Bombardier sells training unit, Q400

by Chad Trautvetter and Gregory Polek

Bombardier is selling its business aircraft training unit to CAE for $645 million and its Q400 turboprop program to Canadian airframe maker Viking Air for $300 million (see page 50) as part of a streamlining exercise expected to include the elimination of some 5,000 jobs over the next 12 to 18 months, the company announced November 8. The company expects both transactions to close by the second half of 2019 and generate net proceeds after assumption of certain liabilities, fees, and closing adjustments of $900 million.

Under Bombardier’s training divestiture, CAE will expand its access to the training market for customers operating the more than 4,800 in-service Bombardier business jets. This would bring CAE’s total business aircraft FFSs to 29 worldwide.

“This transaction represents a win-win for both companies, resulting in enhanced core focus,” said CAE president and CEO Marc Parent. “Market fundamentals in business aviation are strong and the business we are acquiring is well supported by a large installed base.”

CAE will also pay Bombardier $155 million to monetize its existing future royalty obligations under the current authorized training provider agreement with the business jet manufacturer. This provision also extends CAE’s authorized training agreement with Bombardier to 2038.

Meanwhile, the sale of the Q Series turboprop line leaves the CRJ regional jet as the sole remaining commercial aircraft program for Bombardier Aerospace, which sold a controlling stake in its most ambitious project ever—the C Series narrowbody airliner—to Airbus in July.

Soon after Bombardier completed negotiations over the C Series sale, it predicted a bright future for the Q400, and during a June 21 briefing with reporters in Mirabel, it announced plans to boost range by 300 nm, opening up city pairs such as New York to Hong Kong, and confirm a published takeoff distance of 5,800 feet.

Aviation finance
Lenders look ahead to next upturn > page 28

Airports
City seeks to remove safety areas > page 10

UAVs
Drones pose hazard to navigation > page 46
DIFFERENT BY DESIGN.  
DISRUPTIVE BY CHOICE.


Introducing the new midsize Praetor 500 and the super-midsize Praetor 600 – the world’s most disruptive and technologically advanced business jets.

A record-breaking best-in-class range. 
Enviable performance in challenging airports. 
Full fly-by-wire with active turbulence reduction. 

Power the future. Take command. Lead the way.

Learn more at executive.embraer.com.
Industry representatives foresee pilotless future

by Chad Trautvetter

The current pilot shortage and push for urban air vehicles are leading to the development of technology that could allow single-pilot, remote pilot, or even fully automated (no pilot) aircraft operations within the next decade, Embraer Executive Jets president and CEO Michael Amalfitano said last month at the Corporate Jet Investor Miami conference.

While Jet Aviation senior v-p of flight services Don Haloburdo boldly claimed that “pilots might be unemployed in 15 years” due to automation, Amalfitano envisions a longer timeline—at least for traditional aircraft—and more of a phased approach before regulators allow pilotless aircraft carrying passengers.

According to Amalfitano, sister company Embraer X is working on an optionally piloted urban air vehicle that is expected to be certified in 2023. But, given regulatory limitations, it would be certified as a single-pilot aircraft and, under its phased approach, the company would then work to get approval for a remote pilot with onboard flight manager, followed by just a remote pilot, and eventually with no pilot, he said.

Embraer Executive Jets is leveraging the work that Embraer X is doing in this area, Amalfitano said, but with an initial phase calling for single-pilot jets weighing more than 12,500 pounds. As proof that full automation is coming, he cited FAA data saying jet pilots are currently performing just 30 percent of the flying, with automation taking over the rest.

Half of U.S. fleet will miss ADS-B deadline

Just 46.2 percent of the U.S. aircraft fleet is projected to meet the ADS-B equipment mandate by the Jan. 1, 2020 deadline, a panel of business aviation industry experts warned November 14 at the Corporate Jet Investor Miami conference. With less than 400 days left, only 30.3 percent of this fleet is equipped, according to FAA data as of November 1.

But on the general aviation (GA) side, the current equipage figure is bleaker: 22.2 percent, according to data compiled by JetNet and Duncan Aviation. Business jet equipage was highest, with 7,477, or 52.5 percent, of these 14,320 aircraft now compliant. This is followed by turboprops, at 29.6 percent (3,591 of 12,149); piston, 17.5 percent (35,791 of 204,191); and helicopters, 14.2 percent (1,968 of 13,866).

Panelists Alex Craig of AvRisk, Chick Wade of Rockwell Collins, and Joe Zulueta of Aeronautical Systems, had a unified message for operators of non-ADS-B-equipped business jets, most of which are in the light and midsize categories: “You will be effectively grounded after January 1, 2020. Book a slot now, if you haven’t already!” According to Zulueta, not only will non-equipped jets be grounded in less than 14 months, but these aircraft will suffer significant devaluation and owners will incur storage fees.

These slots are already in short supply, said Craig, noting that Duncan Aviation has informed existing customers that it might not have enough capacity to cover all of them by the deadline. Besides lack of available slots, install prices are also escalating and equipment shortages are starting to emerge.

C.T.
This is Corporate Solutions by Flexjet. No two corporate aviation departments are the same. Precisely why our consultative approach produces tailored flight solutions specific to the unique needs of your company. Corporate Solutions by Flexjet features a team of veteran pilots experienced at maximizing efficiency and controlling costs for flight departments of all sizes.

Built on a fully established international infrastructure with highly-awarded safety standards, an unrivaled fleet, and obsessive attention to detail and service, Corporate Solutions by Flexjet empowers your flight department.

866.457.0043 | FLEXJET.COM
YOU WON’T JUST BE FLOWN, YOU’LL BE MOVED.

© 2019 FLEXJET LLC.
Event’s theme of ‘normalizing excellence’ puts focus on ensuring professionalism

by Kerry Lynch

The Bombardier Safety Standdown opened in late October with chief safety leaders from the FAA, NTSB, and the business aviation community highlighting this year’s theme of “Normalization of Excellence” to upwards of 700 registrants.

Entering its third decade, attendance has grown to the point where Bombardier did not have enough space for the 150 more who hoped to attend. Over the years, the event has attracted more than 10,000 people (combined) and scores more listening in to the event that is now webcast online. In fact, this year’s event in Wichita, Kansas, drew more than 2,000 unique online viewers from more than 30 countries.

Andy Nureddin, vice president of customer support and training for Bombardier, pointed to the shared passion for safety that has stemmed from the Bombardier Safety Standdown and reiterated that “our community can’t afford to take safety for granted.”

A perennial favorite at Safety Standdown, Convergent Performance’s Tony Kern also helped open Safety Standdown, outlining the importance of being a “grinder.” He pointed out top golfers who were grinders—they do not dwell in their mistakes but push through and look to the opportunity to take new shots. Kern encouraged the audience not to fall into the handcuffs of mediocrity that can come with experience over time. Instead, he challenged them to be a grinder, strive for a high level of professionalism that he said is “normalized excellence.”

Noting the importance of maintaining not only safety but the perception of safety for the industry, NBAA v-p of regulatory and international affairs Doug Carr pointed to his association’s recent reaffirmation of its commitment to safety with the signing of its safety policy letter earlier this month. Carr lauded the many participants willing to collect and share data to help build on the safety record, and encouraged audience members who have not yet begun such practices to reach out to those who do to learn how to overcome obstacles to data sharing.

Michael Zenkovich, deputy executive director for the FAA’s Flight Standards Service, emphasized that “we’re all on the same team,” adding that while rules and regulations are important, they must come in concert with a strong safety culture.

National Transportation Safety Board officials have been a staple at Safety Standdown, and this year was no different with John Delisi, director of the agency’s Office of Aviation Safety, providing thoughts on learned lessons from Part 121 operations that could boost Part 91/135 business jet operations. JD McHenry, CEO of Global Jet Services, delivered an overview on providing both management and leadership and on reaching across generational lines in his discussion on “Keep It Simple Leadership for Higher Safety Standards.”

Safety Standdown attendees further received an overview from Daniel Mollicone of Pulsar Informatics on fatigue risk management. They learned of studies that correlated sleep deprivation closely to the amount of alcohol drunk (i.e., a person who has gone 18 hours without sleep has a similar cognitive ability as someone with a blood alcohol content of 0.05 percent), and prolonged loss of sleep over time can have effects similar to those of a full day’s loss of sleep.

The FBI’s behavioral expert Amy Grubb returned to also provide insights on mentorships and leadership, stressing that a person can lead without being in a leadership position, the importance of developing a positive culture, and relating through story-telling. Other discussions drilled into professionalism, standardizing, and the safety mindset.

In addition to the general session speakers, Safety Standdown hosted numerous workshops covering everything from training, land and water evacuation drills, and maintenance events to 2020 requirements, birds, altitude physiology, and hypoxia, among many others.

Martin Grier, senior manager of aircraft maintenance for The Home Depot Aviation Department, became the first maintenance professional to receive the Bombardier Safety Standdown Award. “Marty truly embodies aviation professionalism,” said Jeff Wofford, chief pilot and director of aviation from CommScope, noting his 40 years of aviation experience. That includes three decades in business aviation and mentoring veterans who are easing into the civilian workforce. “His depth of experience in aircraft maintenance, modifications, specification and completion is directly tied to how he leads, nurtures, and grows a strong safety culture. He sets an exceptional example for others to follow.”

As the 22nd annual Safety Standdown wound down, Bombardier had already begun to plan ahead for next year’s event, which for the first time will be held in Dallas. The new location is part of “our commitment to spread our safety messages in other key business aviation centers,” a spokeswoman said. That event will be held November 12-14, 2019.

NEWS from SAFETY STANDDOWN

NEWS Briefs

Changes Coming for U.S. Aircraft Registry

There are changes ahead for the U.S. aircraft registry due to new provisions in the recently passed FAA reauthorization bill, as well as anticipated recommendations stemming from ongoing investigations by the DOT Inspector General (IG) and Government Accountability Office (GAO), panelists said last month at Corporate Jet Investor Miami 2018.

Under the reauthorization bill, the FAA’s Oklahoma City-based aircraft registry is required to become fully digitized within three years, including all non-digital registry information and manual-paper-based processes, business operations, and functions. The agency must also install systems that allow digital submission of information and conduct any transactions electronically.

JSSI: Average Bizcraft Flight Activity Still Soaring

Average flight hours per business aircraft exceeded the 30-hour ceiling—at 30.34 hours—for the second consecutive quarter, according to the Jet Support Services International (JSSI) business aviation index for the third quarter. Average flight hours increased 5.7 percent year-over-year. Of the nine industries JSSI analyzed, six reported an increase in flight activity quarter-over-quarter. By region, average flight hours increased “significantly” quarter-over-quarter in the Middle East and Africa, which jumped 39.4 percent, 37.6 percent, respectively, followed by South America, 11.4 percent, and North America, 1.6 percent.

Priester Aviation Rolls Out Jet Card Program

Priester Aviation, one of the longest-running aviation services business, is jumping into the jet card market with its Centerline membership program, which provides on-demand services from New York, Los Angeles, Chicago, Dallas, Atlanta, Denver, and Miami. Centerline members will have access to a core fleet ranging from light to ultra-long-range business jets. Jet cards will be sold in 25-hour blocks, with immediate booking, guaranteed availability, point-to-point pricing, and concierge services.

Embraer Bizjet Deliveries To Meet Lower Estimate

Embraer Executive Jets will meet the lower end of its aircraft delivery estimate this year—105 units—parent company Embraer said during an investor conference call. Earlier this year, the Brazilian aircraft manufacturer said it expected to reach the 115 to 120 business jet shipments, with the lower end being four fewer than last year. In the first nine months, Embraer Executive Jets has handed over 55 aircraft, so it will have to deliver 50 aircraft by the end of this month to meet its goal.
THE LIFESTYLE THAT TAKES OFF WITH YOU

The BBJ MAX 7 raises the bar with a class-leading 7,000 nmi range, enabling nonstop travel between global hubs like Dubai and New York. Feel at home in the clouds with 884 ft² of customizable cabin space as you travel with a team, conduct business and arrive refreshed. From work to leisure, let the BBJ MAX 7 take your lifestyle to greater heights.

boeing.com/bbj
Deliveries up, billings down in first nine months of 2018

by Curt Epstein

Through the first three quarters of the year, general aviation airplane shipments rose by 6.1 percent over the same period in 2017, while overall billings declined by 3.1 percent shrinking from $13.1 billion to $12.7 billion, according to statistics released by the General Aviation Manufacturers Association (GAMA) on November 14.

Private jet deliveries rose by 3 percent, from 435 in the first nine months of last year, to 446 in the same period of 2018. While the overall number of business jet deliveries increased, reflective of the decrease in billings, that total consisted of a higher concentration of smaller jets. Cirrus ramped up its production of the SF-50 Vision jet, from nine in the first three quarters of 2017 to 41 in the same period this year, while Embraer did not ship any Lineage 1000Es this year, after handing over one in the first quarter of 2017.

Turboprops

Pressurized turboprops saw a better-than-5 percent improvement year-over-year, buoyed by Piper, which delivered seven more M-series turboprop singles than it did a year ago, for a nearly 23 percent increase, and Beechcraft, which handed out four additional King Airs. Piaggio, which had no deliveries during the first nine months of 2017, chipped in with three additional Turbina C200 turboprops this year.

On the bizliner front, Boeing tasked on another BBJ to its 3Q 2017 total, for six thus far in 2018. Airbus did not deliver any ACJs in 2017 or through the first nine months of 2018, while Embraer did not ship any 505 jetRanger Xs.

Bell increased its shipments by 68 percent year-over-year, boosted by the ramp-up of the 505 JetRanger X. Deliveries of the light single-engine soared from 10 in the first three quarters of 2017, to 91 in the same span this year. That increase helped cancel out a 16.5 percent shipment decrease by Airbus Helicopters, which delivered 10 fewer H145s and nine fewer H130s during the first nine months of the year. Leonardo handed over six more helicopters year-over-year, and Robinson increased its output by more than 50 units, including three additional turbine-powered R66s.

Alphabet Groups Issue FBO Pricing Declaration

Six general aviation organizations—NATA, AOPA, GAMA, HAI, EAA, and NBAA—have called for better pricing transparency in communications between FBOs and aircraft operators. Over the past two years, AOPA has been asserting that FBO pricing is often unfair. The “Know Before You Go” list of recommended best practices states that service providers should post their current retail charges and fees online in a clear, user-friendly manner so that “a pilot operating a general aviation or corporate-configured aircraft type in routine personal or business use can make an informed decision.” The associations added that FBOs should move “expeditiously to implement these practices.”

Pennsylvania Airport Starts Genav Hangar Project

Pennsylvania’s Lehigh Valley International Airport (ABE) has begun construction on a 54,000-sq-ft heated hangar for general aviation aircraft. The $16.3 million, hangar project will accommodate the latest ultra-long-range business jets. When completed in summer 2019 the addition will bring the total general aviation hangar space at ABE to more than 308,000 sq ft.

NTSB Calls for 25-hour CVRs

As a result of its investigations into multiple business and commercial airplane accidents and incidents over the last two decades, the NTSB is recommending cockpit voice recorders (CVR) with a minimum of 25 hours of recording capability. The Safety Board asked the FAA to mandate the new CVRs on all newly manufactured aircraft, as well as a retrofit on current aircraft, for which a CVR is already required by Jan. 1, 2024. Cockpit voice recorders have a current FAA-required standard recording duration of two hours.

News Briefs

Embraer Expects Brazil To OK Boeing JV Soon

Embraer expects to receive approval from the Brazilian government to move forward with its proposed joint venture with Boeing this month, following consultation between the current government of Michel Temer with the incoming administration of far-right president-elect Jair Bolsonaro. Embraer CEO Paulo Cesar de Souza e Silva said he expects to present the final agreement to the outgoing administration before it leaves office. Once the JV receives the blessing of both administrations, the next step involves calling a general assembly, likely this month, said Silva. The deal would close after it gains shareholder approval and passes antitrust scrutiny sometime in the second half of 2019, he estimated. Under a preliminary agreement, Boeing will take an 80-percent share of Embraer’s commercial aviation business. Embraer Executive Jets will not be part of the joint venture.

Cirrus was one of the hot spots among delivery totals for the first nine months of 2018, with the company handing over 41 of its Vision jets.
Bring your jet Home

For all your support needs, bring your jet home to Bombardier and trust it to the experts who know it best.

businessaircraft.bombardier.com

Exceptional by design
City moves to destroy SMO’s runway safety areas
by Kerry Lynch

The Santa Monica City Council, continuing on its path toward the permanent destruction of Santa Monica Municipal Airport (SMO) in California, recently voted to obtain new bids on removing “excess” runway pavement at the airport, including areas both within and outside the runway safety areas. The city council, upon learning it can only use airport funds to remove runway areas outside the runway safety areas, found initial bids on such activity too high and decided to reject those bids in favor of new ones.

That vote came over strenuous objections from the industry, citing safety and legal concerns. Council member Kevin McKeown noted, “Hope springs eternal [from the aviation community] that they will get their airport back” and added, “that’s not going to happen.” For this reason he pushed for bids that encompassed the runway to reduce the amount of usable runway space—continues to prohibit the runway safety areas, found initial bids after the airport already has reconfigured its new 407GXi single and made its first delivery to Eagle Copters of Chile last month. Bell received Transport Canada certification for the helicopter on January 19. The 407GXi features the Garmin G1000H NXi integrated flight deck and a new Rolls-Royce engine with dual-channel Fadec that delivers better high/hot performance, full automatic reheat, and the ability to cruise at 133 knots.

Titan Establishes U.S. HQ
International aircraft charter, management, and sales provider Titan Aviation has established a U.S. headquarters at New Jersey’s Montoya Municipal Airport. Titan manages nearly 30 aircraft worldwide, ranging from light jets to an Embraer Lineage 1000. But with this move and its recent opening of a new office at Florida’s Fort Lauderdale-Hollywood International Airport, the company aims to have 50 jets under management in the U.S. by 2020.

News Briefs
GAO Investigating FAA Oversight of FBOs
The Government Accountability Office (GAO) is investigating the FAA’s oversight of FBOs to ascertain if they are conducting their businesses in accordance with or in violation of federal requirements. According to a GAO spokesman, the agency has been looking into issues related to the FAA and FBOs since earlier this year “with a target of next spring for completion.” GAO claims the investigation will examine how well the FAA is exercising its responsibility to oversee airports that receive Airport Improvement Program funds and the assurances that come with the grants, including the requirement that airports and businesses on them must charge only “fair, reasonable, and nondiscriminatory fees and prices.” Over the past two years, GAO has been asserting that FBO pricing is often unfair. But NATA has rejected assertions that FBOs are unfairly profiting from allegedly excessive ramp fees and fuel pricing.

Survey Confirms Bizav Value
NBAA and GAMA jointly released updated Harris Poll survey findings that people are notably more productive on business aircraft and most such operations involve small companies. The survey demonstrates that business aviation provides “safe, efficient transportation to companies of all sizes, particularly those located in smaller communities with little to no commercial airline service,” the associations said. Some of the findings include 31.5 percent of flights went to destinations lacking scheduled service, passengers spend an average of 63 percent of their time engaged in work activities while aboard business jets, and 51.6 say that business aircraft travel enables them to meet work schedules they otherwise could not meet efficiently.

Bell 407GXi Gets FAA Nod
Bell has received FAA type certification of its new 407GXi single and made its first customer delivery to Eagle Copters of Chile last month. Bell received Transport Canada certification for the helicopter on January 19. The 407GXi features the Garmin G1000H NXi integrated flight deck and a new Rolls-Royce engine with dual-channel Fadec that delivers better high/hot performance, full automatic reheat, and the ability to cruise at 133 knots.

Challenger 600 celebrates 40 years
Bombardier last month celebrated the 40th anniversary of the first flight of its venerable Challenger 600 series. The Challenger 600 took to the skies on November 8, 1978, from Montreal, Quebec.

Originally designed by Bill Lear in the early 1970s as the LearStar 600, the Canadian-back Canadair became involved and evolved the program in the mid-1970s. Canadair acquired the design outright and launched the program in 1976 with 28 firm orders in hand.

Later named the Challenger 600, the aircraft was to meet new Part 25 standards with a “wide body” cabin and Lycoming ALF 502 engines. Challenger S/N 1002 was nominally delivered in March 1979 but leased back for test flying in advance of certification that came in the latter half of 1980. By the time of certification, Canadair already was working on the next iteration, the GE CF34-powered CL-601, which was formally launched in 1981 and certified in February 1983. Bombardier subsequently bought Canadair in 1986.

