, asserting that Venezuela had blocked as much as $3.78 billion over the preceding 16 months. —*C.A.*

Mitsubishi seeks to restart aborted MRJ ferry flight

by Charles Alcock

Mitsubishi Aircraft is working to resolve issues that led to the first prototype of the Mitsubishi Regional Jet (MRJ) twice aborting a ferry flight across the Pacific Ocean to the Japanese company's engineering facility in Moses Lake, Wash. In an August 29 statement, the manufacturer confirmed that flights on August 27 and 28 "were aborted when anomalies were detected in the signals generated by sensors monitoring air management systems."

The incidents forced MRJ test pilots to turn back to Mitsubishi's headquarters at Nagoya International Airport.

The MRJ uses two air management systems, one installed on each side of the aircraft. The sensor malfunctions happened on the left side of the aircraft. "The air management system operated properly during the flights; however, considering the long flights to the United States, the decision was made to take all possible measures to fly the MRJ in perfect condition," said the company.

Mitsubishi is still preparing to fly the first prototype MRJ airliner to the Japanese company's new engineering facility at Moses Lake in Washington State.

The MRJ flight test campaign resumed in Japan on September 9, following consultations with air management system supplier UTC Aerospace. However, the company did not expect to schedule another ferry flight until late last month or early this month to give it time to gain approval from Russian authorities to land in their territory on the way to the U.S. West Coast.

Mitsubishi's schedules called for flight-testing to start at the company's new engineering facility at Grant County International Airport in Moses Lake during this year's fourth quarter, but the manufacturer had hoped to move that target forward to late summer. Mitsubishi first flew the MRJ on November 11 last year and has since engaged in limited flight-testing in Japan as it aims to deliver the first airplane in the second quarter of 2018. The company landed its first European customer for the MRJ in July, when Swedish leasing group Rockton ordered 10 MRJ90s and reserved options on another 10. ❑


TAP Maintenance and Engineering retrofitted an Airbus ACJ319 with sharklets for Comlux The Aviation Group.

COMLUX IS FIRST TO RETROFIT AN ACJ319 WITH SHARKLETS

Comlux The Aviation Group has become the first to retrofit an Airbus ACJ319 with sharklets. The retrofit cuts fuel burn by up to 4 percent and provides a corresponding range improvement. It was performed by TAP Maintenance and Engineering as part of the first such turnkey-project managed by Airbus Corporate Jets. It is also the first on any version of the A319.

Sharklets act as a barrier to the flow of air around an aircraft's wingtips, reducing drag to save fuel. They have been offered as an option on all A320-series aircraft produced in recent years and are standard fit on all A320neos. Sharklets can also be retrofitted to existing A320s from S/N 1200 onward.

"Comlux has always been a leader in Airbus corporate jets, and our sharklet retrofit highlights our approach to offering customers a modern corporate jet fleet," said Comlux chairman and CEO Richard Gaona.

FAI BREAKS GROUND ON HANGAR

FAI Asset Management has begun construction of a third hangar—to be known as Hangar 8 and used for aircraft maintenance—at Albrecht Dürer Airport in Nuremberg, Germany. The $6.7 million project will result in a 51,600-sq-ft facility, including 48,400 sq ft of maintenance hangar space and 3,200 sq ft for administrative offices. Designed in-house by FAI CEO Siegfried Axtmann, the building will mirror the existing FAI properties in style and, like the rest of the facility, it will be carbon neutral. The project's progress can be watched via a construction cam on FAI's main building.

When Hangar 8 goes into service in March next year, FAI's on-airport complex will occupy 150,700 sq ft. The additional space will be used for line maintenance work across a range of aircraft, including FAI's Bombardier fleet.

FAI Technik, the in-house maintenance division of FAI Group, specializes in Bombardier base and line maintenance. It has completed several heavy maintenance 8C and 12C checks on the Global Express, including cabin refurbishments and modifications. The team has also worked through a number of 96- and 192-month inspections on Challenger 604s, as well as 12-year/12,000-hour inspections on Learjets.

JET AVIATION BASEL GETS NOD FROM PHILIPPINES CAA

Jet Aviation recently received approval from the Civil Aviation Authority of the Philippines (CAAP) to provide maintenance support to Falcon 900s registered in that country. The Basel facility, which is a Dassault-authorized Falcon shop, is currently working to secure CAAP approval for the Falcon 2000 series.

"Our goal is to expand our scope of services to ensure we can support our customers in Southeast Asia who make transcontinental flights to Europe," said Johannes Turzer, senior vice president and general manager of the Basel maintenance center. "We are pleased to extend this to aircraft owners and operators of aircraft registered in the Philippines."

Jet Aviation Basel has in-house design and engineering departments, along with on-site cabinetry, upholstery, sheet metal, composite and paint shops. The organization can outfit jets as large as an A380 or 747-8 and provides maintenance and repair services for other business jets. Besides Dassault Falcon, it is also a factory-approved service center for Airbus Corporate Jetliners, Boeing Business Jets, Bombardier Business Jets, Embraer Executive Jets and Gulfstream.


Jet Aviation Basel is seeking to extend its services for Southeast Asia, recently adding Philippines approval for the Falcon 900.

GREENWICH SELLS THREE OF ITS COMPONENT DISTRIBUTORS

Greenwich AeroGroup is reshaping its portfolio with the sale of three of its aerospace component distributors—Aero Precision Industries, DAC International and Nasam—to private investment firm Odyssey Investment Partners. Terms of the sale, completed last month, were not disclosed.

Greenwich AeroGroup had acquired DAC International and Nasam in 2009, while it picked up Aero Precision Industries in 2013. The acquisitions had broadened its reach in international military and government markets, as well as extended its holdings on both the component manufacturing and distribution side. The three had been operated as a single business.

"It has been our privilege to work alongside these three great companies and their people, and we are heartened by the relationships that have been built between them and the rest of our companies," said Greenwich AeroGroup president and CEO Jim Ziegler. "We look forward to continuing to partner with them on future projects."

Greenwich AeroGroup, owned by Berkley Capital, added that it plans to continue to look for new aviation acquisitions. Odyssey is a middle-market investment firm that has holdings in the aerospace, energy, businesses services, healthcare, packaging and other industries.

GULFSTREAM SERVICE CENTERS ADD MAINTENANCE APPROVALS

Gulfstream Aerospace's company-owned service center in Brunswick, Ga., recently received approved maintenance organization (AMO) designations from Bermuda and the Cayman Islands. Additionally, the company's Las Vegas service center earned AMO status from Aruba. These AMOs allow most Gulfstream aircraft registered with the civil aviation authorities of Bermuda, the Cayman Islands and Aruba to undergo maintenance, repairs, alterations and inspections at Gulfstream Brunswick and Las Vegas.

"These approvals for our Brunswick and Las Vegas sites allow us to provide better service to the significant and growing number of aircraft registered in the Cayman Islands, Bermuda and Aruba that travel to the U.S.," said Derek Zimmerman, president of Gulfstream Product Support.

Gulfstream's service centers in Brunswick and Las Vegas are certified as FAA, EASA and Transport Canada Part 145 repair stations, which means their technicians can work on aircraft registered in the U.S., European Union countries and Canada. Las Vegas also holds AMO designations from the Cayman Islands and Burundi.

VECTOR AEROSPACE TO SUPPORT AUSTRALIAN PT6A OPERATORS

Vector Aerospace has entered into exclusive agreements with four agricultural aviation and aerial firefighting operators in Australia to provide engine MRO services for their Pratt & Whitney Canada PT6As. The companies are Aerotech Australasia, Aerotech Northern Territory, Pays Air Service and Dunn Aviation.

Their combined fleet of 44 aircraft includes the Air Tractor AT-802/802A/802AF/802F, the Air Tractor AT-502B, the Cessna 208B Caravan and the Beech King Air B200. Vector will provide engine services from its P&WC-authorized PT6A designated overhaul facility in Brisbane, Queensland.

"The signing of these four exclusive agreements is a major step forward for our Brisbane facility in its support of the agricultural and firefighting aviation markets within the region," says Jeff Poirier, president of Vector's Engine Services-Atlantic division.

PT6A MRO services to be provided include engine repair, hot-section inspections, testing, modifications and overhauls. Engine variants supported under these service agreements will include the 1,868-shp PT6A-67F, which Vector Brisbane's test cell was recently modified to accommodate. Also included is access to Vector's mobile response team, which provides on-site repairs at customer locations throughout Asia-Pacific, as well as AOG support.

C&L AVIATION GROUP PRIMED FOR EXPANSION

C&L Aviation is planning a $3 million expansion at its facility in Bangor, Maine. The project, supported in part by a $1.2 million grant from the U.S. Economic Development Administration (EDA) recently awarded to the city of Bangor, will refurbish a newly leased hangar, add two buildings, expand capabilities and create 100 jobs over the next two years.

Continues on page 92 ▶

AMAZING SERVICE FACILITY

Jet Aviation St. Louis, 625,000 square feet in ten buildings stretching more than half a mile

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JET AVIATION
A GENERAL DYNAMICS COMPANY

 Continued from page 90

Maintenance News

In 2014, C&L completed a $5 million expansion that tripled the company's space and included a 17,000-sq-ft paint hangar. That expansion was also partially funded by a grant from the EDA, and it allowed C&L to move into new markets such as interior refurbishments for executive jets.