More than 1,100 of the series have been delivered, and the fleet had accrued more than 6.16 million hours by the end of September. Fifty-seven Challenger 600s remained in the fleet at the end of the third quarter (81 were built). The Challenger 604 currently makes up the largest portion of the fleet with 357, followed by the 605 with 288. The latest edition, the Challenger 650, numbered 75 at the end of the third quarter.

Safety Concerns Raised
AOPA and NBAA jointly appealed to the city to scrap the plan, warning of safety ramifications. “Although accidents at SMO are fortunately rare, in the event of a runway overshoot or undershoot event, the entire project must be funded by taxpayer dollars,” they contended, pointing to an FAA letter that recommended that none of the airport funds be used because the project serves no aeronautical purpose.

The associations further pointed to the 2017 agreement—which ultimately allowed the city to shorten the usable runway space—continues to prohibit revenue division by the city. A number of local airport backers have made similar appeals to the city council, but council members agreed nearly unanimously (one abstention from a late arriver) to move forward with a new round of bids. McKeown called the aviation backer’s arguments “strongly worded, sometimes offensively worded.” Council members even offered to take up to $100,000 from the city council’s discretionary fund to make sure the work gets done.

Airport backers are continuing their fight to preserve SMO, both through the courts and an administrative filing within the FAA, including one pending that seeks a review of SMO financial practices. NBAA, along with local airport businesses, further has a case before the U.S. District Court for the District of Columbia over the 2017 agreement that not only allowed the runway shortening, but will clear the pathway for the airport’s closure altogether at the end of 2028.

Survey Confirms Bizav Value
NBAA and GAMA jointly released updated Harris Poll survey findings that people are notably more productive on business aircraft and most such operations involve small companies. The survey demonstrates that business aviation provides “safe, efficient transportation to companies of all sizes, particularly those located in smaller communities with little to no commercial airline service,” the associations said. Some of the findings include 31.5 percent of flights went to destinations lacking scheduled service, passengers spend an average of 63 percent of their time engaged in work activities while aboard business jets, and 51.6 say that business aircraft travel enables them to meet work schedules they otherwise could not meet efficiently.

Bell 407GXi Gets FAA Nod
Bell has received FAA type certification of its new 407GXi single and made its first customer delivery to Eagle Copters of Chile last month. Bell received Transport Canada certification for the helicopter on January 19. The 407GXi features the Garmin G1000H NXi integrated flight deck and a new Rolls-Royce engine with dual-channel Fadec that delivers better high/hot performance, full automatic reheat, and the ability to cruise at 133 knots.

Titan Establishes U.S. HQ
International aircraft charter, management, and sales provider Titan Aviation has established a U.S. headquarters at New Jersey’s Montoya Municipal Airport. Titan manages nearly 30 aircraft worldwide, ranging from light jets to an Embraer Lineage 1000. But with this move and its recent opening of a new office at Florida’s Fort Lauderdale-Hollywood International Airport, the company aims to have 50 jets under management in the U.S. by 2020.

Challenger 600 celebrates 40 years
Bombardier last month celebrated the 40th anniversary of the first flight of its venerable Challenger 600 series. The Challenger 600 took to the skies on November 8, 1978, from Montreal, Quebec.

Originally designed by Bill Lear in the early 1970s as the LearStar 600, the Canadian-backed Canadair became involved and evolved the program in the mid-1970s. Canadair acquired the design outright and launched the program in 1976 with 28 firm orders in hand.

Later named the Challenger 600, the aircraft was to meet new Part 25 standards with a “wide body” cabin and Lycoming ALF 502 engines. Challenger S/N 1002 was nominally delivered in March 1979 but leased back for test flying in advance of certification that came in the latter half of 1980. By the time of certification, Canadair already was working on the next iteration, the GE CF34-powered CL-601, which was formally launched in 1981 and certified in February 1983. Bombardier subsequently bought Canadair in 1986.

More than 1,100 of the series have been delivered, and the fleet had accrued more than 6.16 million hours by the end of September. Fifty-seven Challenger 600s remained in the fleet at the end of the third quarter (81 were built). The Challenger 604 currently makes up the largest portion of the fleet with 357, followed by the 605 with 288. The latest edition, the Challenger 650, numbered 75 at the end of the third quarter.

R.L.
It’s not just a place to land.
It’s your Signature.™
**USC protocol provides tool for bizav security**

by Kerry Lynch

Highlighting a concern that security in aviation operations involves much more than just protecting the airport environment, the University of Southern California (USC) Aviation and Security Program is developing an app that can guide industry on establishing security protocols. Speaking last month at the Bombardier Safety Standdown, USC Aviation Safety and Security Program director Thomas Anthony underscored the importance of business aviation operators ensuring security at their passengers’ destinations.

Anthony, a former top FAA security official who served as point person on a number of high-profile terrorist event investigations, including Egypt Air 990 and the World Trade Center attacks, outlined a history of attacks over the past decade, including some of the most well organized and funded events that have led to the loss of hundreds of lives.

In 2017 alone, 2,017 attacks occurred, he said. Nine involved more than 100 deaths. They were concentrated at the beginning of the year and in the summer, and many involved symbolic places or took place during symbolic events at “soft” (unarmed) targets. But despite generalizations, risks are constantly evolving, requiring business aviation operators to be prepared. “The flight crewmembers are security assets,” he said.

USC has developed a “PRIFISE” operational risk assessment protocol that Anthony said essentially condenses ICAO Annex 17 and TSA directives into a simple, usable approach to developing a plan. PRIFISE is an acronym for planning; roles and rules; intelligence; fences, gates, and barriers; identification of friend or foe; search and screening; and emergency response.

The plan, he said, must start with an objective and have the ability to evolve to changing security needs and threats. With roles, a point of contact must be determined, as well as a person in charge. On intelligence gathering, he suggested checking with U.S. State Department advisors, the CIA World Factbook, and other sources internationally.

As for developing barriers, he said they could be physical or even create the appearance of security when necessary. Just having a person present for observation could provide a level of security. Identification, meanwhile, involves not only the people known in the operation, but those in the area. He showed a photo taken just before a shooting in the baggage area at a Fort Lauderdale airport with a gunman extending a firearm—not yet shooting—and people behind him who appeared oblivious to this fact.

This also goes in tandem with screening and surveying risky areas, and making travel plans accordingly. And, in case of an event, the operation must be prepared for emergency response, including whom to contact at international destinations. An undergraduate student developed a cartoon to explain the PRIFISE concept, which is available on YouTube. But Anthony added that the program is working on an app to help provide guidance on the protocol.

**NASA spoons up supersonic research**

NASA has started low-speed wind tunnel testing of a subscale model of its X-59 low-boom supersonic demonstrator. The X-59, which will be built by Lockheed Martin, could pave the way for supersonic flight over land in the U.S.

The recent tests, conducted at NASA Langley, collected low-speed aerodynamic stability and control data to expand upon previous experimental and computational predictions. They consisted of three phases: static stability and control tests, dynamic forced oscillation tests, and flow visualization tests using laser techniques. Once deemed safe to fly, the X-59 will begin making supersonic flights over “select communities” in 2023 to measure residents’ reactions to any noise they might hear, potentially paving the way for supersonic flight over land in the U.S.

Low-speed wind tunnel testing of the X-59 low-boom supersonic demonstrator has started at NASA Langley. NASA plans to fly the X-59 in 2023 over “select communities” to measure residents’ reactions to any noise they might hear, potentially paving the way for supersonic flight over land in the U.S.

**DOT Tasked With Assessing Illegal Charter**

The U.S. Secretary of Transportation has been tasked by Congress to produce an analysis of reports filed to the FAA’s illegal charter hotline over the past 10 years. That analysis must include steps that can be taken to combat illegal charter operations.

**Bizjet Brokerage JetAviva opening Mexico sales office**

Business aircraft brokerage JetAviva is opening a new sales office in Mexico, headed by Gonzalo Quintana, who will manage all Latin America sales for the company. According to JetAviva, he has played an integral part in the sales of more than $900 million worth of business aircraft over his more than 30-year career in general/business aviation.
Connect without compromise.  
Even at 40,000 feet.

Our fast, reliable technologies have powered businesses, governments, and militaries around the world for more than 30 years—and we apply the same high standards to your in-flight experience.

So go ahead. Conference, stream, and surf just like you would in your office—even at 40,000 feet.

From the leader in business jet connectivity  
T: +1.760.476.4755  E: business-aviation@viasat.com  viasat.com/business-aviation

Viasat will be at EBACE Geneva, May 29-31, please visit us at booth P107
EASA proposes runway alerting systems
by Gordon Gilbert

The European Aviation Safety Agency (EASA) has issued a notice of proposed amendment (NPA) to require the installation of a runway overrun awareness and alerting system on Part 25 large airplanes operated in commercial air transportation (CAT). The agency said the proposed regulatory changes are “expected to increase safety by supporting the flight crew during the landing phase in identifying and managing the risk of a runway excursion.”

The NPA is offering three rulemaking options. Option 1 requires only new large airplane type designs as of 2019 to have systems installed. Option 2 mandates the systems on new type designs and all newly delivered large airplanes to European CAT operators starting in 2022. Under option 2, roughly 75 percent of the fleet would be equipped with the technology by 2037.

Option 3 mandates the systems on all new deliveries and on all in-service airplanes by 2026. Thus, in that year, at the latest, the agency concludes the whole of the EASA fleet would be equipped with the system. Comments on the NPA are due by Jan. 15, 2019.

Meanwhile, as the result of a fatal aborted landing attempt of a Hawker Beechcraft HS 125-800A in 2008, the NTSB recommended that the FAA “actively pursue with aircraft and avionics manufacturers the development of technology to reduce or prevent runway excursions and require that the technology be installed.” According to the FAA, such systems have begun to be installed by several aireframe manufacturers and are available for retrofit.

NEWS FROM: SAFETY STANDDOWN

DeLisi: Part 121 has laid roadmap for bizav safety
by Kerry Lynch

Highlighting the fact that Part 121 fatal accidents have become almost non-existent in the U.S., a senior NTSB official expressed the belief that Parts 91 and 135 can move in that direction as well by incorporating some of the lessons learned from the scheduled airlines.

The discussion about Part 121 fatal accidents in the U.S. “is a very short conversation,” John DeLisi, director of the NTSB’s Office of Aviation Safety, said during the Bombardier Safety Standdown in late October. “It’s the sound of cricket...they’re just not happening anymore in the U.S.,” he noted. “How did what was already the safest form of transportation become one in which accidents just got wiped off the map for nine and a half years? A lot of things came together.”

Factors in the dramatic boost in the Part 121 safety record include the adoption of safety management systems (SMS), he said, calling them an important player in improving the safety culture. Other improvements include weather forecasting and dispatching.

“Weather doesn’t bite us anymore; we know where it is with great accuracy” with the forecast tools now available, DeLisi said. Controlled flight into terrain (CFIT) training and equipment also have played key roles, he added, saying CFIT is “another category of accident that has disappeared from the radar.”

Flight data monitoring (FDM) further has played a role. “I used to feel guilty about this requirement” for airlines, he said, adding that it originally involved collecting data after an accident. But it is now looked at for proactive collection of data that could be shared. In fact, data sharing, including efforts such as Aviation Safety Action Programs, have elevated safety overall.

Accidents Highlight Challenges

“Are we realizing those gains in Part 91 and 135 jet operations? Not yet,” DeLisi said, and listed a series of fatal accidents that point to a need for safety improvements already adopted by the airlines.

These included the June 25, 2015 crash of a Promech Air DHC-3 in Ketchikan, Alaska; the October 2, 2016 crash of a Hageland Aviation Services Cessna 208B in Togiak, Alaska; the November 10, 2015 crash of a Hawker 700A in Akron, Ohio; and most recently the May 15, 2017 crash of a Learjet 35A in Teterboro, New Jersey.

While each of these accidents had different circumstances, they have common threads: decision-making, the need for FDM, lack of CFIT training, and a need for safety management systems, he said. In the 2015 DHC-3 Otter crash, the aircraft hit a mountain about 24 miles east-northeast of Ketchikan, killing the pilot and eight passengers. The operation was under time pressure that had financial implications through a cruise line. This was among the factors present when the pilot flying the tourists decided to take a shorter route through weather that other pilots had avoided. This accident further highlighted a lack of CFIT training, which wasn’t required, as well as a lack of requirement for SMS, DeLisi said.

The 208B Grand Caravan accident also involved CFIT, crashing 10 nm northwest of Togiak Airport and killing both pilots and a passenger. DeLisi said this accident further highlighted a lack of CFIT training. And similar to the Otter crash, the pilots chose a flight path that others had avoided. The weather was changing that day with a front moving through. Rather than flying around it, though, the accident pilot chose the more direct route. After the accident, Hageland installed FDM on its aircraft and has been talk to pilots who don’t perform “turn backs.”

Nine people were killed when the Hawker 700A crashed into terrain in Akron, Ohio. The NTSB found multiple deviations from standard operating procedures and a “casual attitude toward compliance with standards” on the flight. The pilots were on a non-precision approach and descended below minimum descent altitude, even though the runway was not in sight. The first officer flew the accident flight despite a company policy that other pilots had followed. The events are followin common themes: altitude deviations, course deviations, procedure deviations, maintenance issues, and logbook/paperwork issues. Similarly, the causes include distractions, pressures for on-time performance, high workload, inadequate training, and peer pressure.

These are providing lessons for corrective actions, such as checklists, training, and perhaps most important, recognition of threats. Lawton said that recognition is critical because many of the reports are from sole sources and without them, those threats would continue to go unrecognized.

“It’s easy to read these reports and have a Dr. Phil moment: ‘What were they thinking?’” Lawton said, but added, the “reality is they happened, we are all vulnerable to them, and the [benefit is] the lessons we can learn from them.”

K.L.
Train with FlightSafety and benefit from our unequaled experience, team of master instructors and safety-focused programs using state-of-the-art simulation technology. Trust that we’ll always go above and beyond for you and your flight department and deliver the value you deserve and expect. It’s all about you.
FAA, industry team on high-altitude ox rule

by Kerry Lynch

The FAA is considering changing high-altitude oxygen equipment requirements, and a key business aviation executive involved in the issue expressed hope that “something is going to happen soon that is very positive.”

After a four-plus-year effort to gain attention on concerns surrounding mandates for high-altitude oxygen masks in business aircraft, Rick Miller, chief pilot for Merck Sharp & Dohme and chairman of the NBAA High Altitude Supplemental Working Group (HASO), spoke at the recent Bombardier Safety Standdown. He said that the FAA met with leaders on the issue in May and opened a productive dialog on potential changes to FAR 91.211.

That meeting resulted in a strategy on the issue, Miller said, adding he is encouraged that the FAA planned to act on their concerns, although he wasn’t able to say just yet what the final result might be.

Under 91.211, pilots must continuously wear an oxygen mask when flying above FL410 and also when only one pilot is available at FL350. If two pilots are on the flight deck between FL350 and FL410, oxygen masks must be within reach. Data suggests that 60 percent to 80 percent of pilots do not comply with the requirement to don oxygen masks, he said, expressing a belief this number might actually be closer to 90 percent.

Miller, who has written a paper and given a number of presentations on the issue, said noncompliance is not a matter of lazy or undisciplined pilots. Instead, he believes the risks of using the masks outweigh the benefits. Concerns arise about potential fatigue setting in from extended use, interference with cockpit resource management, interference with vision, possibility of contamination of oxygen masks, and possible health risks from prolonged exposure to 100 percent oxygen, among others.

It was actually a noncompliant event that motivated Miller to begin the campaign for change. He learned of the event and subsequently reached out to the pilots involved. His concern was that he had to require his pilots to comply with a rule that none of them liked, but that he would have trouble continuing to mandate such compliance if others were not setting examples.

This led to a dialog that expanded to others in the industry, and Miller eventually discussed his concerns at an OEM conference. NBAA subsequently worked with Miller to form the HASO working group, which has since been joined by numerous safety experts, business aircraft operators, and manufacturer representatives, among others.

The group sent out a survey to pilots on the issue and received 2,000 responses, many with detailed comments, underscoring the interest in a change to 91.211. Miller believes the strong response caught the attention of the FAA, which led to the collaboration on the issue.
It’s time.

What are the most precious things in your life? Your family, your friends, your business? Whatever they are, the most precious resource that links them all together is time.

That’s why we’ve taken the time to make CorporateCare® even more comprehensive, with additional line maintenance, expanded support and even nacelle coverage on later engine models.

Supported by the industry’s leading global service network and cutting-edge digital tools, we are focused on getting you to your destination on time, every time.

It’s time to protect your most precious resource. It’s time to consider CorporateCare Enhanced.

For more information, email corporate.care@rolls-royce.com

The future. Rolls-Royce.
As I sit down to write, news reports are highlighting a near disaster in India involving an Air India Express flight carrying 130 passengers and 6 crewmembers in a Boeing 737 that hit a brick airport boundary wall and then—incredibly—kept going for more than four hours, even after being informed by airport authorities of the collision. Like many disasters and near disasters, this event raises questions beyond the aeronautical judgment of those particular pilots. And, yes, a full investigation is needed to determine exactly what happened and why. But it’s not too early for the U.S. to monitor this event for its implications for India’s ability to oversee the safety of its airlines.

I’ve written before on my concerns about the FAA’s safety ratings of foreign countries; India in particular. What triggered my concern in 2012 were media reports that Air India pilots and those at other Indian airlines were not getting paid. Clearly, multiple major airlines not paying their pilots was a sign of their significant financial distress that should have been worrisome to India’s civil aviation regulator, known as the Directorate General of Civil Aviation (DGAC).

Yet, the situation had been ongoing for months and months and the airlines kept on flying with their pilots unpaid or not regularly paid. Certainly, the situation also should have been a concern for the FAA, which rates whether countries whose airlines fly into the U.S. or want to fly into the U.S. meet the standards established by the International Civil Aviation Organization. (The FAA does not rate foreign airlines but their government’s ability to perform safety oversight functions under ICAO.)

Reasonable Conclusions

As far as I could figure out, the failure to pay pilots did not trigger an FAA review of India’s Category 1 rating, although I believe it should have. However, a 2012 ICAO audit that identified a number of safety deficiencies did. The FAA thereafter conducted its own safety audit and, in 2014, downgraded India to a Category 2 based on its findings that “India’s civil aviation safety oversight regime does not currently comply with the international safety standards set by ICAO.”

With a Category 2 rating, India’s carriers could continue existing service to the U.S. but could not establish new service. Surprisingly enough, in just over a year, the FAA announced that it had upgraded India once again to Category 1, albeit with conditions.

With FAA inspectors reportedly once again mulling India’s ability to oversee its air transport system, the FAA should seriously consider what Air India’s near disaster says about the country’s ability to enforce international safety standards. While a single incident may not normally implicate a country’s oversight ability, the situation with Air India is different in a number of respects.

First, here is what various Indian and foreign media reported about the incident. On October 12, an Air India Express flight in a Boeing 737 took off from Tiruchirapalli International Airport in Tamil Nadu, on the southern tip of India en route to Dubai in the United Arab Emirates. (This is a flight of almost 2,200 miles, much of it over the Indian Ocean.) On takeoff, the Boeing 737 hit a localizer antenna and then a brick boundary wall. The airport director stated, “We informed the pilot about the hit. The pilot said nothing was wrong with the plane as the systems were functioning normally. But we found some parts of the plane, like an antenna, on the ground." I assume this sends chills down your spine, too.

Two hours into the flight, the passenger apparently finally got cold feet and turned the aircraft back to India for a scheduled landing in Mumbai—four hours after takeoff. Photos of the aircraft on social media showed a gash in the belly, and the landing gear had fencing wrapped around it. I find it inconceivable that the crew was not aware that it had hit a brick wall even though they may not have known the extent of the damage. Of course, it’s not knowing the extent of the damage that should have driven their decision-making. And, if it’s true that the crew relied on their cockpit instruments in deciding to continue the flight, they clearly should have known that those instruments would not necessarily give them a complete picture of the potential damage. There could have been damage to the tires, the hydraulic brake lines, the landing gear retraction and extension system; any of which could significantly affect the safety of flight but not show up on the flight deck. Once the aircraft hit an object, the crew would also not know if any other areas of the aircraft were affected, including flight controls, or whether even minor structural damage would propagate and become catastrophic with continued flight.

It’s not just the flight crew that bears blame here, although they have primary responsibility. It seems hard to believe that no one at the airline was aware of this situation after the airport notified the crew. It’s certainly disturbing that it took two hours for the crew, the airline or someone in the Indian government to come to their senses and turn the aircraft back.

While this event would be an indictment of the safety culture of any airline anywhere in the world, because of the relationship between Air India Express, Air India, and the Indian civil aviation authorities, the handling of the event, in my opinion, implicates the competence of India’s aviation safety oversight. According to its website, Air India Express is an international low-cost carrier headquartered in Kochi, India, and a wholly owned subsidiary of Air India. Two of the airline’s directors are high-ranking officials of India’s Civil Aviation Ministry, as are two directors of the parent company, Air India. Air India is not a private airline but, in fact, a government-owned corporation. With high-level Civil Aviation Ministry officials on the board of directors of both the parent and subsidiary airlines, it seems to me that the failings of Air India Express are likely not just “typical” air-line failings but also fairly attributable to failings of the Indian government in its oversight responsibilities.

It seems even the Indian government has concerns. According to an Indian newspaper, the civil aviation minister tweeted, “In a recent review on airline safety, I have ordered to put in place a third-party professional organization to look into various safety aspects [airin-dia].” I’m not sure what “third party professional” means but it seems to me to indicate a lack of trust in the ability of the DGAC to perform its functions.

In any event, the reasons why the FAA began international inspections of foreign governments’ airline safety oversight capabilities remains as necessary today as they were in the wake of the Avianca Airlines disaster that led to these audits. U.S. travelers should have confidence that foreign airlines operating in and out of the U.S. have proper safety oversight by their home governments. I don’t think U.S. travelers should have that confidence in either the Indian government’s oversight of its airlines or the FAA’s handling of the international audit program.

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

John Goglia is a safety consultant. He welcomes your e-mails at: goglia@yahoo.com

FAA: OWD authority violated fed law

Following review of an FAR Part 16 filing, the FAA has determined that the town of Norwood, Massachusetts, and the Norwood Memorial Airport (OWD) commission violated federal grant assurances by “unreasonably denying” Boston Executive Helicopters (BEH) the ability to establish an FBO at the airport and “improperly granting” exclusive rights to the existing FBO, FlightLevel Aviation. The ruling also addressed unauthorized leasing of airport property to Verizon for non-aeronautical use.

Over the last decade, BEH has been attempting to establish an FBO at Norwood Memorial Airport but has been thwarted continuously by the city and airport commission, according to the FAA. In early 2016, BEH filed the Part 16 complaint against the Norwood Airport authorities. Under Part 16, grievances can be submitted for alleged violations of fair and equal treatment of all users at airports that receive FAA grants.

In its filing, BEH contended—and the FAA agreed—that the commission has been violating Part 16 “through a pattern of unreasonable demands,” offers of access on “unreasonable terms” not applied to FlightLevel, restrictions on its operations “not imposed on other tenants, preferred treatment of the airport’s sole FBO, [and] leasing of most flight line facilities to the one FBO.”

According to the FAA, the airport commission’s “delaying tactics, restrictions, and excessive financial information requests” constituted a “continued pattern of delay to prevent BEH from completing the FBO permitting process.” The FAA also determined that the town and the commission’s actions constitute an “unreasonable denial of access [to BEH] and unjust economic discrimination [against BEH].”

As a result of the FAA’s investigation, the agency ordered the town and the commission to “take immediate steps to promptly complete the FBO permitting process with BEH, discontinue leasing practices that provide exclusive rights to a single FBO, and rectify the unauthorized lease of airport land [to Verizon] for non-aeronautical use.”

The town and the commission have until December 1 to appeal. “We will be meeting with counsel to determine our next steps,” an airport commission spokesperson told AIN.

Meanwhile, a trial is set to begin on December 10 in the U.S. Federal Court in Boston to hear the lawsuit filed in 2015 by BEH against the town and the commission over the FBO dispute. C.G.
Aircraft we built. Expertise you trust.

WE SELL MORE PRE-OWNED THAN ANYONE.

Contact a Textron Aviation representative to learn more.

U.S. +1.844.44.TXTAV | INTERNATIONAL +1.316.517.8270 | TXTAV.COM/PREOWNED
For many models, market hitting the apex

by Mark Huber

A super-heated used business aircraft market has had more jet-A thrown on it due to new tax law changes and looming FAA equipment mandate deadlines. The tax law changes, embodied in the federal Tax Cuts and Jobs Act of 2017, extends 100 percent bonus depreciation to used equipment, including used aircraft. Meanwhile, the 2020 deadline for ADS-B installation and an expensive airworthiness directive—estimated to cost up to $350,000 per engine—for certain Honeywell TFE731-4- and -5-powered aircraft could combine to purge up to 20 percent of the older bizjet fleet from the market in short order, according to the Dallas-based Engine Assurance Program (EAP).

EAP notes that the combined cost of ADS-B mandate, the engine AD, and related inspections, could collectively run upward of $800,000, an investment likely to be considered imprudent on aircraft with current market values of $1 million or $2 million. This in a market that is already thoroughly en fuego. At this year’s annual NBAA-BACE, members of the International Aircraft Dealers Association (IADA) brought 20 aircraft for the static display, consisting of many relatively new, high-ticket models including a Gulfstream G650 and a Bombardier Global 6000.

Even though the market is tight, there were more transactions in the first half of the year and more aircraft were coming to market, according to Amstat. The company notes that the percentage of the active fleet sold for the current half-year period compared with the year-ago period increased in key segments such as heavy jets and turboprops. The percentage of the heavy fleet that turned over increased among aircraft of all ages; from 4.2 percent to 5.7 percent among older aircraft, from 5 percent to 6 percent in the mid-age segment, and from 3.2 percent to 3.9 percent with recent aircraft.

Turboprops turning over as a percentage of the fleet increased slightly from 3.8 percent to 3.9 percent, while medium jets held steady at 5.1 percent and light jets declined from 5.1 percent to 4.8 percent. Not surprisingly, the largest reductions in aircraft for sale as a percentage of the fleet occurred in newer and mid-age aircraft across the board in all segments. But notably, mid-aged aircraft in particular are posting large reductions, as the percentage of the fleet for sale reflects a dearth of newer aircraft availability. The percentage of mid-age heavies available dropped from 9 percent to 6.3 percent, mid-age mediums fell from 11.6 percent to 9.6 percent, and mid-age turboprops declined from 7.5 percent to 5.7 percent. This and myriad other data already paints a picture of a used jet market starved for quality inventory, with buyers forced to spend more and settle for less across all categories of business aircraft. Brokers are becoming “finders” as opposed to “sellers,” according to Citi Research’s Jonathan Raviv. And buyers appear primed to lower expectations, willing to offload dreams of acquiring aircraft ready to fly with everything they want in favor of ones that need a little TLC, either in terms of cosmetics or actual cabin and cockpit upgrades.

“Even [Piaggio] Avantis are selling,” says Jason Zilberbrand, president of the aircraft valuation service Vref, referring to the Italian turboprop twin pusher that has sold poorly over the last 20 years. Zilberbrand said the inventory of desirable aircraft including super-mediums, large cabin, and turboprops, with values in the $1 million or $2 million range, is clean, 2020 [ADS-B]-compliant, and realistically priced, it’s going to move. And brokers are taking less in a lot of deals,” he said.

The large-cabin market is even tighter, Zilberbrand says, noting that one customer recently spent six months looking for a used Falcon 7X. And even after a long search, buyers are sometimes relegated to their second, third, or fourth pick, he said. Zilberbrand thinks the concern about a mass scrapping of TFE731-powered aircraft is overblown, noting that stand-alone, lower-cost ADS-B solutions have been devised for many of these aircraft and that many owners are willing to invest in upgrades to aircraft that, from a pure economics standpoint, seem irrational.

“The [TFE731]-powered fleet is not going to go away any time soon,” he counsels. “They’re too many out there and they’re great aircraft, but sometimes we look at deals and scratch our heads” when buyers invest heavily in upgrading older aircraft such as the Hawker 800A or Learjet 55. By way of example, he says that replacing the CRT cockpit screens in the Hawker alone can be a $250,000 event. However, Zilberbrand sees older large-cabin aircraft that are heavily chartered as more of an endangered species when deals do not support the necessary cabin upgrades.

Only 9 percent of the current in-service fleet is listed for sale, the lowest percentage in more than 20 years, and only 7 percent of the current for-sale fleet is three years or newer and under warranty, making the competition—and prices—for these aircraft intense. Compared to last year, the number of 10-year-old or newer business jets has declined by 30 percent with some models, including the Dassault Falcon 7X and Gulfstream G650, in extremely short supply. Amstat reports increasing values in select pre-owned sectors for newer aircraft including super mediums, large cabin, and turboprops, with values in the former jumping by double-digit percentages: YTD increases include heavy jets up 17.7 percent, light jets up 4.8 percent, and turboprops up 11.1 percent.

“The increase in estimated values reflects recent increases in market demand and a tightening market with fewer options for buyers,” according to Amstat general manager Andrew Young. Worldwide, 2,700 pre-owned business jets changed hands last year; approximately 1,900 are on the market now. According to JetNet, during the first half of the year, 1,344 business jets changed hands and the average time on the market dropped by 26 days to 297.

Within this tight market, popular models of newer aircraft are getting even scarcer, according to a recent market analysis by Vref. The company notes that the supply of used single-engine turboprops for sale, such as the Pilatus PC-12, has dropped below 5 percent of the installed fleet as have some popular jets including the Bombardier Challenger 300, while others are nearing that level, including the Gulfstream G450 (less than 5 percent), the Cessna Citation Mustang (less than 5.5 percent), and the Cessna Citation CJ2 (less than 5.9 percent). These dynamics are beginning to restore pricing power either by slowing the depreciation of some...
models or outright increasing prices. Zilberbrand thinks, despite the recent price increases, there is room for more, as it is unlikely that OEMs are fully prepared for a surge of new buyers. “You have to wait nine months right now for even a new legacy aircraft such as a Global 5000,” he notes. “And that is going to continue to put pressure on the need for interim lift—either charter or buying a used aircraft while you wait for the new one.” The OEMs, perhaps snub bit by the go-go new jet market and rapid crash of same a decade ago, appear more sanguine when it comes to spooling up production rates, and that is keeping pressure on the used market.

It’s a market where robust used business aircraft sales are also driving record activity at lenders such as PNG Aviation Finance. The firm’s senior vice president and national sales manager, Keith Hayes, said the red hot used market is going to make 2018 the most active for the firm since 2009. “Activity is as high as it has ever been since the downturn [of 2008],” he said. Used sales activity is also driving record business in the completion, maintenance, and modification businesses. Blackhawk Modifications reports business is up nearly 40 percent from a year ago, driven by a turboprop market that is even tighter than jets, with only 6.6 percent of the installed fleet cumulatively on the market.

Duncan Aviation, which does more late-model mid- to large-cabin jets, reports record sales compared to 2017. Steve Gade, Duncan vice president of marketing, noted that the company is “significantly busier and with a stronger backlog going into next year.” He added, “Current activity is very robust and a lot of it is being driven by transactions” with customers looking to upgrade to aircraft with newer satellite communications, cabin management systems, and avionics with no one activity particularly standing out, but “there’s just more of it.” Gade said most customers are savvy to the crunch and reserving maintenance and modification slots earlier than in years past.

Likewise, higher resale and residual values of used business jets have led to STC upgrades being developed for aircraft that might have made sense to upgrade only a few years ago. By way of example, Garmin is now offering (beginning in 2019) a G500 avionics upgrade for Cessna Citation Excel/Exoc/XLS aircraft for approximately $550,000 while Tamarack continues to expand the list of Citation CJ5s approved for its $1.85 and $2.5 million. Tamarack already has installed winglets on 63 CJ series aircraft. Amstat notes that the new Tamarack winglets on 63 CJ series aircraft. Amstat notes that the new Tamarack winglets are relatively plentiful with asks beginning at $1.5 million for a 2010 Phenom 100 with 1,441 TT is $1.95 million. Late model M2s appear to be holding values well with the list price for a 2015 model with 1,300 TT set at $3.35 million and newer, low-time Citation Mustangs, 2009-2016, bumping along between $1.85 and $2.5 million. Comparable deals can also be had on first generation Citation I and IIs, with older low-time, stock ISPs trading at prices starting at $695,000 and newer vintages with popular modifications, such as the Eagle II package, commanding $1.25 million. And you can still find a few 1970s vintage Citation 500s on the market for around $500,000.

The market is flooded with Citation 500s; 1970s-1980s vintage ISPs are listing from $700,000, while for late-time Bravos circa 2000, prices start at $950,000. Older Learjets, for those willing to sign onto the adventure in product support, offer some of the best speed bargains for around $300,000.

Newer turboprops are relatively plentiful with asks beginning at $1.5 million for a 2010 TBM 930 with 6,400 TT is $1.9 million. Aftermarket winglets and updated Garmin G1000 avionics is $1.65 million. Late model Ma68 appear to be holding values well with the list price for a 2015 model with 1,300 TT set at $3.35 million and newer, low-time Citation Mustangs, 2009-2016, bumping along between $1.85 and $2.5 million. Comparable deals can also be had on first generation Citation I and IIs, with older low-time, stock ISPs trading at prices starting at $695,000 and newer vintages with popular modifications, such as the Eagle II package, commanding $1.25 million. And you can still find a few 1970s vintage Citation 500s on the market for around $500,000.

The market is flooded with Citation 500s; 1970s-1980s vintage ISPs are listing from $700,000, while for late-time Bravos circa 2000, prices start at $950,000. Older Learjets, for those willing to sign onto the adventure in product support, offer some of the best speed bargains for around $300,000. In the category with the model 350s produced between $1.2 million and $3.8 million. The smaller 90 series continues to draw attention with prices between $1.5 million and $2.85 million, and 250s are changing hands for around $1.3 million. All this said, there are still a number of relative bargains available for those willing to consider older aircraft and move fast to close on the deal. Here’s what AIN found scouring the latest brokerage listings that included prices for a representative sampling of various makes and models across all size classes.

**SINGLES**

**Newer Turboprops**

Strong pricing can be found throughout the category. Prices for used Pilatus PC-12/47s range between $1.2 million and $2.8 million. Piper single engines are offered between $675,000 for a 2001 Meridian and $2.6 million for a lightly used 2017 M600. Quest Kodiaks are relatively plentiful with asks beginning at $1.5 million for a 2010 model up to $2.4 million for a 2017 model. Decent Cessna Grand Caravans command anywhere from $700,000 for a 1993 208B to $2.8 million for a barely flown 2018 Grand Caravan EX. Overall, you can find a good selection of 208Bs available in the $1 million “sweet spot” for vintages that are around 15 years old. This despite the fact that used copies of the former trade in the range between $2.5 million and $3.5 million. The smaller 90 series continues to draw attention with prices between $1.5 million and $2.85 million, and 250s are changing hands for around $1.3 million. All this said, there are still a number of relative bargains available for those willing to consider older aircraft and move fast to close on the deal. Here’s what AIN found scouring the latest brokerage listings that included prices for a representative sampling of various makes and models across all size classes.

**TWINSP**

As previously noted, Piaggio Avantis are moving again with prices between $1 million for a 1992 P180 to $6 million for a like-new 2016 Evo. Model P180 Avanti IIs in the 2005-2009 range are priced between $1.5 million and $2.9 million. King Airs continue to dominate the category with the model 350s produced between 1991 and 2007 trading at prices between $1.2 million and $3.8 million; the newer 350i models are priced in the range of $3.9 million to $5.25 million for years between 2010 and 2012. There is still plenty of inventory for the ubiquitous 200 series; 1997-2006 B200s are priced between $1.5 million and $2.85 million, 2008-2011 200GT models trade in the range between $2.5 million and $3.5 million, and 250s are changing hands for amounts between $3.25 million and $4.35 million. The smaller 90 series continues to draw attention with prices between $1.5 million and $2.85 million, and 250s are changing hands for around $1.3 million. All this said, there are still a number of relative bargains available for those willing to consider older aircraft and move fast to close on the deal. Here’s what AIN found scouring the latest brokerage listings that included prices for a representative sampling of various makes and models across all size classes.
Against a backdrop of stable, single-digit business aviation growth in the region, the Middle East Business Aviation Association Show takes place December 10-12 in Dubai at Al Maktoum International Airport (DWC). As the MEBAA Show gears up, local aviation businesses and aircraft operators are looking forward to an Expo 2020 dividend at Dubai South, the city’s new aviation district, and hoping that a slow year in Saudi Arabia will see the kingdom turn the corner in the new year.

As the transition to the new airport at DWC continues, with official figures putting its share of business aviation movements at 60 percent compared to 40 percent at Dubai International (DXB) last year, five FBO operators are now active at the new site, while Jet Aviation and ExecuJet also retain an FBO and MRO presence at DXB.

The common-user VIP terminal at DWC is now fully operational, with FBOs run by Jetex Flight Support, Falcon Aviation, and Jet Aviation continuing to build their clientele, while, as first adopter, DC Aviation Al-Futtaim (DCAP) has been operational at an alternative site since 2013. ExecuJet told AIN at the end of October it expected its new FBO-MRO facility to open at DWC in 2020. Construction is to begin shortly.

Business aviation in Saudi Arabia has been slow in the past 12 months due to an anti-corruption crackdown launched in November 2017, but FBOs in the region say Saudi business is coming back as the cooler weather comes into play.

However, in 2017, there were more than 30,000 private jet flights out of Dubai alone. “The UAE already hosts around 50,000 ultra-high-net-worth passengers per year, leading to about 30,600 private jet flights out of Dubai in 2017,” according to MEBAA.

“The region is set for growth in business aviation,” said Ali Alnaqbi, founding and executive chairman of MEBAA. Alnaqbi expects 500 exhibitors at the show, 40 to 50 aircraft on static display, including models from Gulfstream, Bombardier, Dassault, and Honda Aircraft, as well as nearly 10,000 event visitors.

The conference agenda will include sessions on blockchain, cybersecurity, the potential of supersonic business jets, business-aviation insurance, drones, innovation, passenger connectivity, and the future of private jet design.

“Of particular interest this year are the new features added to the event, including the aircraft operators’ Executive Club Lounge; a product demonstration theater on the show floor, and the Jetsetter Welcome Reception,” MEBAA said.
THE BEST VALUE FOR INFLIGHT WI-FI

With everything you get from SmartSky’s 4G LTE – blazing-fast internet, minimal latency and real-time video – you might expect it to be more expensive. But the best service in the industry is also the most cost-effective.

<table>
<thead>
<tr>
<th>BIDIRECTIONAL</th>
<th>10X FASTER</th>
<th>MULTI-GB THROUGHPUT</th>
<th>20X BANDWIDTH</th>
<th>LATENCY BELOW 100MS</th>
<th>PATENTED TESTED CERTIFIED SECURE</th>
</tr>
</thead>
</table>

Secure 100GB. Pay for only 25.

smartskynetworks.com/get100
800.660.9982

© SmartSky Networks, LLC 2018. All Rights reserved.
Bombardier to sell Q400, bizav training

Quebec, Bombardier Commercial Aircraft president Fred Cromer endeavored to erase any lingering notion that the company’s recent sale of its turboprop assembly site in Downsview, Ontario, could signal a waning commitment by the company to the Toronto area.

At the time, the Q400 appeared to have begun to recover some sales momentum after several years of dominance in the turboprop market by rival ATR. A firm order for 10 airplanes in an 82-seat layout from Ethiopian Airlines in April raised hope that an earlier order for 30 ninety-seaters in September 2018 from India’s SpiceJet amounted to more than a temporary reprieve for the big project.

Now it appears that Cromer’s talk about lowering program costs to improve the Q400’s market competitiveness signaled more than a possible effort to outsource the manufacture of certain subassemblies.

Further initiatives announced Thursday include an effort to “right-size” and redevelop its central aerospace engineering team. Bombardier plans to send key engineering team members to other business segments, the largest group moving to its business aircraft division. It will also establish a new Advanced Technologies Office (ATO) led by François Caza, who the company has named chief technology officer. The ATO will focus on systems design and engineering, including applying experience from Bombardier’s aerospace programs to its rail transportation business.

Bombardier estimates the resulting reduction of some 5,000 positions across the organization will lead to an annual savings of $250 million at full run rate, which it expects to occur by 2021.