This next phase of growth will add to C&L's corporate interiors capabilities, a growing market for the company, with a newly refurbished interior hangar. The additional hangar space and new storage buildings will allow C&L to service more aircraft at once.

"Our company is always growing," said C&L CEO Chris Kilgour. "This funding and the upcoming expansion will help fuel more growth, and we are grateful to the city of Bangor and our state's congressional leadership for their continued support."

CONSTANT AVIATION EXPANDS AOG SUPPORT

Cleveland-based Constant Aviation is expanding its business aircraft maintenance support coverage by adding two hubs: Naples and Palm Beach, Fla. Constant Aviation's AOG hubs employ a mobile force with 60 technicians, providing aircraft maintenance, avionics and structure support 24 hours a day. The addition of the two hubs takes the number of AOG mobile teams to 17 cities across the U.S.

"The program was launched two years ago with the goal of becoming the nation's largest AOG network. Year-to-date, we have fielded 4,000 AOG service calls, across 300 different airports. With the addition of Naples and Palm Beach, we anticipate these numbers will continue to grow exponentially," said Paul Witt, vice president of AOG operations for Constant Aviation. "We understand that an AOG can be time sensitive, and the addition of these hubs will position us to serve our customers anywhere, anytime."

The company anticipates its network of AOG mobile hubs will exceed 25 by year-end.

WESTERN-MJETS OPENS BANGKOK PART 145 REPAIR STATION

Bangkok-based Western-MJets has received U.S. FAA certification as a Part 145 repair station. Western-MJets is wholly owned by MJets, an FBO based on Bangkok Don Mueang International Airport. FAA certification allows Western-MJets to conduct maintenance on U.S.-registered business jets in accordance with FAA Part 145 regulations. The MRO is approved to work on most Gulfstreams; Cessna Citations; Airbus and Boeing bizliners; Bombardier business jets; Dassault Falcons; Embraer executive jets; and Hawkers.

MJets claims to operate the only full-service FBO and private jet terminal in Thailand. It offers charter, management, consultancy, maintenance and AOG services, air ambulance, ground handling services and FBO facilities with VIP lounge and on-site customs and immigration services.

In the last 12 months, MJets passed several major milestones, including both IS-BAO and IS-BAH accreditations and EASA TCO certification for its Thai air operator certificate. Western-MJets is eyeing China, Bermuda, the Cayman Islands, Hong Kong, India, Isle of Man and the UAE for possible new locations, it said.

ARSA: CONGRESS MUST ADDRESS SKILLED WORKER SHORTAGE

The Aeronautical Repair Station Association (ARSA) delivered a letter to the U.S. House of Representatives last month urging strong support for and swift approval of bipartisan legislation to reauthorize, reform and improve the Carl D. Perkins Act, the primary dedicated federal funding source for career and technical education programs. The association's membership consistently cites the shortage of skilled technical workers as a top policy concern.

"From an advocacy standpoint, workforce development is becoming a 'category killer,' so to speak. Every business in every industry in every state is facing the same trouble finding technically skilled workers. The effects ripple up and down supply chains and across markets, leaving money on the table for companies and out of the pockets of the hard-working men and women we all depend on to keep the world moving," Brett Levanto, v-p of operations for Obadal, Filler, MacLeod & Klein, the firm that manages ARSA, told **AIN**.

"There are plenty of causes: changing demographics, shifting curricula away from hands-on skills, bias against careers in the trades. But the solutions all start at the same spot: connecting industry leaders with educational bodies right in their own communities and providing a structure in which schools can start teaching employable, in-demand skills and giving our students what they need to build useful, dynamic careers," he added. "We like to remind people that you can't fly without AMTs. In this case, failing to build a dependable, highly skilled workforce will ground us all."

P&WC LAUNCHES TRIAL OF OIL ANALYSIS TECHNOLOGY

Pratt & Whitney Canada is offering an oil analysis technology trial to business aircraft operators. Over the next 18 to 24 months, P&WC is seeking participants in a trial of its in-development oil debris monitoring technology. Those interested should contact their P&WC field support representative.

P&WC's oil analysis technology is a new way to monitor an engine oil system, with the potential to detect specific engine conditions by identifying the wear patterns of oil-wetted components through analyzing particles found in the oil, the company said. According to P&WC, the system detects the source of debris earlier and more accurately than any existing oil debris monitoring technology available today. It monitors the health of oil-wetted engine components such as bearings, carbon seals and gears. The system also provides "actionable insights" and will enable proactive maintenance interventions.

Amac is installing a new cabin oxygen system in a Boeing Business Jet.

Participants receive free oil sampling kits and return shipping pre-paid by P&WC. Under the program, an operator collects an oil sample every 100 to 150 hours, depending on engine model; ships it to P&WC; and then receives a summary report. Participation in the program does not replace existing engine requirements or maintenance programs.

CLAY LACY AVIATION OFFERS MX TECH SCHOLARSHIPS

Applications are now available for 2017-2018 maintenance technician scholarships from Clay Lacy Aviation. Now entering its second year, the initiative provides funds toward tuition, tools and FAA exam fees for students attending the NVOC Aviation Center at Van Nuys Airport. In the first year, the initiative helped 24 students on their journey toward careers as airframe and powerplant technicians.

Operated by the L.A. Unified School District's North Valley Occupational Center, the FAA-approved aircraft mechanic program consists of 45 subject areas presented in three separate courses, including technical classroom training and hands-on shop experience. All three courses are required to prepare students for the FAA licensing examination in general airframe and powerplant mechanics. These courses are designed to be completed in two years. Both day and night classes are offered, making the program available to full-time students and working adults. Applications, due October 15, are available at www.claylacy.com/clay-lacy-foundation. Scholarships will be awarded next month.

AMAC AEROSPACE TO UPGRADE BBJ OXYGEN SYSTEM

Amac Aerospace has signed a contract to upgrade a Boeing BBJ with a new cabin oxygen system, which will be installed "with a minimum modification work on the existing cabin interior." Amac's Boeing team will simultaneously also perform maintenance on the privately owned aircraft.

The MRO also took in two Gulfstreams—a GIV and GV—for maintenance. A base maintenance inspection will be performed on the government-owned GV and the civil GIV at Amac's facility in Basel, Switzerland.

STANDARDAERO HALVES TFE731 CORE INSPECTION TIMES

StandardAero Business Aviation's Houston MRO facility recently completed three simultaneous TFE731 engine core zone inspections (CZIs) for a Falcon 900 operator in 14 days through its FastLane service program. The company performed the required airframe owner-controlled inspection program concurrently. As a result of the expedited engine maintenance services, the operator was able to minimize aircraft downtime costs, avoid the use of rental engines and return to service immediately.

StandardAzero's FastLane program expedites completion by using three shifts, 24 hours a day, and advanced tools. The program assesses critical hardware exchange or repair requirements and incorporates efficient parts procurement to ensure all components, including critical long-lead items needed for repair, are on hand.

"It is well known that the industry standard for accomplishing TFE731 CZIs is 30 days," said Marc McGowan, president of StandardAero Business Aviation. "Through our FastLane accelerated MRO program, we completed these three CZIs in nine, 13 and 14 days, facilitating the operator's needs to complete both engine and airframe services in record time, thus returning to service as quickly as possible." ❑

BOB PITTMAN
CEO, iHeartMedia

"Business aviation optimizes iHeartMedia employees' ability to meet in person."

NO PLANE NO GAIN

PAID FOR BY THE NATIONAL BUSINESS AVIATION ASSOCIATION

THAI CAPITAL GETS NEW FBO

Thailand-based aviation services provider MJets inaugurated its new FBO at Bangkok Don Mueang International Airport last month. The facility has a terminal with a 3,400-sq-ft lounge, including private meeting rooms and a separate area for private accommodations, on-site customs, immigration and security service, a crew lounge and rest area with showers that nearly triples the size of the crew area in the previous facility, along with four conference/training rooms, the largest of which can accommodate 60 people.

As part of the $8.6 million project, MJets, the exclusive FBO operator at the airport, also added 52,000 sq ft of hangar space sized for an ACJ/BBJ, taking indoor storage to 84,000 sq ft. Last year the company became the first FBO in Southeast Asia to earn accreditation under IBAC's International Standard for Business Aircraft Handling (IS-BAH). "Southeast Asia is an important and evolving market for business aviation and Bangkok is the center of this growth," said Jaiyavat Navaraj, the company's executive chairman. "For this reason, MJets is committed to the regional development and has invested almost 300 million Thai Baht in this state-of-the-art-facility." According to a company spokesman, the former FBO building was returned to the Airport Authority of Thailand, which will use it to serve the Royal Family or government VIP flights.

MJets also offers aircraft charter and management services, and its maintenance operation recently received FAA Part 145 approval.

SIGNATURE EXPANDS LATIN AMERICAN NETWORK

Signature Flight Support expanded its footprint in Latin America with the announcement that Central Charter de Colombia at Bogota El Dorado International Airport has become the latest service provider to join the company as a Signature Select member. The facility offers a 3,800-sq-ft executive terminal with a pair of passenger lounges, a pilots' lounge with refreshments, computers, televisions, Wi-Fi and two snooze rooms equipped for overnight stays. Immigration, customs and permit processing are available at the FBO. Central Charter also offers aircraft maintenance, repair and overhaul through its FAA Part 145 repair station, as well as aircraft charter and management services. The company, which has been in operation for 36 years, is an authorized service facility for Textron Aviation (Cessna and Beechcraft).