Bizav Unit Sees Modest Rise

Bombardier also announced its third-quarter financial results on November 8, which were mostly flat for its business jet division. In fact, quarterly revenues at Bombardier Business Aircraft climbed just $9 million year-over-year, to $1.083 billion, while profits slid $7 million, to $80 million. Revenues are up modestly in the first nine months, to $3.5 billion, while profits are up $20 million, to $285 million.

Net business jet order intake was strong during the quarter, with book-to-order above 1 and “increased interest in the Global family, including the new Global 5500 and 6500,” the company said. Thus the segment backlog jumped to $1.43 billion as of September 30, up $600 million from a year ago.

The division delivered 31 business jets in the quarter, one more than it did in the year-ago period. It handled over four Learjet 70/75s, 20 Challengers (fourteen 350s and six 650s), and seven Global 5000/6000s during the quarter; this compares with four Learjets, 17 Challengers (thirteen 350s, three 650s, and one 850), and nine Globals in third-quarter 2017.

In the first nine months, Bombardier Business Aircraft has shipped 96 aircraft—one more than it did in the same period last year. This represents more than 70 percent of its 135 planned business jet deliveries for this year, which will include handover of the first Global 7500 this month.

For Commercial Aircraft, Bombardier’s revenues during the quarter decreased by $259 million mainly due to the division’s de-consolidation of the C Series Aircraft Limited Partnership (CSALP) from its results and replacing it by CSALP’s net loss following the closure of the new partnership that gave Airbus a 50 percent share in the C Series program. Earnings before interest and taxes (EBIT) rose to near breakeven, a result characterized by Bombardier as a significant improvement as it de-consolidated CSALP results and recognized its share of CSALP’s net loss, resulting in an equity pickup of $13 million.

CRI Series and Q400 deliveries for the quarter totaled five aircraft, while net orders totaled 11 aircraft.

Preowned market

Medium Jets

Price-wise, this is one of the softest spots on the current market. Decade-old, low-time Cessna Citation XLS and Encore+ models are trading near $4 million while older Citation V Ultras and Citation Vs are priced between $1.1 million and $1.6 million. The older Citations III, VI, and VII models can be had for cheap, at prices ranging from $200,000 to $1.5 million. Citation X speedsters are priced at between $2.7 million and $11 million depending on model year, with the refreshed Citation X+ which officially went out of production earlier this year, commands asking prices of between $14 million and $15 million for airplanes that are three to four years old. Citation Sovereigns are rare to market and priced accordingly, with a 2007 model priced at $6.3 million and a gently flown 2014 Sovereign+ given an ask of $11.95 million. Older Learjet 60 and 55 models can easily be had for $1 million or less—sometimes a lot less.

The half-dozen 2008-2010 Hawker 4000s on the market are basically priced at the engines’ scrap value—around $4 million. Gulfstream G400s do only slightly better, with model-year 1999-2007 aircraft priced at $2.395 million to $6.25 million for aircraft with TTs of between 2,000 and 5,000 hours. Newer—and better—G280s are priced higher but are not as scarce. A 2013 model with 2,000 TTs lists for $11 million. Falcon 2000s are priced at $7.1 million to $7.7 million for 1996-2002 models, while newer variants such as the 2007 Falcon 2000EX EASy series lists for $10.35 million, and the market for these newer 2000s is very thin. In the middle of the range, the Legacy 600s range from $4.75 million to $8 million for 2005 to 2008 models with a newer 2010 model 650 with under 4,000 hours listed for $9.5 million. Bombardier Challenger 300s and 500s continue to be extremely strong; 2007 to 2012 model 300s with times between 2,300 and 3,300 hours listing for $7.75 million to $11.95 million, while late-model year-2012 300s and 2015 with low times have asks of between $16 million and $17 million.

Large-cabin, Long-range Jets

There are plenty of older Bombardier Challenger 600-series aircraft out there and they continue to be popular in the charter market. Prices for early 1980s 600s start at $895,000; a late-decade model with fresh major inspections and new paint and interior can bust through the $2 million ceiling. Challenger 605s from the mid-1990s to the early 2000s generally run in the $1.5 million to $2.5 million price range, while newer 605s from the late 1990s to mid-2000s are trading in the $4 million to $6 million range. Models newer than that tend to be scarce, with a five-year-old 605 recently listed for $9.9 million.

Dassault Falcon 900s are priced out at $32 million. Like the Challenger 605, there is no shortage of older Gulfstreams for sale, with prices starting at $695,000 for a 1982 GII with 11,600 hours; GIVs made between 1990 and 1992 are trading in the $1.6 million to $4.4 million range, while GIVSPs produced between 1992 and 1999 are listed from between $1.25 million and $2.5 million. There are a few G300s and G400s available, and the ask on 15-year-old models of those runs between $4.5 million and $7.5 million. Meanwhile, G450s continue to be scarce, with prices on 2006 to 2016 models running in the range of between $9.95 million and $13.75 million.
The importance of accurate information in a tightening pre owned market
reowned business jet retail transactions continue their multi-year growth streak, with 2018 on track to surpass last year’s 2,668 total, according to JetNet. But after a decade of free-falling residual values and an excess of available aircraft, the market is rapidly shifting, with the percentage of business jets for sale dropping to their lowest level since 2005: 9.3 percent of the fleet, according to the data service.

“Inventories are drastically down, and prices are beginning to rise,” said Marc Foulkrod, CEO of large-cabin jet brokerage Avjet Global Sales, which has more than $8 billion in transactions under its belt.

“There’s definitely a reset going on,” agreed Chad Anderson, president of Jetcraft, whose 20 offices worldwide have brokered more than 500 transactions in the last decade. “There’s no such thing as a cheap airplane right now, but there are still plenty of good value plays for buyers thinking long-term.”

The change has caught many shoppers by surprise. “Everybody wants yesterday’s airplanes at yesterday’s prices,” said David Coleman, a member of the Aircraft Sales & Acquisitions team at Duncan Aviation, whose MRO services grew from the company’s sales operation, established more than 60 years ago. “Getting them to understand that’s not possible is difficult.”

Brokers themselves may have trouble keeping up, said Jay Mesinger, president of Mesinger Jet Sales: “If you haven’t been in the business for more than 10 years, you don’t have a playbook for finding the right aircraft [for a client] in a tight market like this.” With more than five decades and two generations of experience, Mesinger Jet Sales is among the brokerages at the top of their game in a challenging environment like today’s.

To succeed in this market, brokers need reliable data—whether for establishing real-time valuations, to have confidence in the spec sheet of a for-sale aircraft, or to learn which jets are coming to market months before they do. We spoke with four major brokerages about the impact of the shift and the information resources they’re using to navigate the turning tide.

Today’s market: The brokers’ perspective
Later-model and larger-category aircraft are leading today’s market correction, according to the brokers. “Any current-generation turbine [aircraft] and one generation behind are seeing a tremendous amount of activity,” said Duncan Aviation’s Coleman. “The geriatric jets are not moving and their prices are still falling.”

Meanwhile, midsize, super-mids and large-cabin jets “have seen inventories drop anywhere from 50 to 80 percent in the past few months,” said Foulkrod, and prices for some models have risen accordingly. “We sold a G550 last year in the $17 million range and also purchased one for a client of ours in the $15 million range,” Foulkrod said. “Both those aircraft would trade well above $20 million in today’s market.”

Not all clients have bought into the change. “We’re still finding buyers disregarding the intelligence of an acquisition specialist and asking for concessions that might have been reasonable a year ago but are outside the boundaries of what’s acceptable today,” said Mesinger.

Such shoppers pay the price in a different way. “Some [buyers] have to miss a few deals to realize the message [of the market shift] is honest,” said Anderson. “There’s often more than one buyer for a properly marketed, properly priced airplane, and [buyers] who out-wager the negotiation often miss the plane they really want to buy. It’s painful and it’s awkward, even when we’re the seller.”

For brokers, success means finding inventory, and even those that do have a playbook may be out of shape for the new game. “I think brokers became complacent and lazy when inventory levels were high, and they have had a hard time adjusting,” said Foulkrod.

Adding to the squeeze, OEM production cuts of the past decade mean fewer recent-vintage than legacy aircraft exist, and what may appear to be an abundant supply of an in-demand model is often illusory. “We look at the universe of any category of aircraft for sale,” said Mesinger. “Then we dissect how many are N-registered, how many have no damage history, the equipment, the pedigree, maintenance history, con-

Jetcraft hosted viewings on board three large aircraft from its inventory during the European Business Aviation Convention and Exhibition (EBACE) in Geneva, May 2018.
BENJAMIN OR WASHINGTON?
It matters, one hundred percent. Choose wisely.

Discover why we're better than the rest. With the highest ethical standards, industry-leading research and analysis, and a no-nonsense approach to business, we sell faster, for a better price, than any other broker or manufacturer.

Jetsales.com
+1 303 444 6766
figuration, and all of a sudden out of a list of what might be 30 airplanes for sale, [only] two or three check all the boxes.”

Moreover, today, “Most of the quality, appropriately priced aircraft are selling prior to being marketed,” said Coleman. That’s because hard-working, well-connected brokerages relentlessly comb fleets and talk to OEMs, flight-department heads, management companies, and many others to learn about their sales or acquisition plans well before they happen, and arrange for a private sale.

“It comes down to being in the market 24/7 and touching each owner/operator on an almost monthly basis,” said Foulkrod. “The last thing you want to have happen is that you buy your client an aircraft and a week later he sees one he likes better and you, the broker, weren’t aware of it.”

At Jetcraft, “Having one airplane create two deals is how we’re sourcing quality aircraft and creating resale inventory,” said Anderson. He cited pending transactions, including ones for a Challenger 300, G450, G550, and a Global Express in which the company is buying the customer’s current aircraft to facilitate a more seamless transition into the purchase of a larger, later-model one.

“The common theme in all of [these deals] is the word ‘trade,’” said Anderson. “Trade fell out of vogue when the market was in Never Never Land. Dealers couldn’t pinpoint a value on the inbound aircraft for trade in. Now that the market is stable enough to predict values, trades are becoming very common again. We have the financial strength to take in a configuration, and all of a sudden out of a list of what might be 30 airplanes for sale, [only] two or three check all the boxes.”

The role of reliable data: A dynamic transactional environment

Today, information about available aircraft, prices, and market metrics is more bountiful than ever, often just a click away, but industry professionals do not rely on such reports and caution against using the data for transaction decisions.

“The credibility and reliability of data is a real challenge for our industry,” said Anderson. “The most actionable intelligence we have, frankly, is our own experience. When we’re handling 80 to 100 transactions per year, we find our own real-time information is best.”

That research approach is exemplified by Jetcraft’s annual 10-Year Business Aviation Forecast, a comprehensive view of expected transaction activity over the coming decade. “A lot of our clients are institutional, and they demand and deserve a very global, forward-looking perspective,” said Anderson.

A reliance on in-house research and proprietary resources is standard at major brokerages. “We do our own analysis in real time based on our market data gathered through contacts involved directly in each deal,” said Foulkrod. “To gain an edge in this industry, you need better information—not the same information that everyone else has access to.” As for publicly available data, “Much of it is inaccurate, biased, or doesn’t represent the transaction in detail,” Foulkrod added. “Manipulation and inaccuracy are rampant in our industry, either through sheer incompetence or through biased self-serving representation.”

Information about any aircraft listed for sale also bears close scrutiny, noted Mesinger. “Often, nobody is checking the accuracy of the foundation of that [aircraft’s] spec sheet, and it might not have been checked in the last two or three transactions. Ask for the spec sheet and the marketing materials to be audited by an inspection facility” that has had access to the aircraft, Mesinger advises.

Buyers need to consider ownership costs as well as purchase price, requiring detailed information on maintenance requirements, lifecycle event schedules, and operational history. Duncan Aviation, among the world’s largest business aircraft MRO providers, “touches about 80 percent of the [business aviation] fleet each year,” said Coleman. “That allows us to provide a very accurate picture in predicting what clients should expect to pay in maintenance if they buy an aircraft in one condition compared with another.

How do you verify the bona fides of the aircraft you represent?

Chad Anderson, Jetcraft: If we don’t see it in black and white on the airplane, it doesn’t go on the spec sheet. We have offices around the world, so we don’t have to operate remotely. We have our own set of eyes on every airplane we’re selling. It allows us to know its strengths and weaknesses.

David Coleman, Duncan Aviation: We start with an inspection of the airplanes we’re considering representing or buying for inventory. We recently got a spec sheet that talked about exceptional maintenance, perfect records, and no damage history and so forth. We sent one of our tech guys to inspect the airplane and lo and behold, the reality was quite different.

Jay Mesinger, Mesinger Jet Sales: We put together a report based on an on-site inspection by our in-house technical director. It’s not just a clean-sheet spec package, it’s a narrative on our logbooks and records review that deals with continuity, completeness, and items that would be critical to the buyer’s assessment of valuation.

Marc Foulkrod, Avjet Global: This is an area where inexperienced brokers and consultants create disastrous financial and safety consequences for buyers and sellers. We do everything short of a pre-buy inspection when listing an aircraft, including bringing our own technical people to review log books and review the aircraft.
A WORLD LEADER IN
GLOBAL JET SALES

MORE THAN A BROKER/DEALER

Avjet Global serves its clients as strategic aviation asset consultants—experts with key contacts around the globe and solid relationships with all major aircraft OEMs. Over the years, Avjet Global has earned a reputation for its uncompromising negotiating skills, setting pricing benchmarks and redefining the broker-client relationship through value-added transactions.
condition. We put that into our figures when performing aircraft evaluations, providing a high degree of confidence in a particular aircraft’s life-cycle cost.”

Recalibrating expectations and standards: Adjusting to the new market realities

For serious prospective buyers in this market, the rules are simple, said Coleman. “They need to invest an appropriate amount of time with an experienced, knowledgeable broker; drill down into the needs and wants; settle on a budget; design a box [of suitable aircraft] to play in, and then hunt for aircraft that fit that box.” Otherwise, he said, “Indecisiveness will cost them several potentially really nice airplanes.”

On the other side of the deal, though the current market can’t support big price hikes, “Most sellers today want a hard transaction—not a soft transaction—where the buyer’s deposit becomes non-refundable at contract signing,” said Mesinger. “If the seller can deliver on a price, we can make decisions quickly, but more importantly, accurately and with full information at their disposal. Being able to use all the tools available makes the difference between success and failure in our industry.”

Buyers slow to accept this new market will ultimately align expectations with reality, if they want an aircraft. “We had a client who missed two Challengers,” said Anderson. “Now we have one inbound on trade, and we’ve said, ‘If you want it, this is the number,’ and they get it. Because the buyers we’re working with are now knowledgeable enough to know the value of the deal.”

Amidst the market shift, the brokerage community faces issues that could reshape the field, including calls for regulating brokers and allegations of unethical brokerage activity. A push for higher standards can be seen in the International Aircraft Dealers Association’s (formerly NARA) initiatives to develop a broker accreditation program, and a uniform sales contract based on the yacht industry’s model; and the NBAA’s statement on ethical business aviation transactions issued one year ago.

While opinions on increasing regulations vary, agreement appears universal that buyers and sellers must recognize, as Mesinger noted, that “there is no barrier to entry to be an aircraft broker, no educational standard, no accreditation required.”

“I used to say anybody with a stack of quarters and a business card could be a broker,” Mesinger continued. “Today you don’t need a stack of quarters.”

One area of concern is so-called “back-to-back” transactions, where a deal is funneled through an intermediary. “Sometimes back-to-backs can be extremely useful, especially in international transactions,” said Coleman. “But when the parties involved don’t know someone is in the middle with a finger in the pie, it becomes a real ethical issue and needs to be addressed in the industry.”

Meanwhile, some buyers and sellers, in an apparent attempt to save on fees or commissions, still shop for representation by price, and engage inexperienced and incapable brokers less likely to observe proper standards. “The people who don’t do many deals are the wild cards,” said Anderson. “In the end, low fees often cost the client a longer time on the market, less worldwide exposure, and lower resale values. The client got a lower fee, but at a very high price.”

Despite efforts to counter such conduct, some believe that if the market shift intensifies, the problem will get worse. “Any asset markets where there is a huge imbalance of supply and demand lend themselves to improper and unethical behavior,” Foulkrod said. “Such imbalances create huge profit opportunities at the expense of the client, so therefore a negative by-product is a rise in this type of behavior.”
Duncan Aviation was founded in 1956 as an aircraft sales organization and is a founding member of NARA. Since 1956, we have conducted more than 3,500 transactions. We have 2,150 aviation experts worldwide, each with an average of 12 years with the company. The aircraft sales team partners with these experts to provide technical support before, during and after the aircraft transaction.

www.DuncanAviation.aero/aircraftsales
Experience. Unlike any other.
It seems like everyone is in “the cloud” these days. It’s powerful, flexible, accessible everywhere. We get this, because we’ve been networking among real clouds for years. We are seasoned professionals who buy and sell business aircraft across the globe. So wherever your aircraft happens to be, Jetcraft will connect you.
Eurocontrol continues wake-turbulence research
by Mario Pierobon

The domain of wake turbulence is a field in which many scientists worked for several years without being able to effect any real operational improvement. It took time to understand how to reduce the risk of wake turbulence from a strictly operational point of view, according to Vincent Treve, who works in the research and development (R&D) unit at Eurocontrol. However, researchers have now developed some changes to address the issue.

Wake turbulence recurrently hits the headlines as a threat to the safety of flight operations. The fact is that wake turbulence is in the very nature of flight. Anything flying generates lift, and induced drag is a byproduct of lift. “Induced drag carries a lot of energy in the form of two airflows that rotate one against the other and remain for a certain time behind an aircraft. This is wake turbulence,” said Treve.

“Wake vortices are generated by the movement of the air from the bottom of the wing toward the upper surface. The heavier the aircraft, normally the more intense the vortex,” explained Marcel Martineau, a pilot and aviation consultant.

A wake vortex becomes a problem when there is a lot of it and another aircraft is passing by. “It is quite common to pass through the wake turbulence generated by another airplane, but normally it is very low. Only occasionally will pilots encounter more severe events of wake turbulence,” said Treve.

“If you have a large aircraft behind a smaller one you may not even feel any turbulence at all. So, first, for being exposed to some turbulence you need to have in front of you an aircraft of a comparable size to yours or a larger one,” said Treve. “Then you must have a set of external circumstances to experience wake turbulence. You need to be close enough, and then the wind or the turbulence must be in your route or trajectory. If you are landing on a runway and you have 15 knots’ crosswind, of course, you will never encounter any turbulence. Anything produced by the aircraft in front of you will be blown away by the wind.”

Coping with Wake Turbulence
Designers have so far been unsuccessful in attempts to prevent aircraft from creating wake vortices by generating a quick distortion of the vortices and hastening their decay. “There have also been attempts to design systems for inducing a decay in the vortices,” said Treve, “but in reality, so far we cannot see anything really improving or reducing the strength of the wakes generated by the aircraft. You cannot avoid the generation of vortices. The problem is to identify what distance you have to maintain with the preceding aircraft for being safe.”

While there have not been significant advancements in design, there are good practices for pilots to implement to prevent wake turbulence. “It can help to have a flight stay above the wake turbulence if conditions permit by landing long; it can also help to stay above the turbulence by taking off before the point where the previous aircraft has rotated when conditions permit,” said Martineau.

In recent times, upset recovery training has become a tool to counter wake turbulence. “Upset recovery is part of normal pilot training. There have been procedures developed and guidance materials produced by the Federal Aviation Administration, Eurocontrol, and the European Aviation Safety Agency which explain what the best way to react is. Of course, if you are at altitude you cannot react in the same way as if you are close to the ground when indeed you are more sensitive to an upset condition,” said Treve.

Air traffic management (ATM) plays an important role in preventing wake turbulence events. “In some countries, ATM will not issue a takeoff clearance until the separation has been achieved, but in other countries, they will issue a clearance, but it is always up to the pilot to take off when ‘they’ feel it is safe to do so,” said Martineau. “ATM will normally separate the aircraft according to their wake turbulence category. For instance, a small aircraft will need greater distance behind a heavy aircraft than heavy aircraft behind a small airplane.”

With regard to flight crew reaction in case of wake turbulence, Eurocontrol has run a series of full-flight simulation sessions to assess the criticality of wake encounter and designed separations as a function of the assessed criticality. “When we come up with separation design, we define the distance at which an aircraft must be behind another one as a function of the size of each of them and we verify that in the worst case the wake and the upset entailed by the wake will be manageable and acceptably safe,” said Treve.