Under the Signature Select program, independent FBOs have the benefits of the network, while maintaining their existing name and brand. Locations can participate in Signature's Status loyalty and TailWins rewards programs, as well as the chain's training programs.

Signature's new FBO terminal at Gerald R. Ford International Airport in Grand Rapids, Mich. features a street-side arrival/departure canopy to protect customers from the elements.

GRAND RAPIDS GETS NEW FBO FACILITY

Signature Flight Support in mid-August officially opened its FBO complex at Gerald R. Ford International Airport in Grand Rapids, Mich., where it is the lone service provider. The $6 million facility, which took nine months to construct, occupies 2.2 acres of former ramp and previously undeveloped property west of the old general aviation terminal.

The facility was part of Signature's acquisition of the Landmark chain, which had already embarked on the project before the facility changed hands. It has a 5,000-sq-ft terminal with VIP lounge; conference room; concierge; bistro/coffee bar; flight-planning area; pilots' lounge, showers and snooze rooms; on-site car rentals; and a street-side arrival canopy, as well as 51 parking spaces. The project also built an 18,000-sq-ft hangar large enough for a G650, which brings total hangar space at the FBO to 92,000 sq ft. As a result of the investment and development, Signature received a 30-year lease extension on the property.

GRIDLOCK MITIGATION PLAN IN EFFECT AGAIN AT TEB

The Port Authority of New York and New Jersey, which operates New York City gateway Teterboro Airport, has once again instituted ramp gridlock mitigation procedures at the field for any periods of exceptional traffic. The program, first deployed at the airport last year for the holiday season, is aimed at keeping aircraft ground traffic moving when few to no parking spaces remain at congested FBOs.

According to the procedure, ATC will advise all arriving aircraft destined for those locations to stop at a specific holding point on the air operations area and contact their FBO. The FBO will advise the pilot as to available parking and/or expected delay times. If the service provider cannot accept any more aircraft, the pilot will then be advised to contact airport operations for alternative FBO options. To help avoid confusion, the airport recommends operators contact their FBO of choice before the flight and inform it of the intended date and time of arrival. Teterboro Airport has six FBOs: Atlantic Aviation, Jet Aviation, Meridian Teterboro and three Signature Flight Support locations (East, West and South).

DEER JET JOINS AIR ELITE FBO NETWORK

Deer Jet, China's largest aviation services provider, has become the first Asia-Pacific FBO to join the Air Elite Network. By joining the World Fuel Services-sponsored group, Deer Jet will begin taking the Avcard at eight of its FBOs in mainland China, making them part of a network of 7,600 locations that accept the aviation credit card.

"More than a new milestone addition, by accepting Avcard, Deer Jet's FBOs are ensuring that clients receive efficient services at every step of the air travel experience, making it easier for clients to charge fuel, maintenance, charters, catering, flight training and many other aviation services at [our] FBOs," said Deer Jet chairman and CEO Zhang Peng. "Once again Deer Jet is promoting the upgrading and global competitiveness of China's business aviation."

SAFETY 1ST TRAINING PUTS NIGERIAN FBO ON THE MAP

Nigerian business aviation service provider EAN Aviation is the first African Safety 1st qualified location to be listed on the National Air Transportation Association's (NATA) FBO map. The Lagos-based company, one of the few full-service, purpose-built FBOs in Africa, was recognized for consistently maintaining its employees' training status. To achieve this qualification, it undergoes at least eight internal audits and four external audits each year. The location has 17 active students registered under the NATA training programs, and since its launch in 2011 has participated in the association's industry standard training regimens.

The FBO provides a VIP lounge, a crew lounge and flight-planning office, as well as conference facilities and a hangar. Passengers and crew can complete customs and immigration procedures in the same building at any hour. The facility also has a restaurant that can provide in-flight catering.

NATA introduced its global map in April to educate aircraft operators about which FBOs and ground handlers are Safety 1st qualified and/or registered under the International Business Aviation Council's International Standard for Business Aviation Handling (IS-BAH). EAN Aviation is also anticipating certification under IS-BAH in the next six months. It would thus become the second African location to achieve this distinction.

VIRGINIA AIRPORT AWAITS FAA RULING ON RUNWAY

Authorities at Virginia's Norfolk International Airport (ORF) are awaiting a ruling from the FAA on when or if they will be able to reopen the nearly 5,000-foot secondary Runway 14/32. According to airport operations director Steve Sterling, the runway was closed in July when it was determined its safety zone did not comply with the latest regulations. Since then, all traffic at the airport has been handled by the 9,000-foot main runway.

Sterling told **AIN** that the airport submitted a plan to either change the declared distances for the runway, or change its landing threshold, in essence shortening the runway. The airport put a target date of October 5 for the reopening, but that date depends on the FAA's response. Until then, the authorities have communicated with the lone FBO on the field to alert the general aviation community to the situation. ORF saw 17,000 GA flights last year, and 14/32 is generally used by smaller aircraft, especially in crosswinds. It is also located closer to the FBO. Sterling said the main runway has the capacity to accommodate current levels of GA traffic.

Deer Jet FBO customers will be able to pay for services using the Air Elite Avcard.

FLEXJET PRIVATE TERMINAL TO OPEN AT HPN

Fractional operator Flexjet will open its second private terminal, its first in the Northeast, this fall at New York Westchester County Airport. Located in Hangar F (formerly home to International Paper's flight department, which relocated to Memphis with the company's headquarters), on the east side of the field near the airline terminal, the 30,000-sq-ft building is being renovated to accommodate all of the types of aircraft Flexjet flies. According to the company, part of the upgrade was to enlarge the hangar doors to accommodate the large aircraft Flexjet is currently flying such as the G450 and Bombardier Global Express, as well as the G650s and G500s it has on order.

The facility, intended for the exclusive use of the "substantial concentration" of Flexjet owners who live in the northern suburbs of New York City, will be able to house up to 15 aircraft and allow the company to have more assets available near those customers. The modernized location will offer an owners' lounge, conference rooms, private work space, Wi-Fi connectivity and representatives to assist with current or future flights.

Flexjet opened its first private terminal at Florida's Naples Municipal Airport in February, and another is under development in Palm Beach, Fla. ❑

The new Flexjet terminal will be the second at HPN operated by a fractional provider.

CURT EPSTEIN

CHARTER NEWS NOTES

> **Dave Edwards and Tom Wells have joined the board of directors of** UK-based charter operator **Synergy Aviation**. Previously Edwards was executive v-p of Qatar Airways and managing director Middle East and Asia at Gama Aviation, while Wells was Gama's managing director, Europe. "Both have taken a significant shareholding in the company and will be fully involved in the day-to-day running and strategic direction of the business," according to Synergy.

> China's **Colorful Yunnan General Aviation has ordered two Phenom 300s** that will be used for medical rescue, disaster-relief, tourism and leisure and business travel. Both jets are slated for delivery by year-end.

> **KMR Aviation**, a charter operator based in Ontario, Calif., **has added a Challenger 604 and Legacy 650** to its fleet. The 604 is the company's fifth. The Legacy seats up to 13 passengers and can fly 3,900 nm. KMR's 12-passenger Challenger 604s include free domestic U.S. Gogo Biz connectivity, a personal cabin server and no fuel surcharge.

> **Twelve jets have joined the Clay Lacy Aviation fleet** since the beginning of the year, and nine of them are available for charter. At the company's Los Angeles headquarters, the charter additions are a Global Express, GV and G200, Challenger 300, Learjet 45 and Falcon 900EX and 2000. A Legacy 600 is located in Las Vegas and another Learjet 45 in Portland.

> **TAG Aviation Spain added a Citation Sovereign** to its charter fleet, with seating for up to eight passengers and range of 2,847 nm. The company also announced that it is the first Spanish charter operator to receive RNP 1 approval from the Spanish Aviation Safety and Security Agency.