“This we do through flight simulation by repeating an occurrence and asking different pilots to rate different circumstances, attitudes, and aircraft types before coming up with a level of exposure that is considered acceptably safe, with the criteria being that we want the pilot to rate the severity as still safe to land and not even think about a go-around. When we design separation we do not consider the possibility of a go-around. It should be safe to land.”

Eurocontrol’s research has generated an ATM improvement with regard to wake separation. “Nowadays many airports are following the recommendations we have produced for optimizing both safety and capacity in relation to wake separation. Today the separation design for remaining safe has been massively revised and implemented in London, Paris, Leipzig, Toulouse, and Vienna while other airports are also on their way to implementation. Many airports in the U.S. as well are now revising the separation minimums for better coping with the wake turbulence risk. This means that when not needed, separation has been reduced, whereas in a certain number of cases separation has been increased in the interest of safety,” he concluded.

Pilatus dedicates completions center in Broomfield
Pilatus Aircraft is expanding its presence in Broomfield, Colorado with a new completions center that will be able to accommodate demand in its PC-12NG turboprop line, as well as the ramp-up of its PC-24 light jet. The Swiss aircraft manufacturer held a grand opening ceremony of the 118,000-sq-ft center at Rocky Mountain Metropolitan Airport (KBJC) on October 23, drawing more than 200 Pilatus employees, dealers, suppliers, local and state government officials, and invited guests to the event.

The facility will provide interior and exterior completions for both aircraft models that are bound for customers in North and South America. Consolidating Pilatus’s operations at KBJC, the center houses fabrication and installation shops, a spare parts inventory to support the service center network, and offices for technical support personnel and business management groups. “We are proud to be able to continue producing and supporting the industry’s highest quality aircraft here in Colorado,” said Thomas Bosshard, president and CEO of the company’s U.S. arm, Pilatus Business Aircraft. “Over the past 20 years, we have built up a talented workforce that maintains the high-quality standards set by our Swiss parent company.”

With the North and South American markets accounting for upwards of 70 percent of Pilatus’s business aircraft sales, the center is anticipated to handle between 25 to 30 PC-24s each year, in addition to the 55 PC-12Ns that are typically completed in Broomfield in a given year. With the additional aircraft type and strong PC-12 demand, Pilatus expects employment will grow at the base by some 30 percent over the next three years.

In concert with the increased hiring plans, Pilatus has rolled out an apprenticeship program to meet the demand. That program is modeled after common apprenticeship programs in Switzerland, the company said, combining training, education, and development efforts. Apprentices are paid to learn trade skills and earn a degree without college debt.

K.L.
**FAA, industry collaborate on Part 135 training changes**

by Kerry Lynch

The FAA’s recent proposed guidance to develop consensus-based standardized simulator training programs for Part 135 marks one of the most significant changes in training approaches for charter operations in years. It is expected to be the first of a series of anticipated updates, said John McGraw, director of regulatory affairs for the National Air Transportation Association (NATA).

The FAA recently put the draft AC, 142-SCC, Standardized Curricula Delivered by Part 142 Training Centers, out for public comment (closed November 13), a move that McGraw said is the culmination of five years of work.

Recognizing that Part 135 rules for on-demand operations and Part 142 rules for training centers were written “at different times, different eras, and those rules didn’t mesh well,” then-FAA Administrator Michael Huerta tasked the Air Carrier Training Aviation Rulemaking Committee (ARC) with exploring areas where efficiency gains could be found, training could become more effective, and rules could change to improve the safety of Part 135, McGraw said.

The ARC formed an air carrier contract training working group, which then produced more than two dozen recommendations, including calling for the option of a standardized training approach. “It’s the first time in many years where there’s been a dramatic change in the way Part 135 training can be done, and it was time for an update,” McGraw said.

Under the standardized approach, the agency is facilitating a collaborative process for manufacturers, operators, simulator companies, and the FAA to jointly develop a standardized curriculum for each type of aircraft for which simulator training is available. “The power of that is everyone gets a say in what that training should look like,” McGraw said.

**Easing Paperwork Burden**

Upon agreement, the training would then be approved nationally by the FAA. “Rather than individual inspectors and offices individually approving training for a specific aircraft at the operator level, this training would be approved at the headquarters level,” McGraw said. These training packages—which will be developed on a model-by-model basis—would then be available for any operator of those aircraft.

“At first blush that probably doesn’t sound like a big change, but there are a lot of efficiency gains built into that,” McGraw said. For example, he noted that currently, an operator must get a letter from the FAA that verifies each simulator instructor is qualified to do so. “They are constantly going back and forth with paperwork, trying to make sure they have a current letter for a current instructor,” he said. “You can imagine how that becomes a real paperwork nightmare to make sure they’ve got it straight.”

This is a process that can take “weeks and weeks,” he added, noting that last-minute changes in instructors from illness or scheduling conflicts could put an operator in non-compliance.

For operators who choose the voluntary standardized program, “all of that goes away, because everybody who is trained on the standardized curriculum can instruct any operator on that curriculum. You don’t have all this variability and non-standardization that is built into all these individual approvals,” he said.

McGraw believes this will result in stronger training programs, because they will benefit from a collaborative approach, data gathered, and lessons learned from all participants.

In addition, the programs are portable; once pilots have received the standardized training, it is good no matter which operator they fly for, as long as those operators use the standardized training curricula. “Pilots don’t have to repeat training, can get a single robust training program done, and take that with them.”

The standardized packages, however, do not replace training conducted beyond aircraft type, such as indoctrination training on company procedures and culture. Further differences training may be required if a particular operator’s aircraft has special equipment or the operator flies more advanced missions, such as transoceanic flights.

But the standardized program is “the basis. Everything else can layer on top of that,” McGraw said.

**Continuous Collaboration**

As for safety benefits, the new approach will come with a feedback loop that enables continued collaboration and discussions to update the programs over time. If a safety issue continues to crop up with a specific aircraft, then the training programs can be altered to mitigate that issue. Not only can operators provide that kind of feedback, but the training standardization board that creates the programs will also be able to tap into data such as from the Aviation Safety Information Analysis and Sharing (ASIAS) program as they continue to evolve the programs.

McGraw is hopeful that the final guidance will be released by the spring, and then the training standardization board can set up action teams to immediately begin work on programs. “The plan is to start at the top and go for aircraft that are most widely used at the [Part 142] centers and work our way down,” he said.

The participants in the efforts have already conducted two separate dry runs to see what such an effort might entail, he said. “It wasn’t as burdensome as we envisioned,” he said. “In fact, [participants] learned that they came to agreement fairly quickly and found some advantage in learning what others were doing.”

He estimated that such an effort may take a month or so for the initial programs and maybe up to a couple of years for most aircraft. “We’re trying to tackle the biggest chunk of training first.”

He calls the standardized approach a win-win-win: Part 142 centers reduce their paperwork and can focus on quality; operators also see efficiencies in training and can focus on other training aspects; and rather than worrying about paperwork, the FAA can focus on “real safety risks” that might arise. “Everybody gets a benefit out of this,” McGraw noted.

Industry participants have agreed to jointly reach out to the industry through social media, webinars, town halls, and other means to explain the changes and the benefits to the operators over the next year, he said. One of the first efforts was the joint NATA/NBAA press release issued in October after the proposed guidance was released.

This guidance is the first of a number of actions McGraw anticipates to result from the working group. “There are a number of efficiency gains that will come out a little at a time,” he said, such as changes to who can give check rides. This is an area where there’s a lot of angst in the industry because of the length of time required to arrange check rides, McGraw added.

Among other significant changes on the horizon is enhanced scenario-based training for recurrent training. Rather than providing only the same “canned approach” for training involving the same maneuvers every time, pilots will also be handed scenarios specific to their operations. This includes regular departure and destination airports and common weather patterns. The pilots will plan those flights. Then during the training, unexpected events will be folded into the training and pilots will be given the opportunity to test their mitigations. Such an approach can enable instructors to streamline programs, and possibly reduce the amount of time spent on certain procedures that aren’t problematic.

“That will be a much more effective way for pilots to be refreshed,” he said, adding, “We think that will be the next major change to come out.”

All of this will be data driven. “Modern aircraft fly a ton of data that’s readily available. Data is going to provide a role. The time couldn’t be more perfect.”

Most encouraging to McGraw is the dedication and the resources that the FAA and the industry have put toward these training changes. “It has been given a high level of focus.”

---

**Hartzell props to drive Eviation’s Alice**

All-electric aircraft startup manufacturer Eviation Aircraft has selected Hartzell Propeller as a development partner for its first model—the nine-seat, 565-nm Alice. Under the partnership, Hartzell will provide customized and optimized propellers and support systems.

The all-electric Alice business and regional airplane will have a three-blade main pusher propeller at the tail and two-blade pusher propellers at each wingtip. According to Hartzell, the design and manufacture of these propeller systems will build on technologies developed for its five-blade carbon fiber blades and Bantam hub series, providing “the optimal combination of reduced weight and maximum performance.”

“Eviation’s new aircraft provides an exciting opportunity to be a part of the next generation in aircraft powered by electricity,” said Hartzell Propeller president Joe Brown.

“The Alice will be test flown at the 53rd Paris Air Show in June 2019,” Hartzell said, but a spokesperson for Tel Aviv-based Eviation told AvIN that the aircraft will not be flown before the Paris show. Eviation has also not yet publicly announced who will develop electric motor and battery system for the airplane.
When you’re tasked with upgrading your aircraft with last year’s operating budget, you could keep crunching numbers —

Or, you could let us.

A Global Jet Capital Operating Lease can make it easier to upgrade without tying up the capital required in a traditional cash purchase. You’ll have the freedom to choose and equip your own aircraft—new or used. At the end of the lease, return the aircraft and select your next one, free from worries about residual values and tax implications. Simple. With more than $2 billion in assets, world-class financial backing, hundreds of years of collective experience, and thousands of business aircraft transactions behind us, Global Jet Capital is uniquely positioned to craft customized financial solutions.

844.436.8200 \ info@globaljetcapital.com \ globaljetcapital.com
Lenders look to finance the next cycle upturn

2018 marks one decade since the global economic downturn brought an abrupt end to the prosperity the business aviation industry had been experiencing. OEMs had been riding a bubble of exuberant good fortune that saw a record 1,317 business jet deliveries in 2008; but that changed swiftly.

Before the crash, the super-heated business jet market had some models of used large-cabin jets selling at a premium, above new list price, to those who felt they couldn’t wait for their slot in the production backlog. That dynamic had many industry financiers scrambling to make deals as fast as they could, in many cases requiring borrowers to put forward little to no down payments, leaving the lenders shielded by only the seemingly unassailable value of the jets themselves. In the words of one industry veteran, “If you had a phone, you got a loan.”

That frenzy might have lulled some experienced lenders to a false sense of security, which manifested itself in their relaxing loan criteria. “Before the crisis, business aviation was essentially a perpetually growing industry,” explained Donald Walsh, senior vice president for business aviation with Stonebriar Commercial Finance, adding that aircraft values had to that point proved resilient across economic cycles. “The corresponding sense of safety was reflected in investment decisions, [and] in the quest for growth, many finance providers, banks and non-banks, stretched and expanded into each other’s space. For a while, overheated capital and aircraft markets camouflaged the risks. But once the crisis hit, the industry was suddenly retrenching, capital seized, and prices fell at unprecedented levels.”

Many aircraft buyers during those frothy times soon found themselves underwater as private jet values tumbled in the aftermath of the recession. What was once so coveted became easily available, as owners looked to unload their aircraft for a variety of reasons, ranging from personal or corporate financial distress, to the resulting decline in flying hours as companies looked to conserve cash.

The percentage of business jets for sale worldwide hit a high-water mark of 17.67 percent of the fleet in July of 2009, according to statistics from industry data provider JetNet. Many finance providers suddenly found their lending portfolios cratered with aircraft that were in some cases worth half of their previous value. “Throughout the period, lessors experienced residual write downs on their lease portfolios, lenders were forced to write off losses in their loan portfolio, and others either exited aviation financing or cut back substantially,” said Rudy Tencore, president of V2 Aviation Consultants. “The larger and more established lenders weathered the crisis and continued to provide financing alternatives.”

With their aircraft worth less than what was owed on them, some borrowers simply parked their jets and walked away, leaving the lenders to clean up the mess. “The crisis and its ensuing impact on the business aviation market reminded every one that business aircraft are depreciating assets that do, in fact, lose value over time,” said Ford Von Weise, director and head of global aircraft finance at Citi Private Bank.

With an abundance of used aircraft flooding the market, the airframers slashed production accordingly, with the total annual deliveries of new business jets not exceeding 874 in any year since that banner 2008 output.

Even a decade later, the effects on the aviation finance industry have not entirely faded. “There are a few financiers who are still living with the multi-year transactions that were booked in the run-up to the financial crisis,” explained Michael Kahmann, principal at Kahmann Consulting. “For lessors, this is seen in residual positions that exceed fair market value and an attendant requirement to re-lease aircraft rather than sell and immediately recognize the residual loss.” For loans, he noted the equivalent would be balloons that are greater than fair market value and therefore require “re-writes” to bleed down the banks’ book position over time.

A Different Time, A Different Market

Today, the business aviation landscape is much different. That swollen preowned inventory has dropped nearly in half, to less than 9 percent, according to JetNet. Prevailing wisdom has long demarcated 10 percent as the dividing line between a seller’s and a buyer’s market. Indeed, those plentiful young, used bargains that were present in the market just a few years ago are now gone. That has led to the long hoped-for stabilization in prices. “That’s really where we see the recovery today,” said Paul Cardarelli, JetNet’s vice president of sales, at NBAA’s annual convention in October.

Used aircraft inventory, along with economic factors such as gross domestic product, corporate profits, and wealth creation, have long been correlated with the health of the industry. Business jet deliveries have historically been tied to leading economic indicators such as the U.S. GDP and the Dow Jones Industrial Average, and using that metric, new aircraft deliveries are lagging. The U.S. has now had 35 consecutive quarters of GDP growth, while the Dow reached 26,000 for the first time in January, and saw a peak of 26,828 in early October. The Standard and Poor 500 hit the 2,900 mark for the first time this past summer. The U.S. unemployment rate, which hit 10 percent in October 2009, has steadily declined since then, reaching a nearly 50-year low of 3.7 percent in September. “We are finally beginning to see a sustained recovery in business aviation aircraft values that is reflective of the overall very strong economy,” said Citi’s Von Weise.

While some in the industry believed that the old metrics used to assess the health of the industry were no longer relevant, aircraft values did not increase in lockstep with the GDP, equity markets, and other historically linked indices.”
While those once-strong correlations may have frayed somewhat over the past decade, they can’t yet be disregarded entirely, according to Kirsten Bartok, managing partner of AirFinance. “They do still apply: however, what we now see is the industry is truly global,” she told AIN, adding that while the U.S. currently accounts for more than half of the overall business aircraft market, it can’t support the industry alone. “If one economy tumbles, that does impact global unit sales, especially for new aircraft. While the U.S. economy can be strong, if the Russian economy tumbles, if we see an Asian economic flu, or the commodities tumble, that does impact sales.”

**Cash Is King**
Cash remains the preferred method for purchases of jets in the U.S. According to JetNet data, of the more than 2,350 FAA-recognized business jet transactions over the past year, little more than one-fifth involved financing, down considerably from the 40 percent-plus seen in the years before the economic downturn. After that point, aviation financiers became more restrictive as lenders tightened their loan criteria. “During this period, buyers found themselves having a very hard time finding financing, which pushed them to use cash,” said Wayne Starling, the former senior vice president and national sales manager for PNC Aviation Finance, who was recently named executive director of the International Aircraft Dealers Association (IADA). “That moved the cash buyers to the highest percentage of all times. Today, if you take enough time, you can find a financing program to assist you to buy almost any type and age aircraft you want.”

The trend of using cash for aircraft purchases accelerated in the aftermath of the economic downturn. “With interest rates at historic lows over the past 10 years, cash acquisitions were running as high as 75 percent,” explained Tenore, an industry veteran with more than a quarter century of experience. “Currently in a rising interest rate environment and a strong equity market, cash is being redirected into investment opportunities and other capital expenditures.” As a result, he added, there has been an increasing level of requests for financing and refinancing. For those qualified customers, there are still plenty of eager lenders. “Financing is coming back in vogue as business people realize there is plenty of financing available,” noted Sam Harris, president of Jetloan Capital, who sees the pendulum swinging to the point where it may once again reach the 50-50 balance between cash and financing, last seen in the fourth quarter of 2004.

Liquidity is present in the market and funding is readily available from a variety of sources: traditional major lending banks, smaller regional banks, and new companies that have carved out a niche specializing in aviation finance. “Many of the larger banks tend to view aviation finance as a means to attract and retain high-net-worth clients,” explained David Labrozzi, chief operating officer with Global Jet Capital, which entered the market in 2014 and acquired GE Capital’s Americas business aircraft portfolio the following year. “Although there continues to be substantial liquidity in the market, when it comes to business aviation finance, banks have continued to adjust their business models to focus on relationship banking through corporate and ultra-high-net-worth clients,” he told AIN. “In some ways liquidity is more focused in this regard and allows a benefit and credibility to aviation-focused non-bank lenders.”

While some long-time major financiers such as GE, CIT, and Element have left aviation finance, some new players are entering the arena, attracted by the recent rebound in sales activity and prices. “It’s only in the past 18 to 24 months we have seen new lenders previously not in the aircraft finance space start to explore the market,” said Marc Yahr, vice president with L&L International, an aircraft brokerage that also provides financing through a partnership with CMG Capital. “There are several new lenders in the industry as financial institutions continue to search for ways to diversify their balance sheets,” agreed Robert Kent, president of Scope Aircraft Finance, adding that barriers to entry are high for a bank that does not have the requisite expertise. “Occasionally we see a smaller regional bank tiptoe into the small-to-midsize space, but there hasn’t been a new [major] entrant since Global Jet Capital,” said Bartok. “With the exit of CIT, Element, and GE, the overall effect is we still have fewer lenders.” She attributes the hesitancy of some lenders to enter the market to new capital requirements and the need to show regulators evidence of liquidity.

As an example of a smaller lender, there is Seacoast National, a Florida-based community bank with nearly a century of history. It moved into the aircraft finance arena fairly recently, expanding its marine and recreational vehicle loan division due to customer demand in the mid-2000 boom years. The company, which just joined the National Aircraft Finance Association (NAFA), survived the downturn and remains active in the aviation finance market.

“Our typical customers are high-net-worth business owners or professionals and small-to-medium-size corporations who are looking to purchase these assets,” explained Philip Bartholomew, the bank’s yacht and aircraft finance specialist. “Our loans are typically up to about $9 million, which encompasses a huge percentage of the aircraft sales market.” He said the company manages to compete against the major aircraft financiers in the mid-Atlantic, the Northeast, and Europe by understanding the market for the collateralized asset and the customer’s needs.

“We spend a great deal of time earlier in the conversation trying to decide what’s going to work best for the customer and then crafting a solution for them,” Bartholomew noted.

**The Current Climate**
While long term loans and little-to-no down payments that were hallmarks of the pre-downturn era have largely disappeared in the years following, very secure borrowers can still find virtually any terms they want. “Since the crisis, the average term seems to have settled in around five years,” Walsh told AIN. “Before the crisis, seven to 10 years was common.” He noted that down payments and amortization periods can vary quite a bit depending on the transaction merits. “As a ballpark, 90 percent-plus advance, with a 20-year amortization is possible for a superior credit profile, and a 75 percent-plus advance with a 10-year-plus amortization could be expected for an asset-based structure,” which involves confidence in the asset (aircraft) value, the aircraft manager, and the structure of the deal as the primary form of repayment or exit strategy, rather than the wealth of the client, which is how banks generally underwrite.

In the Federal Reserve Bank’s most recent quarterly survey of senior loan officers, more than 17 percent of the respondents noted that they had some what eased their commercial and industrial loan standards for large and middle market firms (those with annual sales totaling $50 million or more) over the past three months, as compared to the just 1.4 percent that reported they had somewhat tightened their standards.

For smaller firms with sales of under $50 million, 3 percent of the lenders said they tightened their loan application standards, as opposed to the more than 10 percent, which indicated they had eased their criteria. In terms of the spread of loan rates over their institution’s cost of funds, for loans to large and midsize firms, 42 percent of the bank officials said they had narrowed the gap somewhat, making the lending terms more attractive to potential borrowers, while 10 percent reported increasing the spread.

**Sage Advice**
**AIN** asked our panel of aviation finance experts what advice they would give to a friend who was currently considering acquiring a business jet.

“Pay close attention to the loan covenants and amortization, as you do not want to be upside down in a business jet financing.” — Ford Von Weise, Citi Private Bank

“Maintain equity in the plane, match fund the term of the debt or lease with a longer-than-expected ownership/lease horizon, and select an experienced lender that doesn’t ‘flip its paper post-close.’” — David Labrozzi, Global Jet Capital

“Start with your primary bank, but get proposals from several of the top experienced jet lenders.” — Joseph DiLallo, BMO Harris Equipment Finance

“Do your homework, and understand the importance of working with a financial institution that is fast and effective and has your best interest in mind.” — Robert Kent, Scope Aircraft Finance

“Spend a little money and hire experts to guide you through the buying process even if you are a repeat buyer... Find a plane that will meet 85 to 90 percent of the mission requirements and charter for the outliers.” — Allen Qualey, 1st Source Bank

“Whatever financing product you choose, commit to a dependable source early and try to build an equity cushion into the structure. This could result in more favorable terms and more important, add flexibility when it comes time to exit or upgrade.” — Donald Walsh, Stonebriar Commercial Finance

“Engage a member of the International Aircraft Dealers Association to guide you through the process of acquiring the right aircraft for your mission requirements. To finalize all the complicated details of aircraft ownership, having a professional aviation tax attorney guide you through the process is absolutely critical.” — Rudy Tenore, V2 Aviation Consultants
“The financing market has once again become very competitive with many lenders reducing loan covenant requirements and offering extremely competitive interest rate spreads, combined with very high loan to value [ratios],” stated Von Weise, who is also the president of NAFA.

Another change from the pre-downturn era is that the time it takes to arrange financing has generally lengthened as lenders face much more scrutiny of their deals. What was once a matter of days has increased now to several weeks in most cases, to even months, as the lenders satisfy their anti-money-laundering and know-your-client (KYC) guidelines. For lenders, the regulatory penalties for making a mistake on a client’s trustworthiness can be severe.

While it is not a regulated bank, Global Jet Capital, which specializes in operating leases, still must adhere to those regulatory standards, especially because half its clients are outside the U.S. The company uses a network of third-party researchers to investigate the finances of potential clients abroad. “It gets a little dicey, but the work has got to be done,” Labrozzi told the audience at the JetNet IQ Summit in June.

Keith Hayes, senior vice president and national sales manager for PNC Aviation Finance, also speaking at the annual JetNet summit, described how some customers will work with a broker for months to locate a suitable airplane, sign a pre-buy letter of intent, and go through the pre-buy inspections before thinking closely about how they will pay for it. “Then they come to us and say can we get financing on it, we need to close in two weeks,” he said. “Quite often, especially with our asset-based product, we can do that. But under a fully written transaction, it’s very difficult.”

With the level of financial scrutiny now required, most lenders want to be involved sooner rather than later in the process, which will contribute to a more trouble-free closing. “We add the most value when we’re engaged early,” said Joseph DiLallo, head of corporate aircraft finance with Stonbriar Commercial Finance. "Once we have the borrower’s financial statements and details on the jet, we can typically propose within a week and close within a month.”

For all lenders, the elephant in the room remains residual values. “Anyone who says they can predict long-term residual values with any level of certainty is not being truthful,” said Tenore. “All of the players estimate badly missed their targets during the last economic downturn.” He explained that the variables that can influence residual values are numerous and beyond the industry’s control.

Obviously, the longer you project out, the less the accuracy in the forecast. Add in geopolitical risk, economic downturns, new technologies, a restrictive regulatory environment, and an unprecedented event such as a major OEM bankruptcy, and residual value forecasting becomes very difficult,” he told AIN. The past decade was marked by precipitous depreciation of aircraft residual values, the curve for which, at least for some models, has finally begun to flatten. “There are recent developments to suggest we are entering a more stable atmosphere,” said Walsh, noting that over the past 12 to 18 months the preowned market has rebounded as international buyers have become educated about the value of used aircraft and U.S. buyers are more willing to consider purchasing a previously foreign-operated aircraft.

PNC’s Hayes agreed that while the depreciation spiral has slowed on some aircraft (large-cabin, young, and U.S.-registered), he isn’t ready to make any blanket assumptions of residual values. “I think you truly have to look at every single deal, every single plane, every single age of the plane and make the determination based on that asset.” He told AIN that 2018 is shaping up to be a banner year for the company, which has closed more transactions annually since 2009 than any other aviation finance company in the U.S. and that this year’s activity is as high as it’s ever been in any period since the downturn.

“People are concerned about what is going to happen in 2019,” Hayes said. “As the used market drops down to single-digit inventory levels and you get past the U.S.-registered fleet to aircraft with less desirable pedigrees, and as used prices begin to rise in some cabin sizes, at some point used aircraft buyers will take a more serious look at buying new aircraft.” While most prefer to lend on jets 15 years old or younger, there are always exceptions. “There’s more to it than just age,” said DiLallo. “While our guideline keeps us focused on zero- to 15-year-old jets, there are some five- to 10-year-old jets we won’t finance, and certain 16- to 18-year-old jets that we may be comfortable with, based on the specifics of a particular jet and the specifics of the particular borrower.”

“Financing risk levels increase on older aircraft for a number of reasons, including but not limited to higher maintenance costs, regulatory restrictions, and new and more efficient replacement models,” said Allen Qualey, senior advisor and president emeritus of 1st Source Bank’s specialty finance group.

Another looming concern for older aircraft is the U.S. mandate for ADS-B equipment, which will take place at the end of 2020. According to MRO provider Duncan Aviation, as of the beginning of October, only 52 percent of the U.S.-registered business jet fleet had been upgraded to ADS-B compliance, while only 30 percent of turboprops had been so equipped.

Bartok noted, “The growing realization seems to be that there may not be enough maintenance slots remaining over the next 15 months to accommodate all of the planes that need these technical upgrades, and as a result, a lot of planes will either be grounded or operated in a suboptimal fashion after the deadline passes.”

Given those options, experienced lenders are taking proactive steps. “We closely monitor every jet, and every borrower in our portfolio,” said DiLallo. “For every jet we have financed, or consider financing, the jet is either already NextGen-compliant or there is an agreed-upon plan and timing to become compliant.”

Once again, as new lenders move back into the periphery of the market, some see old habits beginning to creep back in. “I don’t think as an industry we have learned much, as memories fade and newcomers who have no experience jump in with both feet without doing their homework,” Qualey told AIN.

“Some lenders have begun to go back to the same inappropriate long amortizations and light down payments that caused problems after 2001 and again after 2008,” said Kent. “Each cycle, as the market heats up, lenders begin to make concessions as they chase loan volume.”

IADA’s Starling offered a warning to potential lenders: “Do not get caught up in trying to win business by out-structuring a deal outside what your guidelines are,” he said. “If losing one deal is going to create a major problem for you, then you probably already have a problem.”

---

**Appreciation for Depreciation?**

At the end of December 2017, the Tax Cuts and Jobs Act went into effect, and in addition to slashing the tax rate for corporations, it increased and extended bonus depreciation for business aircraft through 2026, and expanded its benefits to include used aircraft that meet the appropriate criteria.

**At a Glance:**

- 100 percent (bonus expires) for aircraft purchased before January 1, 2022
- 80 percent after December 31, 2022 and before January 1, 2024
- 60 percent after December 31, 2023 and before January 1, 2025
- 40 percent after December 31, 2024 and before January 1, 2026
- 20 percent after December 31, 2025 and before January 1, 2027
- 0 percent (bonus expires) for aircraft placed in service after December 31, 2026.

Some have attributed this act to helping spur the recent preowned boom. The IRS rule changes, namely the ability for a 100 percent write-off against earnings for new and preowned aircraft purchases, has provided a further boost and is contributing to the sustainability of the recovery,” said Donald Walsh, senior vice president for business aviation with Stonbriar Commercial Finance.

Others believe the results are yet to be seen. “If someone could use the [depreciation] tax benefits before they can use them now, and if they couldn’t use them before, they can’t use them now,” said Keith Hayes, senior vice president and national sales manager for PNC Aviation Finance.

Before making their decision on depreciation, buyers have some important factors to consider, according to Nel Stubbs, vice president at industry research and data-provider Conklin & de Decker. “While this may sound like a good tax break to an aircraft buyer, the question remains, can I take this 100 percent deduction on my tax return?” she said. “Some things that should be considered when asking this question are, is the aircraft ordinary and necessary and can the buyer meet the 50 percent qualified business use of the aircraft for subsequent years?” Stubbs added that there may be heightened IRS attention on the business’s tax return that could trigger an audit. “Just because the 100 percent bonus depreciation is available, this large of a write-off may not be for everyone. And the modified accelerated cost recovery system (MACRS) depreciation schedule may be the better option.”

C.E.
THE COMPANY WILL THANK YOU AGAIN AND AGAIN AND AGAIN.

You simply won’t find a business aircraft that offers a better ROI than the PC-12 NG. You get a spacious 8-passenger cabin, seating that can be reconfigured in minutes, and a private lavatory. And we guarantee your CFO will love its low acquisition and operating costs. With an airplane this comfortable, versatile and efficient, you’d better get used to the praise.
Drilling down to trend lines, preparing for change, filtering out the “noise” of substantial data collection, and learning more about employees personally were among the lessons provided to attendees yesterday at the 2018 Bombardier Safety Standdown. In a workshop entitled “Safety, Education, and Experience Talks,” top business aviation executives, many of them NBAA Dr. Tony Kern Professionalism in Aviation Award winners, told tales of safety issues they encountered or initiatives they have undertaken in their continual quest to build safety cultures.

Dan Boedigheimer, CEO of Advanced Aircrew Academy, noted the belief that all the low-hanging fruit for safety improvements have been addressed to drive the accident rate down to a low level. “But what if we had a system that in the next 90 days you could reduce your own error rate by 50 percent?” he asked. Boedigheimer described his own effort to manage personal errors through a certification program that involved a tally sheet to track every time a small error would crop up. Tracking personal patterns is important because everyone has different issues—“everyone is weird”—he said.

These errors involved mostly minor issues, such as initially forgetting to turn on a rotating beacon light, and on the surface looked random. But looking closely he saw a thread connecting many of them: self-induced time pressure. “I am always trying to cram 90 minutes into every hour,” he said, and this pressure led to 50 percent of his errors. This realization allowed him to step back and write personal standard operating procedures (SOPs) to address those occurrences. He was able to reduce those errors in half.

Jeff Wofford, chief pilot and director of aviation, CommScope, highlighted efforts his company went through to upgrade to a larger aircraft, a Challenger 300, and effectively managing change. This involved extensive planning and list-making that started with a single spreadsheet and soon spread to several sheets. Everybody in the flight department was involved, from the pilots to the maintenance technicians.

The change-management process, he said, is just like other parts of safety management systems, looking at risk, mitigation, and then assurance of the risk-mitigation efforts. This is a continual cycle, he said and applies to any change, whether hiring a new pilot, accommodating a change in leadership, or adding an aircraft.

James Slabaugh, pilot and safety chairman at Kiewit Corp., provided guidance of how to “filter out noise” from the vast amount of information that has begun to flow in through all the safety programs and data-collection efforts. His organization noticed a higher level of events reported on arrival procedures and he realized this was an issue that needed to be addressed. “The difficult part was figuring out how to solve [the issue],” he said.

Slabaugh’s organization sorted through the different reports and came up with 13 corrective actions based on the data. These actions were all “legitimate things” representing best practices, but they were disjointed, not really taking into account the full picture, he said.

New Policies and Procedures

Instead, his group took a step back, filtering out excess noise to determine root causes, he said, and they discovered three most common triggers that were beyond the control of the pilots and might have led to increased pilot workload: being vectored off the arrival and then cleared to rejoin; a runway change that occurs after arrival procedures begin; and being given an unpublished restriction by ATC.

The pilots then were aware of those triggers and could make sure they follow through with proper procedures. The result has been notable, he said, “definitely better than before.”

“Beware of what you don’t know,” was the message of Don Wade, director of safety at Pinnacle Aviation, discussing fatigue management. “Fatigue is everywhere,” he said, noting that his organization has tried to address this with policies, training, and reference materials from top fatigue experts. But it was what they didn’t know about their pilots that would lead to fatigue issues.

He cited an example two pilots dealing with health issues involving family members. This was keeping those pilots up at night, resulting in fatigue. Another pilot had a caffeine addiction, which was resulting in loss of sleep and thus leading to fatigue. Because the organization wasn’t aware of issues such as these, it created the possibility of two such pilots being paired on a mission. This underscored the need to learn as much as possible about factors that could play into fatigue among its pilots.

Automation errors also were highlighted. Jim Weaver, vice president of operations with Advanced Aircrew Academy, discussed his experience with a Part 135 operation, which learned through a two-year-old Aviation Safety Action Program that automation management errors were causal in 24 percent of the operation’s altitude deviations and 37 percent of course deviations.

Looking at policies and procedures, the organization realized automation management procedures were spread over many places, often “bolted on” over time. The organization streamlined and simplified its procedures. A feedback loop was incorporated to enable discussion with pilots and the organization began conducting pilot briefings. “We had a great reduction in our deviations following this,” he said.

FBI supervisory special agent Troy Smith discussed how his organization’s flight department began factoring in ground support equipment in its prevention and maintenance program. “If you are not looking at this stuff, it is going to come back and hurt you. There are little gremlins in every one of these things,” he said, citing data that eight employees are killed annually while using scissors.

In an effort to develop checklists that apply to ground support equipment, the FBI realized that much of the equipment came with maintenance manuals, but not all. The agency then went to equipment providers for preventative maintenance programs.

Another story relayed by Erika Armstrong, director of instructional design for Advanced Aircrew Academy, involved an instance where a Citation X crew learned of poor runway braking conditions just before touchdown, essentially too late to go around. The aircraft skidded off the runway on landing. While everyone on the flight survived, the pilots were shaken by the event and in the moment they froze. They were unable to figure out how to retrieve the emergency response plan in their iPads. The lesson here, she said, is that while the use of electronic devices can be positive, it may be worthwhile also having a laminated emergency procedure checklist available.

Marty Grisar, superintendent for aircraft maintenance for Home Depot, discussed the importance of measurables, saying, “If you can’t measure it, you can’t improve it.” He outlined a series of data points—such as near misses or other incidents—that came from safety reports. The reports must be easy for employees to file, he said.

**Gray charter case sent to district court**

In a move that the National Air Transportation Association hopes will increase awareness of illegal activity, the FAA has referred its civil penalty enforcement action against Portage, Michigan-based Hinman Co. to the U.S. Attorney’s Office for resolution.

This summer, the agency proposed a $3.3 million civil penalty against Hinman for allegedly “conducting hundreds of commercial aircraft operations in violation of the Federal Aviation Regulations, including failing to hold the required operator certificate for the flights being performed.” This activity occurred through Hinman’s subsidiary Hincojet, involving a Beechcraft Beechjet 400A and a Hawker 900XP, the agency added.

In its civil penalty case, the FAA alleges the company conducted more than 800 commercial charter flights without either proper FAA certification or DOT economic authority, approved pilots, or authorized training. The company had entered into time-sharing arrangements for the aircraft but operated the flights for a profit, according to the FAA.

Hinman representatives said they are “aware of the lawsuit and [the company] welcomes the opportunity to tell its side of the story as the legal process runs its course.”

John McGraw, director of regulatory affairs for NATA, however, said, “This case... demonstrates that engaging in illegal time-sharing, participating in improper leasing schemes, or establishing so-called flight department companies creates significant risk for aircraft owners.

The FAA on October 4 referred this case to the U.S. District Court for the Western District of Michigan. “The FAA’s decision to involve the Justice Department sends a clear message to aircraft owners and the industry that the government takes non-compliance seriously, particularly when unauthorized air carrier operations occur.”

NATA, which has been engaged in a multipronged effort to highlight illegal activity, including sorting out and educating what is and isn’t permissible, believes this is the first of several cases that will come to light as the FAA steps up its focus on so-called gray charter.
American Aero FTW
Fort Worth, Texas | KFTW

A PREMIER AVFUEL-BRANDED FBO

Ranked #1 FBO in Dallas-Fort Worth, Top 5% in the World - 2018 AIN FBO Survey

American Aero FTW aims to redefine the FBO experience and continually set the standard for excellence in the aviation industry. That means creating an exceptional experience for every customer at every touchpoint through unparalleled facilities, safety and customer service.

- World’s First IS-BAH Stage 3 FBO
- U.S. Customs On Site
- New, World-Class Facility
- Air Start Service for up to a 747
- Eleven Acres of Open Ramp (Largest on the Field)
- Ritz Carlton, Flight Safety, Avfuel, NATA and Gulfstream Trained

AmericanAero.com | (817) 289-8000 | Avfuel Contract Fuel and AVTRIP available

Powering your flight with more than just fuel. Learn more at avfuel.com.
Embraer Praetor 600

by Matt Thurber

Embraer’s new Praetor business jets were unveiled at the NBAA convention in October, and both will enter service next year. Embraer Executive Jets redesigned the Legacy 450 and 500 fly-by-wire business jets, adding two new models—the Praetor 500 and 600—with new performance capabilities. The Praetor 500 and 600 will sit at the top of Embraer’s midsize and super-midsize offerings, but the company said it will still manufacture the Legacy 450 and 500 as long as there are buyers.

Embraer’s Praetor 600 is basically an upgraded version of the Legacy 500, but there are enough changes that make the new model significantly better.

From a handling perspective, the Legacy 500 and 600 fly exactly the same, and this is due to the similarity of the basic design but also a benefit of fly-by-wire (FBW) flight controls. Engineers can tune the controls to optimize handling, so the key difference between the two models is performance, especially the Praetor 600’s longer range to 3,900 nm, made possible by added fuel capacity, new winglets, and more powerful engines.

In addition to the Praetor 600’s longer range, Embraer brings to business aviation the world’s first synthetic vision guidance system (SVGS) instrument approaches. Scheduled for FAA approval at entry into service in the second quarter of 2019, SVGS approach capability allows for autopilot-flown ILS approaches to 150 feet height above touchdown, with visibility as low as 1,300 feet RVR. This is an important benefit because the optional E2VS enhanced vision system and HGS-3500 compact head-up display (HUD) by Rockwell Collins isn’t required for SVGS approaches, and it is the first time regulators will grant lower landing minimums credit for a synthetic vision system-equipped airplane.

I was eager to try out the SVGS approach when I traveled to Brazil in early October for a flight in the then-secret Praetor 600. I have flown the Legacy 450 and 500 a few times and greatly enjoy their handling. The same was true of the Praetor 600.

Embraer’s FBW designs are of the flight path-stable variety, a trait they share with Falcon and Airbus jets. Compared to pitch- or trim-stable FBW designs (Boeing and Gulfstream), Embraer’s path-stable FBW allows the pilot to use the sidestick to select a flight path. The trim-stable FBW replicates traditional flight controls, and pilots fly the airplane exactly as they would with mechanical or hydraulic controls, continually manipulating the yoke or stick to achieve the desired performance, using trim to hold a particular attitude.

In the Embraer FBW models, once the pilot sets the desired flight path, whether in pitch or bank (within certain limits), the pilot can release the sidestick and the FBW maintains that flight path with no further manipulation of the controls.

FLY-BY-WIRE DESIGN

The Embraer FBW has two flight envelopes, normal and limit. In the normal mode, the stick moves relatively easily (although it is spring-loaded to add some feel) until the limits are reached (33 degrees bank, plus 30 and minus 15 degrees pitch), Vmo, and 1.13 Vs (stall speed). The pilot can steer outside the normal envelope into the limit envelope, but doing so requires some pressure on the sidestick. The FBW system also automatically trims and compensates for pitch and yaw during turns and for roll during sideslips.

There is a lot more to the FBW system to help make flying easier for the pilot.

The Rockwell Collins Pro Line Fusion avionics and fly-by-wire sidestick combine to provide an elegant and uncluttered flight deck for Praetor 600 pilots.

For example, at 65 knots on takeoff, the FBW switches to takeoff law. This gives the pilot pitch-rate control with pitch damping, which helps the pilot stop at the desired pitch attitude after rotation. About three to five seconds after takeoff, the FBW switches to the normal flight mode (Ni control law) and remains that way until configured for landing.