> Birmingham, Ala.-based **AirMed International has been re-accredited** through March 2019 by the European Aeromedical Institute. The accreditation covers adult critical care and advanced adult critical care and applies to the company's Hawker, Beechjet and Learjet medical transport fleet. ■

FBO PROFILE: Luxivair SBD

TRAFFIC ON THE RISE AT SBD FACILITY

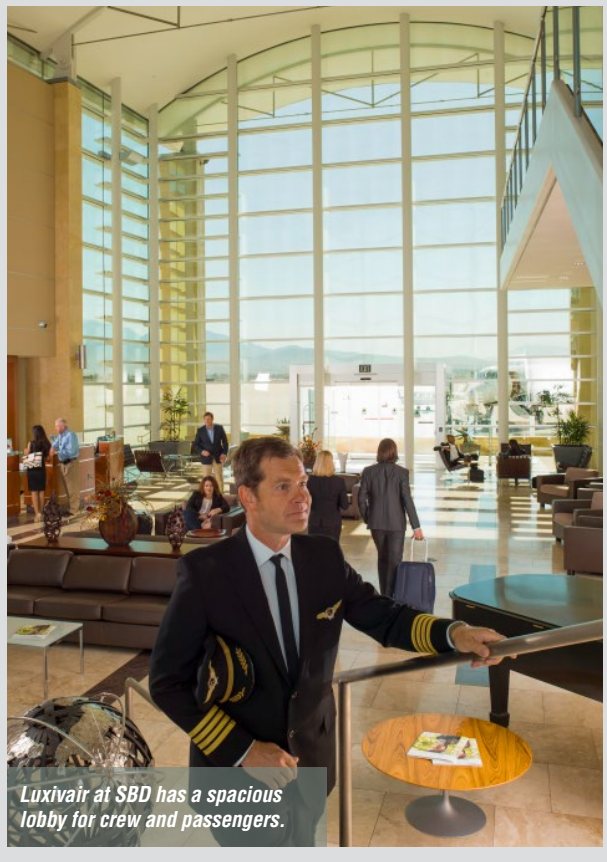
While its initial start may have been rocky, Luxivair SBD, the lone FBO at California's San Bernardino International Airport (SBD) has seen nothing but smooth skies of late. SBD's roots took hold when the former Norton Air Force base closed in 1994 after half a century of military ownership and was transferred to municipal use. Given the facility's tired infrastructure, $250 million was spent on rehabilitation: replacing the 10,000-foot-long, 200-foot-wide main runway, bringing the control tower back on line, building a new taxiway, ramp areas and fuel farm, constructing new domestic and international terminals, rewiring the airfield and renovating hangars with new roofs and fire-suppression systems, all this coming after massive environmental cleanup, a legacy from its former owners.

The $20 million FBO opened as a Million Air franchise, part of one of the companies run by airport developer Scot Spencer, who had his hands in many of the businesses on the field. His control of the FBO lasted barely two years and ended soon after a February 2012 incident when the FBO ran out of fuel.

Authorities seized control of the airport's fueling operation, setting up shop in a double-wide trailer, while Million Air terminated its branding agreement with the company, citing unpaid management and franchise fees. A stipulation in the lease agreement specified that the FBO had to be partnered with a nationally recognized service provider, and after a flurry of lawsuits, a bankruptcy judge ordered SBD Airport Services to vacate the facility, giving the airport authority full control of the FBO in December 2012, and it has retained control ever since.

"We are pleased to put that behind us and move forward," said Mark Gibbs, SBD's director of aviation. "We wanted to make sure that folks visiting the airport were not only getting the services that they needed, but were also walking away impressed. We have a great facility but we keep our prices well placed in the market, with the intent of providing a lot of value to our customers."

The 12,000-sq-ft two-story FBO terminal offers a spacious glass-enclosed atrium lobby, ramp-side vehicle access, pilots' lounge, snooze room, a 14-seat A/V-equipped conference room, theater room with stadium seating, flight-planning room, crew cars, on-site car rental, complimentary snack bar and an outdoor lounge offering a panoramic view of the airport framed by the San Bernardino Mountains. At six years old, the facility remains in pristine condition, but the airport authority recently commissioned an acoustical study to combat one of its few flaws: the level of echoes in the domed lobby, caused by its abundance of glass and the stone floor tiles. A $50,000 investment in sound-attenuating panels provided the remedy.



Luxivair at SBD has a spacious lobby for crew and passengers.

Another benefit is on-site U.S. Customs, which helps international flights avoid some of Southern California's more congested airspace and provides another option to LAX, Palm Springs International and Van Nuys. The Inland Empire region in which San Bernardino is located sits just outside the Los Angeles area and is the 10th largest metropolitan area, larger than Denver, Phoenix or Boston. According to the U.S. Census Bureau, four million people live within 25 miles of the airport.

The Epic-branded facility is open from 7 a.m. to 10 p.m., with after-hours callout available. It has a fuel farm with capacity for 150,000 gallons of jet-A, served by six refuelers (two 15,000-gallon, two 10,000-gallon, one 7,000-gallon and a 5,000-gallon truck). On the avgas side, three tankers of 5,000 gallons, 2,500 gallons and 1,000 gallons shuttle fuel from the 24,000-gallon tank. "We're in good shape with refuelers and sometimes we need every one of those trucks," Gibbs told **AIN**, referring to this summer's wildfires, which raged in the San Bernardino area and torched more than 37,000 acres. "We've got the Forest Service tanker base here, and there have been times when we moved 400,000 gallons of fuel." Generally, he noted, the FBO pumps 1.5 million gallons of fuel a year. In high-tempo periods such as fire season, which sees constant operations from morning until dusk, the location's eight-person staff is supplemented by the airport operations team, which has been cross trained under the NATA Safety 1st program.

According to Gibbs, normal operations at the airport averaged a steady 25,000 a year between 2009 and 2012, but after the airport took over control of the FBO and started marketing it, that number has climbed continuously to about 40,000 operations last year. So far this year, it is 20 percent over that level of activity. It also sees a lot of traffic drawn to the five Part 145 repair stations operating on the field.

Fifteen of the 50 aircraft based at the airport are turbine powered, ranging from a 90-series King Air to a privately owned 747SP. Regularly handling such a large aircraft was good experience when Air Force One and President Obama came calling earlier this year, according to FBO manager Wendy Bechtel. "There is no airplane too big or too small for us," she said. "If you come in in a Long EZ or Cessna 150, you are going to be treated the same as if you came in in a G650." —*C.E.*

PRELIMINARY REPORT

GRAND CARAVAN, PA-18 COLLIDE IN VMC OVER ALASKA

Cessna 208B, near Russian Mission, Alaska, Aug. 31, 2016—The ATP-rated pilot and two passengers on board the Caravan perished when their aircraft collided with a Piper PA-18-150 Super Cub in day VMC 6.5 miles northwest of Russian Mission Airport (PARS). The scheduled Part 135 commuter flight was operating under VFR, as was the PA-18, operating a guided hunting expedition under Part 91. The pilot and passenger on board the Super Cub also died in the crash, and both aircraft sustained significant damage.

The Caravan departed PARS at 9:58 a.m. for Marshall Don Hunter Senior Airport (PADM), Marshall, Alaska. The Piper had departed Bethel Airport (PABE) 50 minutes before, destined for a remote hunting camp 20 miles northwest of Russian Mission. Respective company flight-following procedures were in effect for both aircraft, and the Cessna was equipped with ADS-B as part of its G1000 avionics package.

In a telephone conversation following the accident, a representative with the Caravan operator stated that the company's operational control center (OCC) initiated overdue airplane procedures after the aircraft failed to arrive at Marshall at its scheduled time of 10:17 a.m. The OCC also contacted pilots of two company airplanes operating near Russian Mission and provided them with the accident aircraft's last recorded lat-long coordinates. Those pilots visually confirmed the accident wreckage in an area of rolling terrain, with heavy vegetation 10 feet tall.

The owner of the hunting/fishing expedition company operating the Piper told investigators that, after delivering a customer to his hunting camp at 10:30 a.m., he flew over the intended destination of the accident aircraft and could see neither it nor its occupants. He then radioed company headquarters for the status of the accident flight, and after receiving the last latitude and longitude coordinates from its DeLorme flight following system, flew over the accident site and saw the wreckage.

The NTSB noted that the FAA has implemented full ADS-B coverage in Alaska under a joint industry/governmental program formerly known as Capstone. The Cessna's ADS-B system was installed as part of that program, intended to provide the airplane's position over terrain and warn pilots of the presence of other ADS-B-equipped aircraft in the area. The aircraft's operator stated that the equipment on board the Cessna was ADS-B OUT, capable only of transmitting. The PA-18 was equipped with a Garmin GPSMap 296. Investigators have asked the FAA to provide radar and track data for both aircraft. ❑

FACTUAL REPORTS

MISRIGGED AILERON CITED IN JETPROP TAKEOFF CRASH

Piper PA-46-350P, Spokane, Wash., May 7, 2015—In an updated factual report, the NTSB noted that the right aileron of a Piper Mirage JetProp that crashed during an emergency landing attempt had been misrigged to deflect in the same direction as the aircraft's left aileron. The pilot-in-command (PIC), a company maintenance technician for Rocket Engineering and the pilot-rated passenger, a company sales representative, perished when the aircraft crashed in the Spokane River near Felts Field Airport (SFF) in day VMC.

The aircraft was on a post-maintenance test flight following an annual inspection conducted by the company. Multiple witnesses saw the aircraft in a 10-degree climbing right turn immediately after takeoff, followed by a more aggressive right turn as the aircraft passed through 1,000 agl on a southbound heading. Audio feeds recorded sounds of labored breathing over the advisory frequency, and the pilot replied "that's negative" when asked by the tower controller if everything was OK.

Over the next 45 seconds, the aircraft completed almost two spiraling turns, with tower personnel observing the aircraft in a 90-degree right bank. The bank angle reduced as the aircraft descended through 700 feet agl, and the aircraft appeared to recover. Approximately 2.5 minutes later, the pilot reported, "We are trying to get under control here, be back with you."

The aircraft continued to climb on an easterly course away from the airport, reaching 5,600 feet msl (4,000 feet agl) over the town of Newman Lake. The pilot told controllers that "things seem to be stabilizing," adding he would perform further controllability tests before turning back to the airport.

Tower granted the pilot's request for a straight-in landing for Runway 22R at SFF. As the aircraft approached the airport, the pilot told controllers, "We have a control emergency there, a hard right aileron."

Tower personnel noted the aircraft remained closely aligned with the extended centerline in a 20-degree, right-wing-low attitude throughout the final approach. As the aircraft flew over the runway, the controller noted the engine sound changed as if the aircraft were attempting a go-around. The aircraft then rolled sharply to the right and crashed in the river just north of SFF.

Post-accident examination of the wreckage revealed that the right-hand aileron drive cable followed the balance cable path through the wings past the pressure vessel seals, rather than the drive cable routing, and that the right-hand aileron balance cable had been connected to the left wing balance cable inboard of the cabin pressure vessel seal.

The 22-year A&P technician who performed and signed off on the annual inspection told investigators he had replaced PA-46 aileron cables "about five times" throughout his career. He worked exclusively on the accident aircraft. He reported replacing the cables in compliance with maintenance manual procedures, removing and replacing each cable individually to prevent inadvertent misrigging, and confirming smooth and full-deflection aileron operation from both inside and outside the aircraft.

He also stated that he asked another mechanic to check his work, specifically to verify correct aileron operation; the second mechanic told investigators that he assisted with reattaching the ailerons and verified secure installation of safety wire, but asserted that he was not asked to confirm correct aileron operation and that he did not do so.

DHS HELICOPTER ROLLS OVER

Eurocopter EC120B, near Ajo, Ariz., June 13, 2016—The pilot exited the skid-equipped helicopter, operating for the U.S. Department of Homeland Security (DHS), shortly after landing on a volcanic rock hilltop. Soon after, the pilot heard "an audible change in the sound of the main rotor" and watched as the ground under the helicopter's right skid gave way. The helicopter then rolled to the right, sustaining substantial damage to the tail boom. The pilot reported no apparent preflight mechanical failures before the accident, and no one was injured.

In its updated factual report, the NTSB cited a portion of the FAA-H-8083-21A Helicopter Flying Handbook (2012) stating: "Many helicopter operators have been lured into a 'quick turnaround' ground operation to avoid delays at airport terminals and to minimize stop/start cycles of the engine. As part of this quick turnaround, the pilot might leave the cockpit with the engine and rotors turning. Such an operation can be extremely hazardous if a gust of wind disturbs the rotor disk, or the collective flight control moves causing lift to be generated by the rotor system. Either occurrence may cause the helicopter to roll or pitch, resulting in a rotor blade striking the tail boom or the ground. Good operating procedures dictate that, generally, pilots remain at the flight controls whenever the engine is running and the rotors are turning."

BALD EAGLE STRIKE ON TURBINE OTTER

De Havilland Canada DHC-3T, near Homer, Alaska, June 19, 2016—The Otter, converted to turboprop power, had departed Homer-Beluga Lake Seaplane Base (5BL) on a VFR company training flight in day VMC. Ten miles northeast of 5BL while cruising at 2,500 feet msl, the pilots saw what they believed to be a bald eagle off their left wing immediately before hearing and feeling an impact. The aircraft continued to fly straight-and-level with no apparent control issues, and the crew notified the Homer Flight Service Station of their intent to return to 5BL.

As they made their first approach to land, the crew experienced uncontrollable roll to the left below 75 mph. The pilots then declared an emergency and requested emergency services. On the second approach, the crew held airspeed above 75 mph until immediately before touchdown, and the aircraft landed successfully with no further control issues.

Inspection revealed substantial damage to the leading edge of the left wing, outboard of the landing light, over a length of about three feet. The leading edge, upper wing skin and lower wing skin were fractured at the impact point, with the fracture in the upper wing skin extending aft by two to three feet and a resulting hole approximately one-foot square. Drag created by the damage disrupted airflow over the wing at low airspeeds, degrading performance on landing. Testing by the Smithsonian Institution Feather Identification Laboratory positively identified the remains as those of a bald eagle. ❑

FINAL REPORT

DYNAMIC ROLLOVER CITED IN BELL 206B TAKEOFF ACCIDENT

Bell 206B, Linden, N.J., Feb. 6, 2016—A pilot's failure to maintain control during takeoff resulted in dynamic rollover during a training flight; the flight instructor's inadequate remedial action was a contributing factor, according to the NTSB.

During takeoff from a parking dolly in day VMC, the JetRanger suddenly rolled to the left as it became "light on the skids." The flight instructor providing transition training to the pilot told investigators he had been looking left during the accident sequence to verify the area was clear of obstructions, and had "never felt anything that quick." Security video showed the helicopter initially began to roll to the right during takeoff, followed immediately by the roll to the left.

The helicopter bounced as it struck the ground on its left side, and came to rest on its right side. The fuselage, main rotor blades, tail rotor blades and tail boom were substantially damaged during the accident.

The private pilot receiving instruction purchased the helicopter in July 2015 and reported 625 total flight hours with five hours in type. The CFI reported 25,000 total flight hours, with 2,760 hours in the Bell 206 and 1,020 hours as instructor in type. A 3,000-hour maintenance inspection had been performed recently, as well as a separate inspection by a mechanic requested by the owner-pilot. Both pilots stated the preflight inspection revealed no anomalies. ■

The material on this page is based on the NTSB's report (preliminary, factual or final) of each accident or, in the case of recent accidents, on information obtained from the FAA or local authorities. It is not intended to judge or evaluate the ability of any person, living or dead, and is presented here for informational purposes.

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Pre-Owned Update

by Bryan A. Comstock

Signs point to a strong finish, but some uncertainty lingers

By most accounts this past quarter was uncharacteristically busy and the traditionally busiest quarter is now upon us, but with the twists and turns of a frothy stock market and upcoming U.S. Presidential election, it's anybody's guess how the used jet market will perform. It's clear, however, that low pricing and tightening, but still plentiful, supply continues to attract buyers.

Some markets run hot and cold. Take the Falcon 2000 market right now. In August last year, there were only six for sale. Today there are 32. That number has doubled since the beginning of the year, rising from 15. The 32 for sale today equates to about 14 percent of the number in operation. They are selling at a rate of one per month, which places the current supply at a 24-month absorption rate. Prices have averaged in the low-$4 million range, according to AircraftPost. The aircraft that have sold this year must have been priced right, as their average time on the market was a respectable 139 days. Pricing alone will bring buyers back in droves, like last year. Models seem always to fluctuate between overbought and oversold, with pricing the catalyst that drives the markets in both directions.

On the other end of the spectrum is the venerable Citation XLS, which continues to remain stable compared to many of its counterparts. In fact, supply sits at 15 right now, and only half of those are U.S.-based. The inventory represents just shy of 5 percent of the number in operation, making a decidedly tight market. Pricing runs from about $4 million to the mid-$5 million range and sales are moving at about one per month.

Inventory Fluctuations

By contrast, the number of Hawker 800XPs for sale is growing and now stands at 58, or 12.4 percent of its active fleet, representing a two-year high. Seven- to 10 percent availability is generally considered normal in terms of supply of any model type. Asking prices range from $1.4 million to $3.9 million and the average is $2.33 million, down $250,000 year-to-date. The current supply translates to a 24-month absorption rate. Year-to-date there have been 28 transactions of 800XPs or 3.5 per month, compared with 30 transactions for the same period last year. Sale prices have ranged from $1.5 million to $3.5 million.

The successor 850XP has fared much better over the past 12 months, fluctuating between seven and 10 offerings on the market, with nine currently for sale, equaling 7.5 percent of the fleet. Six of the nine 850s available are registered in the U.S., a shift in the geographic distribution from more overseas sellers in previous months. Asking prices range from $3.2 million to $5 million.

Five 850XPs have traded this year versus seven last year. Sale prices are grouped in a tight range from $4.2 million to $4.6 million, with the average 850XP selling for $4.28 million after 210 days of market exposure. The low was a 2006 model with 4,000 hours. A 2007 model with 1,900 airframe hours represented the peak selling at a reported $4.6 million in July.

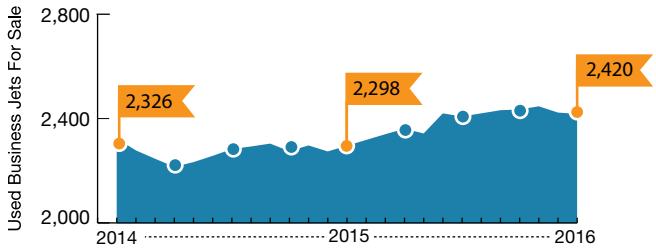
Challenger 604 offerings swelled to 45 in July, but then retreated below the six-month moving average as buyers swooped in on deals. There are 38 available, or 10 percent of the active fleet. The majority of the supply is located in North America (25), with the remainder in Europe, the Middle East and Asia-Pacific. Roughly half have the upgraded -150 APU installed, and about 45 percent have onboard Wi-Fi equipment. Asking prices range from $3.5 million to $8.7 million. Sales activity shows a rate of two per month, and, given the current stock, that's about a 20-month supply.

A similar percentage of Challenger 605s are available, with most of them parked outside North America. In fact, only one third of the 30 for sale reside within N.A. That might be, in part, the result of economic conditions in North America from 2008 to 2010, coupled with an increase in buying activity abroad. Asking prices range from $9 million to $17.5 million (the high representing a 2013 delivery).