When flying the Embraer FBW Legacys, I have found them easy to adapt to and quick to respond to my commands. Unfortunately for trying out the SVGS approach, the weather at Embraer’s headquarters airport in San José dos Campos was perfect, with clear skies and almost zero wind. The Praetor 600 I was flying, with test pilot Sydney Rodrigues in the right seat and chief test pilot Eduar do Camelier in the jumpseat, was still in experimental configuration with test equipment in the cabin, but the flight deck was the production configuration.

After starting the Praetor 600’s Honeywell HTF7500E turbofans, I taxied to Runway 15. The steer-by-wire nosewheel steering is controlled by the rudder pedals and allows up to 62 deg of turn below 10 knots, reducing as speed increases. The Praetor is easy to taxi smoothly without any steering jankiness.

The takeoff weight was 17,355 kg (38,261 pounds; this airplane is set up with metric weights, probably because it is slated for a European customer). Onboard were four people, myself, Rodrigues, Camelier, and flight test engineer Leandro Souto. Maximum takeoff weight is 19,440 kg (42,858 pounds), roughly 5,000 pounds more than the Legacy 500. We carried about 14,530 pounds of fuel, nearly 1,500 pounds below the maximum 15,986 pounds. Both fuselage tanks were full and the wings nearly full.

With flaps 1 set, the Pro Line Fusion avionics calculated our V1 at 124 knots, rotation speed 128 knots, and V2 at 134 knots.

Rodrigues plugged in a flight plan to a point south of San José dos Campos over the ocean, with a climb to 30,000 feet.

During takeoff, I had to remind myself to put my right hand on my right knee.
after reaching V1. The Rockwell Collins autothrottles smoothly brought the power up and the more powerful HTF7500Es accelerated rapidly and gave the Praetor a firm push. At rotation speed, just a small movement aft on the sidestick produced the right amount of nose-up attitude, and quickly the FBW system reverted to normal mode. I set the desired flight path, then rested my fingertips on the sidestick.

We headed south over Blabla ("beautiful island") and climbed quickly to FL300, in Embraer’s Bandeirante and Bandeirante Uno flight test areas.

AVIONICS AND HANDLING

We wanted to test the Rockwell Collins MultiScan radar and view its vertical weather profile and predictive windshear capabilities, but there was no weather within hundreds of miles.

The Bossa Nova interior on Embraer’s new Praetor 500 and 600 features stylish diamond stitching designed to mimic the curvy walkways on the Rio de Janeiro beachfront promenade.

Rodrigues dialed up the Praetor’s new cockpit display of traffic information (CDTI) on the MFD, which uses ADS-B In technology along with TCAS. We could see traffic on the MFD and click on individual targets to view a data block with identity, altitude, and velocity information.

Pro Line Fusion, although not the touch-screen variety, is relatively simple for pilots used to mousing around with a cursor control device and modern graphical flight planning. Four 15-inch displays provide plenty of glass real estate that pilots can customize with systems synops, charts, checklists, and more. The FMSs are WAAS/LPV units with optional RNP AR 0.3 accuracy and FANS 1/A datalink.

While descending to FL250, I lowered the nose and advanced the power levers to pick up speed and watched the automatic envelope protection system pull up the nose to keep the Praetor 600 from overspeeding. At the other end of the spectrum, I pulled the power back and deployed the spoilers to slow down and allowed the airspeed to drop. As the speed slowed below 160 kias, the spoilers automatically retracted. Then, while holding the stick aft into the limit envelope, at 1.08 of stall speed the protection kicked in and lowered the nose to keep the Praetor from stalling.

I brought the power up to the takeoff setting, then pulled one engine back to idle and kept my feet flat on the floor, watching as the asymmetric thrust compensation helped keep the Praetor tracking straight. It’s important to stay in the loop in a one-engine-out situation, and to help with this, the pilot must apply a small amount of rudder to fully compensate for the failed engine. I also did an engine swap, moving one throttle rapidly from idle to full power, and then the other throttle to idle, and the FBW easily maintained heading with no wing rocking.

In turns up to 33 degrees of bank, the FBW automatically compensates for the loss of lift, and there is no need to pitch up to keep the nose from dropping. Once the bank angle is set, the jet will simply circle happily by itself, with no need to touch the sidestick.

But when I steepened the bank beyond 33 degrees, I could feel pressure on the sidestick, encouraging me to return to a lower bank angle, and I also had to pull back to compensate for the loss of lift. When I let go of the stick, the bank angle returned to 33.

Our next demonstration was the effect of different attitudes on how fuel flows between the fuselage ventral and forward tanks and the wings. The Praetors use bleed air to pressurize the tanks and meet new fuel tank flammability regulations. At angles of attack of fewer than 6 degrees, bleed air pressure forces fuel from the forward tank to the wings. Once the forward tank is empty, the ventral tank is tapped, again moving fuel to the wings. This scheme biases the in-flight weight-and-balance towards aft CG, which is more efficient for cruise flight.

If bleed fails, then auxiliary fuel pumps switch on automatically to effect the fuel transfer. Above six degrees and below minus-two degrees angle-of-attack, the transfer from the fuselage tanks stops, then resumes when the angle falls within those parameters.

What is a Praetor?

Praetor, from the title for Roman magistrate, derives from the verb praeire, which means “to go before, to precede, to lead the way.” Praetor was a no-brainer,” said Embraer design chief Jay Beever, “[being] the ultimate magistrate, the butler, the servant to the emperor, and capable to fulfill the needs of the emperor.”

The Praetor 600 steps up the capabilities of the Legacy 500 with new winglets, additional fuel capacity, a new software load for the Rockwell Collins Pro Line Fusion avionics as well as a new Multi-Scan radar, and more powerful Honeywell HTF7500E engines. The Praetor 500 is the newer version of the Legacy 450, with the new winglets and the fuel capacity of the Legacy 500 along with the new avionics capabilities.

Fuel capacity of the Praetor 500 is 13,058 pounds, up from 12,108 in the original Legacy. Both the Legacy 450 and 500 share the same wing design, so this wasn’t a huge change.

The only way to tell the Legacy 450 and Praetor 500 apart visually is by comparing winglets, which are canted out further on the new designs, adding 50 inches in wingspan and 22 inches in wingtip height. The winglets bolt on now, which makes replacement in case of damage much easier.

Embraer engineers were able to avoid structural changes in the wings for the new winglets because they were able to accommodate changes in loads on the wing by modifying the fly-by-wire software to alleviate loads in all configurations and conditions.

The Praetor 500 and 600 models are upgraded versions of the Legacy 450 and 500 (both of which remain in production), and the main difference is the new model’s greater range. The Praetor 500 now offers coast-to-coast range at 3,250 nm (long-range cruise, four passengers, two crew, NBAA IFR reserves), up from the Legacy 450’s 2,900 nm. Takeoff distance is longer, however, at 4,263 feet. Maximum payload is 2,921 pounds, and payload with maximum fuel 1,600 pounds.

The optional three-seat divan features a reinvented diamond stitching on the seats, which mimics the design of the walkways on the beachfront promenade in Rio de Janeiro.

A carbon-fiber finish on tables wraps around corners without showing the structure of the material. The dark, thin, three-plly material looks homogenous, with the weave perfectly aligned. “The beauty of the carbon-fiber is that its strength comes from the shape change,” he said. “It’s more than an application, it’s structural.” Jet-black metal plating complements the carbon-fiber finish in areas where the materials meet.

The optional three-seat divan features what Beever said “is a perfect 105-degree seating angle. Most divans are like a park bench, with straight-up backs. Nobody wants to sit in it. You need to machine the arc of the tracks so it can go flat, but not when upright.” Tuxedo stitching in a racetrack pattern on the divan reveals the intricate detail employed by the Embraer craftspeople.

To add to the attention to fit and finish, the interior is maintenance-friendly and designed for quick removal and installation without putting components at risk of damage.
We pulled up the fuel system synoptic on the MFD and watched the fuel system automatically switching to the wing tanks as I moved the sidestick aft to increase the angle-of-attack above the trigger point of 6 degrees.

SVGS APPROACH

It was time to return to San José dos Campos for the SVGS approach. We dialed up the ILS Runway 15 approach with SVGS in the Pro Line Fusion avionics and set the radar altimeter minimums to 150 feet while flying toward the UGTEV waypoint then the LONES initial approach fix.

The SVGS procedures call for flying on autotthrottles and autopilot until now delivering 7,528 pounds of thrust. We dialed up the ILS Runway 15 approach with SVGS in the Pro Line Fusion avionics and set the radar altimeter minimums to 150 feet while flying toward the UGTEV waypoint then the LONES initial approach fix.

As the main wheels touched, I held the sidestick neutral and the FBW automatically lowered the nose at a smooth minus-two-degree pitch rate.

Rodrigues reset the flaps for takeoff, then I pushed the power levers forward until the autothrottles engaged, then accelerated and lifted off. We climbed in a left traffic pattern, and this time we set the autothrottles on the high setting so I could experience a maximum performance braking procedure.

Hand-flying the FBW Embraers is a delight, and it was easy to maneuver the Praetor 600 around at low altitude. I pulled the power back quickly after takeoff to keep from blasting through the pattern altitude. I had to extend the downwind to allow for another airplane to land, then turned base and final, letting the autothrottles help manage power and keep me on speed. Lined up with the runway, I aimed the flight path vector on the PFD at the touchdown point and now in pitch-rate control law (the FBW system’s default configuration during takeoff), I reset the trim point with the TCS button on the sidestick. Again I added just a tiny bit of nose up with the sidestick as the Praetor 600 neared the runway while the throttles moved to idle. As soon as the main landing gear rolled onto the runway, I pushed the sidestick full forward—the FBW commands the maximum nose-down pitch rate without damaging the nose gear, and the nose wheel dropped quickly onto the runway. The autobrakes activate one second after the main wheels touch, even if the nose wheel is still in the air. But at the high setting, the autobrakes allow only low brake pressure until the nosewheel is on the ground, then kick in full pressure.

This all happened much faster than describing how it works, and we came to an incredibly quick stop, well within the specified 2,270-ft minimum. I disengaged the autobrakes by stepping on the pedals, then taxied back to the Embraer ramp.

The Praetor 600’s Honeywell HTHF7500E engines now deliver 7,528 pounds of thrust.

Embraer Praetor 600 Specifications and Performance

Price: (typically completed and equipped)
$20.995 million

Engines (2):
Honeywell HTHF7500E, 7,528 lb thrust

Passengers: (typical)
2 crew + 8 pax

Range:
(w/nMIA reserves, 200-nm alternate)
3,900 nm

High-speed cruise:
460 kts/Mach 0.82

Long-range cruise speed:
433 kts

Fuel capacity: 15,986 lbs
Max payload w/full fuel: 2,533 lbs

Maximum operating altitude:
49,000 ft
Cabin altitude at ceiling:
5,800 ft
Max takeoff weight:
$42,858 lbs

Balanced field length at mtow: (sea level, standard)
4,800 ft
Landing distance:
2,270 ft
Length:
68.1 ft
Wingspan:
70.5 ft
Height:
21 ft

Cabin:
Volume: 826 cu ft
Width: 6.8 ft
Height: 6.0 ft
Length: (seating area) 27.3 ft

Baggage capacity:
/internal and external compartments/
155 cu ft/l,133 lbs

FAA certification:
(first half of 2019)

FAA certification:
FAR Part 25

continued from preceding page

The cabin-management system in the Praetors is Honeywell’s Ovation select. Gogo Vision will be an option when the Gogo Avance L5 air-to-ground connectivity system is installed. All of the models offer a new global airborne connectivity option with the Viasat Ka-band satellite and IPTV. The satcom will cost $395,000 and will be available in second-quarter 2019. Retrofits will be available for existing Legacy 450s and 500s. The Praetors come with a new software load for the Rockwell Collins Pro Line Fusion avionics. A new RTA-4218 MultiScan radar adds vertical weather, predictive windshear, and ground-clutter suppression.

Future capabilities are enabled by the new cockpit display of traffic information (CDTI), which displays TCAS and ADS-B in traffic. Eventually this will allow for reduced separation in busy traffic areas. The most significant avionics addition is the synthetic vision guidance system (SVGS), which will be approved for a 50-foot reduction in Cat I ILS minimums to 150 feet and lower visibility minimums without requiring a head-up display or special training. Embraer’s Rockwell Collins-based E2VS enhanced vision system and HGS-3500 head-up display, which can display both EVS and synthetic vision system imagery, is an option for the Praetor 500 and 600, as it was for the Legacy 450 and 500. In an effort to encourage adoption of E2VS, the SVGS option will be included free for buyers who select the enhanced vision system and HGS-3500.

An optional Honeywell Laseref VI inertial reference system is available, providing improvements in navigation in remote areas and other benefits for GPS and other nav source outages.

The Praetor 500 baseline price is $16.995 million and it will enter service in the third quarter of 2019. The $20.995 million Praetor 600 will enter service in the second quarter of 2019.
WHO CARES THAT OUR ADS-B SOLUTIONS ARE APPROVED FOR MORE THAN 50 MODELS OF BUSINESS AIRCRAFT?

IF YOU NEED ADS-B INSTALLED IN YOUR AIRCRAFT, YOU DO.
Elwell paints vision for ‘third great era’ of aviation

by Kerry Lynch

Aviation is on the cusp of its “third great era” with the emergence of autonomous and unmanned aircraft, according to acting FAA Administrator Dan Elwell. This new frontier is coming at a more complex time, with thousands of aircraft crisscrossing the globe and joined by commercial rockets and a million drones, Elwell said in prepared text for his speech before the Aero Club of Washington last month. “I’m not sure we appreciate how much of a seismic change it’s going to be—for all of us.”

Warning that the government and industry do not want to be caught flat-footed, he said they must be ready for this next era of aviation; and the system in place today must get better.

Industry must be allowed to be a driver in this. “Innovation fuels aviation, and innovation rarely comes from the federal government,” he said. “Bureaucrats shouldn’t tell innovators what they can’t do. See? It’s right there... page 27, section 3, paragraph 1, subpart b—in the footnote.’ We’ve had too many of those exchanges in the past.”

The recently passed five-year reauthorization bill—the longest that the FAA has had in more than 35 years—will help change that, he added. “It doesn’t have everything we asked for. No bill ever does. But it’s full of a lot of good things,” he said.

The bill provides a mandate for the FAA to accelerate momentum on unmanned aircraft, paves the way to remote identification standards, and supports long-awaited rules for unmanned operations over people and at night. It also strengthens protections for malicious use, he said.

The law further increases commercial space funding by some 36 percent over the next five years, enabling the creation of an Office of Spaceports. “It even sets us up for the return of supersonic aircraft,” Elwell said. “That’s something most of us thought we’d never see again.” Aircraft advancements will be aided by a reformed certification system, he added.

But while the bill paves the way for the future of aviation, it falls short on funding reform. “This isn’t about more money,” he said. “We collect plenty to keep the system running. What we need is stability and predictability.” He further expressed a desire for spending flexibility.

Operating under the 47th continuing resolution that has been in place over the past 11 years, Elwell said, “the FAA hasn’t started a fiscal year with a full appropriation since 1997. Think about that for a second. We support two-thirds of the world’s airspace...nearly a billion passengers...and 5 percent of the GDP.”

Elwell also addressed a number of other areas, from regulatory reforms and NextGen initiatives to workforce shortages. In the area of regulatory reform, he said the agency is putting actions in place that should save $65 million annually. At the same time, he added, “We’re busy creating a new and improved regulatory framework for drones and commercial space transportation.”

The agency is advancing on airspace initiatives, such as adding performance-based navigation (PBN) procedures in the Northeast Corridor, one of the most congested airspace regions in the U.S. “The Northeast Corridor brings the system to its knees. It’s a petri dish for delays due to weather, construction, and volume,” he said, estimating about a third of all system delays stem from the Northeast Corridor.

PBN is among a number of new technologies rolling out, Elwell added, including “standing up” Data Comm En Route Services in Memphis, Indianapolis, and Kansas City. This should be in place by year-end.

“We’re also gearing up for the Terminal Flight Data Manager, which will improve controllers’ situational awareness. We’ll begin rolling out those capabilities in 2020,” he said.

As for the workforce shortage, Elwell pointed to a nearly 30 percent decrease in pilots holding active airman certificates since the early 1980s and concerns that “our technical workforce is aging at the same time our pipeline is running dry.”

Aviation is competing with Silicon Valley for talent, he said, “and we’re losing... If we don’t turn this around, and I mean soon, we’re going to have empty flight decks. Not unmanned—empty.”

He pointed to the summit the FAA held recently, noting the discussions surrounding getting young people excited about aviation again. “That’s got to be part of the solution,” he said, saying everyone must play a role in spreading “the aviation bug.”

This leads back to innovation. For the FAA’s part, Elwell outlined a vision for creating an “innovation incubator” within the agency “so that good ideas don’t die on the vine.” This could provide freedom to tackle new technologies and tough questions, he said. “We’ll measure success by our ability to disrupt the status quo and break down obstacles—so that new ideas can be transformed into concrete actions without disturbing current operations.”
Asian Sky: BA/GA fleets growing in China

by Kerry Lynch

Business and general aviation fleets have grown to encompass 244 fixed-wing aircraft, 160 helicopters, and seven other aircraft in the Greater Bay Area (GBA) of China, but airspace and other restrictions continue to limit the industry’s growth there, according to a new report from Asian Sky Group (ASG).

Timed for release in concert with Airshow China in Zhuhai, the Greater Bay Area Aviation Report focuses on one of the top economic regions within China, made up of Hong Kong and Macau, as well as nine cities in Mainland China’s Guangdong province (Guangzhou, Shenzhen, Zhuhai, Foshan, Zhongshan, Dongguan, Huizhou, Jiangmen, and Zhaoqing).

This report follows on to ASG’s first China GA Report released last year and comes as the Chinese government “continues to place a high emphasis on general aviation,” ASG managing director Jeffrey Lowe said. “While the Greater Bay Area presents ample opportunity for all segments of GA, it is unlikely to materialize without significant low-altitude airspace reform.”

This is complicated by restrictions in Hong Kong and Macau, the company added. “A truly integrated region requires integration across the board.”

Largest Fleets

As far as business aviation and GA, Hong Kong and Shenzhen have the largest aircraft fleets in the GBA. Nearly 54 percent of the 52 operators solely fly business jets. Another quarter operate only helicopters, while 10 percent are dedicated to turboprops and piston. Business jets account for 83 percent, or 202, of the fixed-wing aircraft there. Gulfstream alone accounts for 94, or 47 percent, of those, while the Bombardier fleet has reached 71, or 35 percent. The preference for long-range aircraft remains, accounting for 62 percent of the business jet fleet.

Airbus has taken the 31 percent market share with 49 helicopters there, while Sikorsky follows at 24 percent, or 38 helicopters. Medium helicopters are the preferred size, comprising 43 percent of the GA fleet.

The region is home to 42 pistons and turboprops, 22 of which (52 percent) are Cessna models. Cirrus and Diamond follow with eight (19 percent) and seven (17 percent), respectively. Single-engine turboprops make up 52 percent of this fleet.

Fifteen airports and 19 helipads are operational in the area. Of the airports, seven are dedicated to air carriers, six to helicopters, and two to general aviation. The region houses just four fixed-base operations in Mainland China and one each in Hong Kong and Macau.

The Civil Aviation Administration of China (CAAC) last year relaxed regulations to simplify the permit process and make it easier for GA companies to establish, ASG said. In addition, some flight paths were modified. This year the CAAC unveiled plans for a three-level service system for low-altitude flights by 2020.

The CAAC, the company added, is making progress by simplifying the procedures and loosening the strict regulations on non-commercial aircraft registrations, operating permit applications, and infrastructural approvals, and the Chinese government has emphasized the development of an airport network in its 13th Five-Year Plan, running through 2020.

But ASG said the industry believes this doesn’t go far enough. “GA operators are faced with restrictions regarding parking and slots, which are prioritized for commercial aviation,” the company noted, and said airspace policies still “haven’t offered much in the way of relief for operators.”

ASG has been suggested as one of the first regions to be able to open low-altitude airspace. That airspace “isn’t truly open,” ASG said. “While the Greater Bay Area presents ample opportunity for all segments of GA, it is unlikely to materialize without significant low-altitude airspace reform.”

The region is home to 42 pistons and turboprops make up 52 percent of this fleet. The region houses just four fixed-base operations in Mainland China and one each in Hong Kong and Macau.