The supply of Global 6000s sits at just 6 percent, but lackluster sales mean that the 12 being offered represent a 33-month supply. Prices range from the mid-$30 million range and carry up near the mid-$50 million range, and just one quarter of the current offerings are U.S.-based. Its market counterpart, the G550, after enduring some excruciating pain in the price department, seems to be closing in on a level that is attracting buyers. When earlier this year some early G550s fell through the $20 million floor, the airplane began to receive heightened attention. That hasn't moved the inventory needle much yet though, as choices are perched squarely at their 12-month moving average of 33 aircraft. That number represents 6 percent of the 530 in operation. Prices range from about $17.5 million to $41 million, and that wide spread is simply an indicator of the long production run the G550 has enjoyed.

Barring any market disruptions, which may prove to be an understatement given the upcoming election, activity looks poised to continue. The confluence of low pricing, low interest rates and strong stock market point to a continuation of greater activity in the used jet market through year-end. ❑

Two-year Inventory Trend



JetNet, AircraftPost

Compliance Countdown by Gordon Gilbert

Within 6 Months

▶ **Nov. 26, 2016**

EASA TCO Compliance Mandatory

On April 29, 2014, the EU published regulations that set requirements for Third Country Operators (TCO) to fly in EASA airspace. On Nov. 26, 2016, those requirements become mandatory for commercial operations, including Part 135 on-demand operations. Part of the approval process is to have a state-recognized safety management system (SMS) in accordance with ICAO Annex 19. While TCO authorization is required for Part 135 operations, it is not required for Part 91K fractional operations.

▶ **Dec. 1, 2016**

Overtime Eligibility Qualification Rules Change

New U.S. Labor Department regulations raise the minimum annual salary necessary to qualify for overtime eligibility to $47,476 from $23,660 when the new rules take effect on Dec. 1, 2016. For so-called highly compensated employees the minimum salary level to be considered for overtime will rise to $134,004 from $100,000. Most Part 121 and Part 135 operators are exempt from the overtime pay provisions, according to NBAA. Most Part 91 operators, however, are not exempt under this provision and must either comply or establish that their employees meet a different exemption.

▶ **Jan. 1, 2017 and Jan. 1, 2018**

Russia Requires Glonass Equipment

Non-Russian-built aircraft, including those registered abroad, put onto a Russian operator certificate, weighing more than 12,500 pounds mtow and used for commercial transportation will be required to install Glonass satellite navigation equipment by Jan. 1, 2017. That mandate is Jan. 1, 2018, for general aviation aircraft. It is imposing new requirements on non-Russian-certified operators, but the Russian Federation says it does not intend to prohibit the use of other GPS constellations in Russian airspace.

▶ **Feb. 2, 2017**

Australian ADS-B Mandate

The Civil Aviation Safety Authority of Australia is implementing new regulations and aircraft equipment mandates to align the nation's operations with global standards set by ICAO. The new rules contain a number of equipment mandates that culminate on Feb. 2, 2017. After that date IFR-rated pilots and aircraft must comply with ADS-B equipment and operational requirements to fly in Australia.

Within 12 Months

▶ **April 24, 2017**

Part 135 Rotorcraft Radio Altimeters

Under new Part 135.160, rotorcraft must be equipped with an operable FAA-approved radio altimeter, or an FAA-approved device that incorporates a radio altimeter, after April 24, 2017. Deviations from this requirement may be authorized for helicopters in which radio altimeters cannot physically be installed in the cockpit. The request for deviation authority is applicable to rotorcraft with a maximum takeoff weight no greater than 2,950 pounds. The radio altimeter mandate is contained in the final rule upgrading private, air-taxi and air ambulance helicopter operations, published on Feb. 21, 2014.

Beyond 12 Months

▶ **Jan 1. 2018**

Deadline for European 8.33-kHZ Spacing

Starting Jan. 1, 2018, aircraft might not be able to operate in any EU member states' controlled airspace unless they are equipped with communications systems that have 8.33-kHz voice-channel spacing capability. Eurocontrol says extending 8.33 kHz below FL195 down to ground level is important, as "Europe has a known shortage of voice communication frequencies." The 8.33-kHz requirement for higher altitudes in controlled airspace has been in effect for some time. According to Eurocontrol, the consequences should this shortage of comm frequencies not be addressed are "significant: there will be more air traffic delays; it will be harder to implement safety improvements; and we will lose flexibility in introducing operational enhancements."

▶ **Nov. 8, 2018**

ICAO Adopts 15-min. Position Reporting

The International Civil Aviation Organization Council adopted a tracking standard for certain international flights that requires crews to report their aircraft's position at least every 15 minutes. It will become applicable Nov. 8, 2018. The new requirement will be made formal as Amendment 39 to Annex 6—*Operation of Aircraft*, Part I.

▶ **Jan. 1, 2020**

Aircraft CO_2 Emissions Standard Close to Adoption

New recommendations for CO_2 aircraft emissions are scheduled to be enacted in March 2017 by the International Civil Aviation Organization. The standard would apply to new aircraft type designs as of 2020 and to new deliveries of current in-production aircraft types from 2023. A cutoff date of 2028 for production of aircraft that do not comply with the standard was also recommended.

▶ **Jan. 1, 2020**

U.S. ADS-B OUT Mandate

ADS-B OUT equipment must be operational starting Jan. 1, 2020 in aircraft that fly in the U.S. under IFR and where transponders are currently required, namely class A, B and C airspace.

▶ **February 2020**

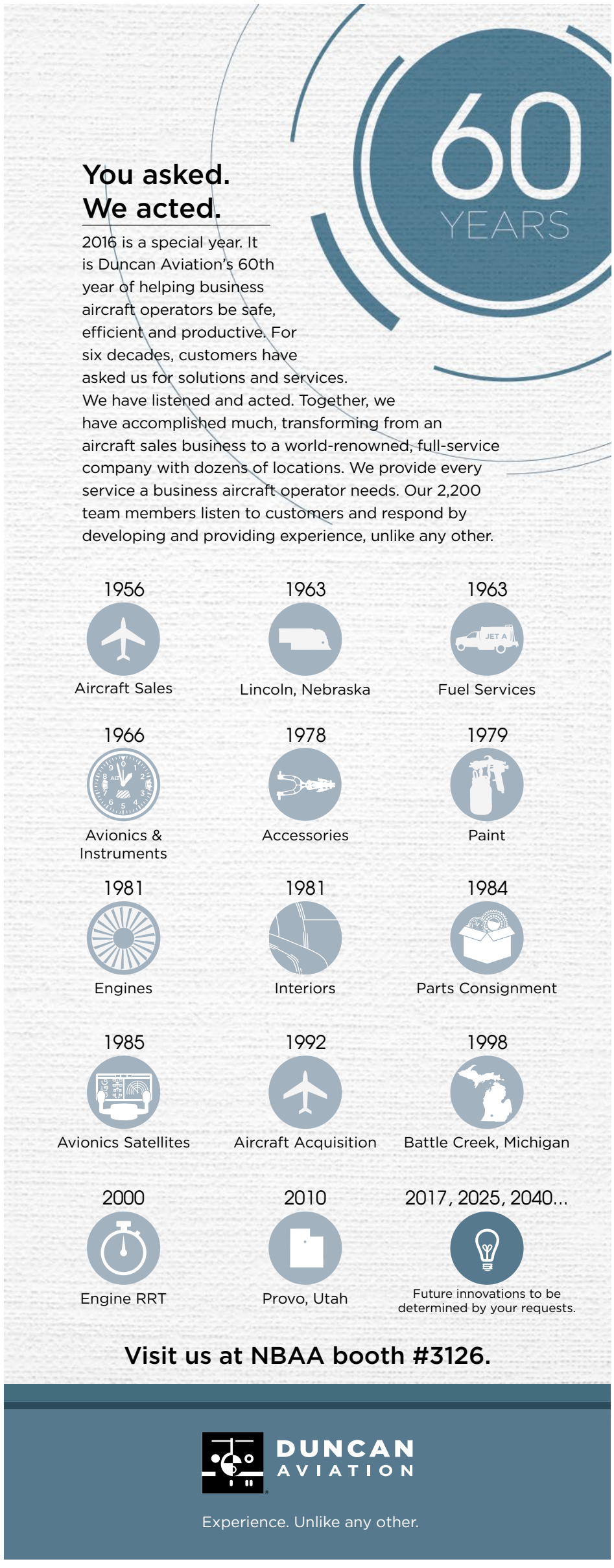
European Controller-Pilot Datalink Com

Europe won't require aircraft operators to equip for controller-pilot datalink communications (CPDLC) until February 2020, to accommodate technical problems. Additionally, European Commission figures showed that only 40 percent of operators would have been ready to use CPDLC by the original deadline of Feb. 5, 2015.

▶ **June 7, 2020**

European ADS-B OUT Mandate

The ADS-B OUT retrofit requirement in Europe is June 7, 2020. The ADS-B OUT requirement in Europe was June 8, 2016, for new aircraft. ❑



People in Aviation Compiled by Kerry Lynch

TAG Aviation Asia appointed **Jolie Howard** CEO. Most recently regional v-p of CIT Business Aircraft Finance in Asia, Howard, previously spent six years as director of business development for TAG Asia.

Robert Molsbergen was named president of *ExcelAire*. Molsbergen has held a number of senior executive positions with aviation and manufacturing companies, including president of its Executive Jet Management (EJM) subsidiary and COO of NetJets global aircraft management, president of MD Helicopters, president of InnovationPlus and president of EMTS.

Vivek Saxena has stepped in as president and CEO of *Mooney International*. Saxena, who takes the role held by **Jerry Chen**, is a veteran senior executive in the aerospace industry, having previously served as an executive officer with ICF International and before that holding multiple roles with Pratt & Whitney, among them general manager.

Greg Principato joined the *National Aeronautic Association* (NAA) as president and CEO, succeeding **Jonathan Gaffney**. Principato has long been an aviation association official, previously serving as president and CEO of the National Association of State Aviation Officials and before that president and CEO of Airports Council International.

John Wade, who steered *Gogo's* business aviation division over the past eight years, was promoted to executive vice president and COO for Gogo. Gogo promoted **Sergio Aguirre** to senior v-p and general manager of this division.

The African Business Aviation Association (AfBAA) named BestFly managing director **Nuno Pereira** vice chairman. Angola-based BestFly was among the founding members of AfBAA, and Pereira has been regularly involved since the association's inception.

Sergio Oliveira e Silva has become the new general manager for *Gama Aviation Hutchison* in Hong Kong. Silva has 22 years of aviation experience, previously working as an engineering manager for Jet Aviation in Hong Kong and also holding roles with Metrojet, NetJets Europe and Air Luxor.

Gulfstream Aerospace appointed **Jeannine Haas** to the newly created position of chief marketing officer. Haas has a quarter century of marketing experience, most recently as the CMO for Avis Budget Group and before that with American Express and Ford Motor.

James Henderson joined *XOJet* as chief business officer. Henderson had been president and CEO-Americas for yacht manufacturer Ferretti and previously had served with a range of luxury goods and premium consumer products businesses. He also managed commercial operations for the Red Bull Sauber Petronas F1 team.

The *General Aviation Manufacturers Association* promoted **Greg Bowles** to v-p of global innovation and policy and **Joe Sambiase** to director of maintenance and airworthiness. GAMA also hired **Kyle Martin** to serve as director of European regulatory affairs. Bowles, who had been directory of European regulatory affairs and engineering, joined GAMA in 2005 and had served as the industry co-chair of the Part 23 Reorganization Aviation rulemaking Committee. Sambiase joined GAMA in 2010 as manager of maintenance and airworthiness and before that held roles with Compass Airlines, US Airways, Independence Air and Jet Aircraft Maintenance. Based in Brussels, Martin joins GAMA from the Aerospace and Defence Industries Association of Europe (ASD), where he was civil aviation manager.

Parker Aerospace promoted **Steve Pitts** to v-p and general manager of the Control Systems Division and **James Stephens** to general manager of the Aircraft Wheel & Brake Division. Pitts was most recently general manager of the company's Stratoflex Products Division. Stephens previously served as business unit manager of the Parker Hannifin Hydraulic Valve Division.

The *International Business Aviation Council* hired **Bennet Walsh** to become its next director of the International Standard for Business Aircraft Operations (IS-BAO) programs. Walsh takes over from **Sonnie Bates**, who recently joined Baldwin Aviation. Walsh brings a background in both operations and safety to his new role, previously serving as senior v-p vice president of safety and operations for Jet Edge International and also serving as an auditor for Argus, as a pilot and simulator instructor for Delta Air Lines, and a pilot for a corporate flight department.

Tan Sri Ravindran Menon, founder and executive director of the *Skypark Group*, Malaysia, has joined the *Asian Business Aviation Association* (AsBAA) Board of Governors as lead of the Malaysia chapter.

Kelly Murphy joined *Women in Aviation International* as director of communications and editor-in-chief of *Aviation for Women*.

Emery Air named **David Kay** director of sales and marketing for its Corporate Aircraft Maintenance and Avionics Division. Kay most recently held an avionics system sales position for J.A. Air Center.

Aviation Mart named **Gerald Timmermans** sales director for Asia-Pacific. Based in Sydney, Australia, Timmermans has 25 years of experience within the aviation sector, working with Fokker, Rockwell Collins and, most recently, Thomas Global Systems.

At *FlightSafety International* **Bryan King** was promoted to manager of the HondaJet training facility in Greensboro, N.C. King joined FlightSafety in 1999 in the Wichita East learning center and joined the HondaJet training team last year. **Matthew De Foe** was appointed assistant manager of the training facility West Palm Beach, Fla. De Foe, who has flown a variety of business aircraft and served as first officer for ExpressJet Airlines, joined FlightSafety's Tucson, Ariz., learning center in 2008 as an instructor and most recently was assistant manager of the facility. And **Darryl Prince** was promoted to assistant manager of the training center in Long Beach, Calif. Prince joined FlightSafety's Long Beach facility in 1988 as a flight simulator technician and has held a number of positions since.

Constant Aviation added **Jerry Sanders** and **Dan Frahm** as avionics regional sales managers.

West Star Aviation appointed **Jerimiah Webb** as landing gear regional sales manager in the Western U.S. region. ❑


Jolie Howard


Steve Pitts


Tan Sri Ravindran Memon


Kelly Murphy


Bryan King

Final Flights

William Meyer, a lifelong aircraft mechanic who was celebrated by the Professional Aviation Maintenance Association (PAMA) as a "man who could fix everything," died July 8. He was 69. Born in California, Meyer enlisted in the U.S. Air Force after high school, joining the 50th Maintenance Squadron in Han, Germany. There, he worked on the F-111 and the F-4 Phantom.

Following his service, he joined Allied Signal Garrett AiResearch, where he remained for 23 years. While at Garrett, Meyer was instrumental in the development of a Lockheed JetStar engine conversion program, which became known as the JetStar-731. He then moved on to the Dassault Falcon 20 re-engining program with TFE731-5s.

After retiring from Garrett, he began a business with his brother Andy, American Data Plate and Aviation Collectables, and later became director of maintenance for Spears Manufacturing, where he maintained aircraft from the light-sport category to helicopters, turboprops and large business jets. Meyer was active in PAMA, serving as secretary, v-p and executive v-p of the national board of directors.

Along with brother Andy and sister Francine Freedman, he is survived by his wife, Doris Meyer; two daughters, Christa Ennis and Laura Ramirez; and four grandchildren.

Tim Corter, who was director of maintenance for Ballengee Aviation, died on August 13 at the age of 56. A graduate of the Sacramento City College Department of Aeronautic Technology, Corter had a 35-year career beginning at Mauser Aviation in 1981. A licensed airframe and powerplant mechanic, he also held positions at AAR of Oklahoma, Jet Service Enterprise, Kerr-McGee Aviation and Dallas Jet International, where he was chief of maintenance. In his most recent role at Ballengee, he oversaw maintenance of a Falcon 50EX and King Air 90. During his career, Corter was recognized with the FAA's Ruby Award, as well as the NBAA Aviation Maintenance Technician Safety Award.

Corter is survived by his wife, Sandra Dee Corter; daughters Sarah Ann Lau and Erin Elizabeth Gibson; brother Charlie Corter; and two grandchildren. ■

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IRAN HAS HUGE POTENTIAL FOR BIZAV, BUT HURDLES

The lifting of nuclear-related sanctions on Iran earlier this year won't have immediate benefits for business aviation, since air transport is being opened up first, speakers said at Aeropodium's Iran Aviation Conference in London last month. However, private charter flights could possibly be permitted at the same time as airline flights from Western countries.

Axon Aviation partner and CEO Kurosh Tehranchian told attendees that the country has "lots of high-net-worth individuals…There is a large base of millionaires and billionaires… and the way to travel this way [by business aviation] will certainly be there."

He added that there are a few business jets in Iran—mainly old Dassault Falcons—that are regulated by the country's civil aviation organization. He described Iran as "the biggest aviation market opportunity in the world and a virtually virgin territory for many aviation services."

Tehranchian said most airports are in the major population centers in northwest Iran, but industry is spread throughout the country. "There is a need for corporate aviation," he said. "Business is everywhere," said Tehranchian, meaning not necessarily where the airlines fly.

He added, "There is charter business in Iran, and some people are using it a lot. And the opportunity for building FBOs/MROs around Iran is tremendous."

José Eduardo Costas, v-p marketing and sales for Embraer Executive Jets, said the forecast GDP growth for Iran is 4.1 percent and said the country has only 21 business jets "for a country of over 80 million people, and with all those resources and wealth." Embraer is forecasting this fleet could grow to more than 50 by 2035, and the opening up to international traffic could significantly boost the country's business aviation traffic.

For now, he said, "The formal answer from the U.S. Office of Foreign Assets Control is that corporate aviation is out. But it is not clear whether a charter aircraft can be considered to be commercial passenger transport. It needs to be more clear. Nobody is yet flying in Iran, apart from local aircraft." —*I.S.*

Pre-owned values

▶ *Continued from page 8*

start to play the game properly in terms of their deliveries, their production and, most important, their pricing, then I think the market will stabilize," said Zuskin, adding that the current U.S. aircraft prices are being influenced somewhat by continuing softness in the international market.

According to Dassault Falcon Jet president and CEO John Rosanvallon, in 2011 fully one half of his company's new aircraft sales were to BRIC countries. Today that number has dwindled to 10 percent. "I have been with Dassault for 41 years, and I don't think I have ever seen a market where the pre-owned market has influenced new aircraft sales this much," he said.

"I think it's really simple," said Robert Spingarn, Credit Suisse's director of equity research for aerospace and defense. "The used market is too large, and until we clear the used market, I don't think the new-build aircraft market is going to recover."

Such oversupply, as evidenced by the lowering delivery rates, has caused OEMs to make the hard decisions to curtail production. "In 2015 as we started looking at all the factors associated with demand profiles, we made a conscious choice and the tough decision to reduce our production rates in 2015 to make sure that they would be aligned going into 2016," said David Coleal, president of Bombardier Business Jets

"The way that's manifested itself right now is we have a book-to-bill of one in the first six months of 2016. We have to be disciplined about that and make sure that we are protecting our residual values, and make sure that we are aligned for the demand that's out there," he added.

For those with a need for a business jet, there likely has never been a better time to buy one, panelists agreed, as low capital costs, inexpensive fuel and the tremendous bargains currently available create opportunities for buyers to get more airplane for their money. ❑

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AIN Calendar

See www.ainonline.com for a comprehensive long-range aviation events calendar.

OCTOBER

AEA U.S. CENTRAL CONNECT CONFERENCE…
October 5-6, Kansas City, MO.
Info: (816) 347-8400; www.aea.net/connect.

ISTANBUL AIRSHOW…October 6-9, Istanbul, Turkey. Info: +90 (312) 446 1294; www.istanbulairshow.com.

6th ANNUAL OFFSHORE AIRCRAFT REGISTRATION…October 10-11, Bermuda. Info: +1 (305) 767 4707; www.aeropodium.com/oar.html.

ERA GENERAL ASSEMBLY…October 11-13, Madrid. Info: www.eraa.org/events-general-assembly-2016.

HELITECH INTERNATIONAL HELICOPTER EXPO & CONFERENCE…October 11-13, Amsterdam RAI, Holland. Info: +44 (0)20 8271 2155; www.helitechevents.com.

AIROPS EUROPE…October 12-13, Cannes, France. Info: +32 2 766 0070; www.ebaa.org/en/news-publications/news/airops-europe-12-13-october-2016-cannes.aspx.

INTERNATIONAL AIRPORT GSE EXPO…
October 18-20, Rio All-Suite Hotel & Casino, Las Vegas, NV. Info: (800) 547-7377; www.gseexpo.com.

AEA CANADA CONNECT CONFERENCE…
October 19-20, Calgary, Alberta.
Info: (816) 347-8400; www.aea.net/connect.

2016 IES ALC AIRFIELD LIGHTING COMMITTEE TECHNOLOGY MEETING…
October 23-28, Hyatt Regency Mission Bay Spa & Marina, San Diego, CA. Info: (419) 524-2121; www.iesalc.org.

NBAA TAX, REGULATORY & RISK MANAGEMENT CONFERENCE…October 30-31, Orange County Convention Center, Orlando, FL. Info: (202) 783-9000; www.nbaa.org.

SINGLE PILOT SAFETY STANDDOWN…
October 31, Orlando, FL. Info: (800) 783-9000; www.nbaa.org.

54th ANNUAL SAFE SYMPOSIUM…
October 31-November 2, Dayton Convention Center, Dayton, OH. Info: (541) 895-3012; www.safeassociation.com.

NOVEMBER

◆ ● **NBAA BUSINESS AVIATION CONVENTION & EXHIBITION**…November 1-3, Orange County Convention Center, Orlando, FL.
Info: (202) 783-9000; www.nbaa.org.

AEA SOUTH PACIFIC CONNECT CONFERENCE…November 14-15, Melbourne, Australia, Info: (816) 347-8400; www.aea.net/connect.

INTERNATIONAL AIR SAFETY SUMMIT…
November 14-16, Dubai, United Arab Emirates.
Info: www.flightsafety.org/aviation-safety-seminars.

DRONE WORLD EXPO…November 15-16, San Jose, CA. Info: (203) 371-6322; http://droneworldexpo.com.

AfBAA BUSINESS AVIATION CONFERENCE (AfBAC)…November 17-18, Cape Town, South Africa. Info: +20 100 300 49 40; http://afbaa.org.

BASEL & BUSINESS JETS…November 24, Swiss Conference Center, Basel Airport, Basel, Switzerland. Info: +44 20 8123 7072; www.aeropodium.com/basel.html.

CIAM 2016 11th INTERNATIONAL TRADE SHOW AND CONGRESS…November 30-December 2, JW Marriott Cancun Resort & Spa, Cancun, Mexico. Info: (+52 1) 777 317-64-45; www.expo-ciam.com.

DECEMBER

◆ **MEBAA SHOW**…December 6-8, Dubai, Dubai World Central, United Arab Emirates.
Info: www.mebaa.aero.

BARRY AMBROSE

NBAA BUSINESS AVIATION CONVENTION & EXHIBITION

Orlando will once again host business aviation's biggest show. The event runs from November 1 to 3, but don't miss educational and professional development sessions taking place before and after, such as a tax seminar and a safety forum. Organizers expect some 27,000 industry professionals and 1,100 exhibitors at the Orange County Convention Center and off-site static display area.

DAVID McINTOSH

DUBAI TO STAGE MEBAA SHOW

The biennial show is one of the final business aviation events on the calendar, marking the close of a challenging year for business aviation. In December, organizers expect some 9,000 visitors and 460 exhibitors at a show aimed at expanding business aviation in the Middle East and North Africa.

FEBRUARY 2017

SCHEDULERS AND DISPATCHERS CONFERENCE…February 7-10, Fort Worth, Texas. Info: (800) 783-9000; www.nbaa.org.

NBAA LEADERSHIP CONFERENCE…
February 14-16, Hyatt Regency, Miami, Florida.
Info: info@nbaa.org;
https://www.nbaa.org/events/leadership/2017/

MARCH 2017

BUSINESS AIRCRAFT FINANCE, REGISTRATION & LEGAL CONFERENCE…March 5-7, Hyatt Regency Coconut Point Resort, Bonita Springs, FL. Info: (202) 783-9451; www.nbaa.org/events/finance-registration-legal-conference/2017.

◆ **HELI-EXPO**…March 7-9, Dallas, TX.
Info: www.rotor.org.

AEA INTERNATIONAL CONVENTION & TRADE SHOW…March 13-16, New Orleans, LA.
Info: www.aea.net/convention/2017.

INTERNATIONAL OPERATORS CONFERENCE…
March 13-16, Atlanta, GA. Info: (800) 783-9000; www.nbaa.org.

INTERNATIONAL BRAZIL AIR SHOW (IBAS)…
March 29-April 2; Galeão International Airport, Rio de Janeiro, Brazil. Info: +55 11 3032-5633; http://www.sators.com.br.

APRIL 2017

◆ **ASIAN BUSINESS AVIATION CONFERENCE & EXHIBITION**…April 11-13, Shanghai Hawker Pacific Business Aviation Service Centre, Hongqiao Airport, Shanghai, China.
Info: www.abace.aero.

MAY 2017

◆ **EUROPEAN BUSINESS AVIATION CONVENTION & EXHIBITION…**May 22-24, Palexpo Convention Center, Geneva, Switzerland.
Info: (202) 783-9000; www.ebace.aero/2017.

JUNE 2017

◆ **PARIS AIR SHOW**…June 19-25, Exhibition Center of Le Bourget, France. Info: visiteurs@siae.fr; http://www.siae.fr/.

◆ Indicates events at which **AIN** will publish on-site issues or distribute special reports.
▲ Indicates events for which **AIN** will provide special online coverage or e-newsletter.
● Indicates events at which **AIN** will broadcast AINtv.com.

NBAA SCHEDULERS & DISPATCHERS

The event is a key resource for anyone with responsibility for scheduling/dispatching business aircraft. Expect a full slate of educational sessions—2016's event had nearly 30—on issues from flight operations to airport access. In recent years the event has offered several opportunities for participants to give back to the host city.

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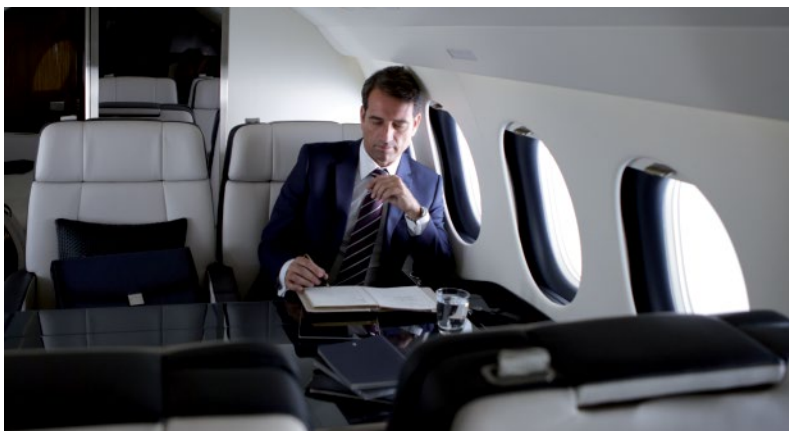

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