The Civil Aviation Administration of China (CAAC) last year relaxed regulations to simplify the permit process and make it easier for GA companies to establish, ASG said. In addition, some flight paths were modified. This year the CAAC unveiled plans for a three-level service system for low-altitude flights by 2020.

The CAAC, the company added, is making progress by simplifying the procedures and loosening the strict regulations on non-commercial aircraft registrations, operating permit applications, and infrastructural approvals, and the Chinese government has emphasized the development of an airport network in its 13th Five-Year Plan, running through 2020.

But ASG said the industry believes this doesn’t go far enough. “GA operators are faced with restrictions regarding parking and slots, which are prioritized for commercial aviation,” the company noted, and said airspace policies still “haven’t offered much in the way of relief for operators.”

ASG has been suggested as one of the first regions to be able to open low-altitude airspace. That airspace “isn’t truly open,” ASG said. “While the Greater Bay Area presents ample opportunity for all segments of GA, it is unlikely to materialize without significant low-altitude airspace reform.”

This is complicated by restrictions in Hong Kong and Macau, the company added. “A truly integrated region requires integration across the board.”

Esterline Avionics Systems

Featuring
CMC ELECTRONICS Products

www.esterline.com/avionicssystems

Secure Cockpit CONNECTIVITY.

SCALABLE AVIONICS GRADE SOLUTIONS

• Access to data for pilot and flight operations
• Bridging cockpit, cabin and maintenance systems
• Enabling tablet connectivity and applications hosting
Piper Aircraft has strengthened its commitment to the diesel-powered light aircraft fleet by bringing the diesel Archer DX program in-house, starting with 2019 models. Since the Continental CD-155 diesel engine was approved for installation in the Archer under an FAA supplemental type certificate (STC), Piper has been building diesel Archers as standard TX models that were then modified with the diesel-engine STC.

Orders for the diesel Archer haven’t exactly soared, with 10 deliveries since 2015, but Piper officials believe that market will climb. “We’ve been marketing the DX as its own product,” said Gunnarson. Piper v-p of sales, marketing, and customer support, “and as a result, we’ve started to see [growing] interest.” DX sales were averaging two per year, but that jumped to six in 2019. “We have a couple of large proposals for fleet purchases for the DX, and I believe these will come to fruition,” he said.

An interesting facet of the market for diesel-powered trainers is that most flight academies are focusing on teaching future airline pilots. Diesel training airplanes’ single-lever power controls are far more similar to the throttle-propeller-mixture controls on avgas-powered airplanes. Transitioning a pilot from a single-lever diesel-powered airplane to a jet should be far easier.

“We’re seeing a lot of interest from airline-funded programs,” said Gunnarson. They see the value, and they want the transition to be as seamless as possible. That’s where a lot of the interest is coming from, and we expect that to continue to grow.”

There are other advantages to diesel-powered airplanes, widespread availability of jet-A fuel is most important, but also lower fuel burn. The Archer DX burns about 5.8 gph, 37 percent less than the TX. The DX can even run on EN950 diesel. “It starts to make a lot of sense,” he said.

Of course, diesel aircraft engines are far more expensive than avgas engines, and this may explain why the market uptake of diesels has been so slow. The Archer DX base price is $359,000, while the Archer DX base price is $430,795. Diesel engines, built tough to handle much higher cylinder compression than gasoline engines, are hard-working. Earlier Aero-diesels had fairly low lifetimes, but Continental has been able to increase the time between removal of the CD-155 to 2,100 hours. At that point, the engine must be replaced. There are interim maintenance requirements and many items with life limits. These include the gearbox clutch and high-pressure pump every 300 hours, the alternators every 600 hours, friction disk every 900 hours, v-ribbed belt every 1,200 hours, alternator excitation battery every 12 months, and all fuel, oil, and cooling lines every 60 months. The propeller is limited to 2,400 hours or 72 months, and the governor and accumulators to 2,000 hours or 72 months.

Such maintenance requirements are more typical for larger aircraft, but forcing operators to keep up with maintenance schedules with mandatory inspections and component replacements will help make operation of the Archer DX safer. The replacement time for the DX engine is mandatory, for example, while the time between overhaul for a Lycoming engine is a recommendation. According to Piper, operating costs of the Archer DX are 30 to 40 percent lower than the gasoline-powered models.

With Fadec, there is no mechanical connection between the throttle and the engine. The Fadec has two channels and runs on one, with the other as backup. Electrical power is essential to keep the Fadec running, and it is equipped with a backup battery that runs up to two hours after alternator failure.

A welcome change in the Archer DX is a beautifully designed, much more solid-looking fuel selector handle made of machined aluminum nestled in a raised carbon-fiber housing. The new fuel selector valve routes excess fuel back to whichever wing tank is selected. This return fuel is warmed during its trip through the fuel system, and the fuel selector thus feels warm during operation. This also helps warm the fuel in the wing.

The DX is equipped with the Garmin G1000 NXi avionics suite, although the one that I flew—purchased as a trainer for Nepal’s air force—didn’t have the NXI upgrade as it was contracted before that became available.

**Diesel Archer eyes training segment**

by Matt Thurber

**Engine Details**

The Continental diesels are manufactured in St. Egidien, Germany. The four-cylinder, liquid-cooled CD-155 is turbocharged and features direct fuel injection, and it is digitally controlled by a two-channel full-authority digital engine control (Fadec). Compression ratio is a massive 18:1, reflecting the nature of diesel engines, which have no spark plugs but rather use compression to heat up the air in the cylinders and thus cause fuel to heat up and combust. A gearbox reduces rpm at the propeller to 2,300 for takeoff.

Diesel engines, built tough to handle much higher cylinder compression compared to gasoline engines, are hard-working. Earlier Aero-diesels had fairly low lifetimes, but Continental has been able to increase the time between removal of the CD-155 to 2,100 hours. At that point, the engine must be replaced. There are interim maintenance requirements and many items with life limits. These include the gearbox clutch and high-pressure pump every 300 hours, the alternators every 600 hours, friction disk every 900 hours, v-ribbed belt every 1,200 hours, alternator excitation battery every 12 months, and all fuel, oil, and cooling lines every 60 months. The propeller is limited to 2,400 hours or 72 months, and the governor and accumulators to 2,000 hours or 72 months.

Such maintenance requirements are more typical for larger aircraft, but forcing operators to keep up with maintenance schedules with mandatory inspections and component replacements will help make operation of the Archer DX safer. The replacement time for the DX engine is mandatory, for example, while the time between overhaul for a Lycoming engine is a recommendation. According to Piper, operating costs of the Archer DX are 30 to 40 percent lower than the gasoline-powered models.

With Fadec, there is no mechanical connection between the throttle and the engine. The Fadec has two channels and runs on one, with the other as backup. Electrical power is essential to keep the Fadec running, and it is equipped with a backup battery that runs up to two hours after alternator failure.

A welcome change in the Archer DX is a beautifully designed, much more solid-looking fuel selector handle made of machined aluminum nestled in a raised carbon-fiber housing. The new fuel selector valve routes excess fuel back to whichever wing tank is selected. This return fuel is warmed during its trip through the fuel system, and the fuel selector thus feels warm during operation. This also helps warm the fuel in the wing.

The DX is equipped with the Garmin G1000 NXi avionics suite, although the one that I flew—purchased as a trainer for Nepal’s air force—didn’t have the NXI upgrade as it was contracted before that became available.

**Diesel Flight**

Despite the engine’s complexity—far more complicated than the Archer TX’s carbureted Lycoming O-360-A4M—I found the diesel engine simple to operate and it seemed to be more forgiving than the Lycoming, with none of the concerns about carburetor icing or difficulties starting that come with piston avgas engines. Piper chief pilot Bart Jones
From the fastest ramp-up in commercial aviation history to achieving 2 million engine flight hours in just over two years. Clearly, the LEAP engine is delivering.

www.cfmaeroengines.com

CFM International is a 50/50 joint company between GE and Safran Aircraft Engines
Philips doesn’t come with wheel pants.) At 75 percent power, fuel flow increased to 6.3 gph, and the model performs at least as well simply runs out of power. Climb at 85 percent power and faster than climbing at slow airspeeds. Jones likes to engine instrumentation on the Garmin delivers less power as soon as density delivering full power from the ground to hp, compared to the 180 hp Lycoming in the TX. But the diesel engine is capable of train future jet airline pilots because they altitude then unlearn that when transition - and thus makes flying much simpler. This is a huge advantage for flight schools that train future jet airline pilots because they do not need to learn throttle-prop-mixture then unload that when transitioning to a jet. The smoothness of the diesel engine truly made me feel like I was flying an airplane with a responsive, efficient powerplant in front, and it didn’t really matter to me what was under the cowl. I will be surprised if, even at the higher cost, large flight academies don’t adopt airplanes such as the diesel Archer.

The engine ran smoothly as we climbed up about 500 feet at about 700 fpm initially then about 500 ft at a cruise climb of 86 knots. Once at altitude, I leveled off to check performance.

At 70 percent power, fuel flow was 5.7 gph and true airspeed 109 knots. (This Archer doesn’t come with wheel pants.) At 75 percent power, fuel flow increased to 6.3 gph and speed to 117 kias. I pulled the power back to 50 percent, and fuel flow dropped to 4.2 gph and speed to 100 kias. We had taken off with 34 gallons of fuel, 14 less than full, and we could have flown at 50 percent power as far as Galveston, Texas, or even Jamaica. The rough equivalent amount of fuel for diesel operations to a full tank of avgas in the gasoline-powered Archer is 30 gallons. In other words, the Archer DX will fly the same distance on 30 gallons as an Archer TX with 48 gallons.

After some stalls and trying out slamming the throttle forward and back, there are no restrictions on this, I descended to shoot some touch-and-goes at Okeechobee County Airport. There is no need to worry about cold-soaking the liquid-cooled CD-155 by pulling the power back for a rapid descent (not that this is an issue with the O-360). In the traffic pattern, the engine acted, well, normal. In fact, I hardly even thought about it, other than pulling or pushing the throttle for the power setting I needed. The engine responded quickly to power inputs. I did notice that with a diesel, there are redundant steps in the GUMPS check on final approach (no mixture, no prop).

What I like about the diesel engine is that it eliminates the need to operate two other controls — propeller and mixture — and thus makes flying much simpler. This is a huge advantage for flight schools that train future jet airline pilots because they do not need to learn throttle-prop-mixture then unload that when transitioning to a jet. The smoothness of the diesel engine truly made me feel like I was flying an airplane with a responsive, efficient powerplant in front, and it didn’t really matter to me what was under the cowl. I will be surprised if, even at the higher cost, large flight academies don’t adopt airplanes such as the diesel Archer.

VoltAero ready to validate hybrid-electric demonstrator

by Ian Sheppard

French company VoltAero, led by former Airbus CTO Jean Botti, has started phase 1 tests to validate its hybrid-electric aircraft systems with a new iron bird test rig and a flying “prototype,” each based on a converted Cessna 337 Skymaster. The initiative could lead to quiet and efficient aircraft carrying between four and nine passengers. The company hopes that the reduced noise levels will help placate many airport authorities where conventional aircraft are being shunned due to noise (e.g. Toussus-le-Noble near Paris). During an open day at the company’s Aérodrome de Royan-Médis base on October 18, CEO Botti and technical director Didier Esteyne—who were the driving force behind the E-Fan electric aircraft while they were at Airbus—explained their new project to dignitaries and AIN.

VoltAero uses two forward-facing electric motors (60kW each) to allow “nearly silent” takeoffs and landings, while the “push” is provided by three 60 kW electric motors (300 kW for takeoff and climb). Installed at the rear is also a 170-kW internal combustion engine that facilitates a unique auto-start capability to drive the pusher if the “puller” electric engines fail or need more power, providing increased safety, especially during takeoff/ go around, as well as recharging the batteries.

The Nouvelle-Aquitaine region is helping to support VoltAero and will be the location for final assembly. Also involved are Solution F, which created the first manned electric helicopters and played a key role in the E-Fan; and Aéro Composites Saintonge, which was also part of the E-Fan team and has since focused on the battery assembly and other components for the VoltAero demonstrator aircraft. It has developed the ground-based “iron bird” rig at Royan-Médis.

The five REX90 60-kW electric motors have been sourced from the Czech Republic. Paul Lemoire, electrical engineer with VoltAero, told AIN the 10-kW battery racks include the BMS (battery management system) with five sub-packs per motor and can be changed out in two hours. The “electrical range” is 30 minutes including takeoff and climb, and 40 minutes if only used for cruise. There are five battery racks on each side of the aircraft, with 15 in the nose, together driving the aircraft’s five electric motors (three in the tail and one on each wing).

The mtor is two metric tons and, according to Lemoire, the aircraft needs 300 kW for takeoff and climb.

Didier Esteyne, who was involved in the Cri-Cri in 2011 and E-Fan in 2015, said the Cessna 337’s structure is perfect, because parts can be removed easily to add batteries. He said a normal single-engine airplane “would not work.” Jean Botti said the aircraft will have a complex power-management system otherwise it would be “too complicated to fly.” It will have only one power lever, for example, using a “module de puissance” (power module) to make the aircraft “simple to fly.” This will be a software package created by VoltAero, derived from phase 1 tests and has already been partly patented.

Botti noted the safety benefit of having “two sources of power” helping to negate the need for a parachute. Another unique feature of the VoltAero craft will be an electric nosewheel drive for taxiing, when for added safety “none of the blades will turn,” said Botti. The piston engine is at idle for taxiing and for the whole flight although it will run at a higher rpm when recharging the batteries. Botti told AIN that funding of the project was “well covered for all iron bird and flight testing” but “not for phase 2.” Ultimately it will be an all-composite aircraft, and the phase 2 full production aircraft will have a fully automatic flight management system. The company is hoping for very low rate production “by the end of 2021.”
Your designated alternate for West Palm Beach (PBI)
TFR Just 15 miles North of Palm Beach County

Stuart Jet Center, LLC
Concierge Services • Aircraft Charter • Aircraft Maintenance
Aircraft Sales • Aircraft Hangars • Executive Offices

2501 SE Aviation Way, Stuart, FL 34996
Phone: 772-288-6700 • Fax: 772-288-3782 • Toll free: 877-735-9538 • stuartjet.com
First AW169 fatal crash leads to ADs

Thai billionaire Vichai Srivaddhanaprabha and four others were killed in the first-ever Leonardo Helicopters AW169 accident. The 2016 medium-twin helicopter, G-VSKP, S/N 69018, crashed the night of October 27 shortly after it lifted off from the center field pitch of King Power Stadium in Leicester City, UK. Eyewitness reports said the helicopter struggled to gain altitude to clear the stadium and then spiraled down rapidly into an adjacent parking lot, where it was consumed by a post-crash fire.

Investigators from the UK’s Air Accidents Investigations Branch (AAIB) recovered the aircraft’s digital flight recorder (voice and data), “which was subject to intense heat as a result of the post-accident fire” and took it to the AAIB laboratory in Farnborough for analysis.

On November 14, after analyzing data from the recorder, the AAIB released its preliminary report, indicating that the helicopter failed to respond to the pilot’s left pedal input.

The crash occurred shortly after 8:30 p.m. local time, 40 minutes after the English Premier League soccer game between Leicester City and West Ham United ended. Srivaddhanaprabha, who made his $5 billion fortune establishing the chain of King Power duty-free shops in Thailand, bought the Leicester team in 2010 and regularly commuted to the stadium from Berkshire via helicopter.

Following up on an EASA Emergency Airworthiness Directive issued after the accident, the FAA issued a more comprehensive EASA AD (2018-23-52) to cover Leonardo AW169 and AW189 twin-engine helicopter tail rotor servo-actuator assemblies. The FAA said it “determined the unsafe condition exists and is likely to exist or develop on other helicopters of the same type design.”

The FAA AD requires inspecting the nut, cotter pin, lock-wire, hinge bracket connected to the tail rotor servo-actuator feedback lever link, and each connection of the tail rotor servo-actuator feedback lever link. It also requires applying a paint stripe or torque seal on the nut and reporting certain information to Leonardo.

The EASA AD specifies visually inspecting the nut, cotter pin, lock-wire, hinge bracket for condition and absence of damage, while the FAA Emergency AD requires inspecting those parts for corrosion, installation and loose, broken, and missing parts. While the EASA AD specifies visually inspecting the connection elements of the tail rotor servo-actuator feedback lever link, the FAA Emergency AD requires inspecting all three connections of the tail.

Continues on facing page...
Air Methods trusts sims

The chief pilot for the nation’s largest air ambulance provider says his company is moving aggressively to train the majority of its pilots in simulators and is committed to extending coordinated crew training to the medical personnel riding in back.

“We’ve probably changed more in the last two years than in the last 20 as far as training goes,” said Air Methods chief pilot Raj Helweg, who added that between 85 to 90 percent of the company’s 1,350 pilots now receive initial and recurrent simulator training, including in Level D simulators, at FlightSafety International’s Denver learning center for the Airbus Helicopters models A550, EC130, and EC135 and the Bell 407.

All of the simulators are currently dry leased, with company instructors and check airmen providing training and checking. Helweg said Air Methods recently signed a memorandum of understanding with the FAA to establish an aircrew designated examiner (ADE) program, the first of its kind for a Part 135 helicopter operator. “That will allow us to do ATP checkrides for our pilots in the platforms they are flying on a regular basis,” he said. “Right now we have two FAA ASIs [aviation safety inspectors] assigned to the training facility in Denver. We train up an FAA inspector to be a line pilot, training captain, or check airman in our airframe with our training curriculum. They will observe training and help with curriculum development. It is efficient for the FAA and for us.”

While Helweg said the bias toward single-engine platforms remains throughout the industry, there is still a strong demand for twin-engine, single-pilot IFR service, especially among the hospital-based programs and select community-based programs. “It has to do with regional needs. It wouldn’t do us any good to have single-pilot IFR in Casper, Wyoming where icing is a big issue, but it makes perfect sense in Seattle.”

For both VFR and IFR operations, simulator training is invaluable, he said. “We’re always trying to reduce risks. Today, the aircraft, engines, and avionics are more dependable. So the last step is the pilot. If we can set them up for success with better and more comprehensive training, then I believe it can’t help but reduce the mistakes that are happening.

Simulator training is seen as invaluable in both VFR and IFR operating environments.

Leonardo is selling 22 new AW169M medium twin-engine helicopters to Italy’s state Guardia di Finanza for an initial $315.5 million including support and training. The deal could be worth another $112 million if the support package is extended. Deliveries start next summer and should be completed by 2024. The aircraft will be used for patrol and reconnaissance, law enforcement, search and rescue, and homeland security. They will join a fleet of 14 AW139 intermediate twins, six of which are already in service and the following eight due to be delivered in 2019. The Guardia di Finanza maintains more than 100 aircraft and is responsible for patrolling Italy’s territorial waters and addressing financial crime and smuggling.

The AW169Ms for the Guardia di Finanza will receive a military qualification by the Italian Directorate of Air Armaments and will feature a dedicated configuration including rescue hoist, emergency flotation system and life rafts, wire cutters, TCAS II (Traffic Collision Avoidance System), NVG (night vision goggles)-compatible cockpit, HTAWS (Helicopter Terrain Awareness Warning System), advanced communication system, OPLS (Obstacle Proximity Lidar System), advanced HUMS (Health Usage Monitoring System), AFCS (Automatic Flight Control System) with SAR modes, searchlight, ice detector, fast roping, and satcom. The aircraft will also have a range of Leonardo systems such as RW ATOS (Airborne Tactical Observation and Surveillance) system with an advanced operator console, Gabbiano radar, LEOSS (Long Range Electro-Optical Surveillance System), M428 IFF transponder, V/UHF radio systems, cockpit panels and lighting and provisions for SPHYDER (Smart Processing Hyperspectral Detection and Reconnaissance System).

“This contract will allow us to deliver the Guardia di Finanza a new-generation helicopter with the best technologies available, to perform missions which are getting more and more complex and challenging. Our ability to provide state-of-the-art products to meet the requirements of Italian government agencies and armed forces, for the security of our nation, is the result of Leonardo’s leading edge technology and innovation,” said Alessandro Profumo, Leonardo CEO.

Ninety percent of what happens out there is within our control. We’re not victims of circumstance too often.”

Helweg said the company has had a bit of a learning curve, converting from in-aircraft to simulator training. “We are dealing with pilots who in many cases have been training solely in aircraft for 20 years and we took all their visibility away from them. There’s a learning curve with that and we had to adjust how we train. Right now we’re in the walking part of ‘crawl, walk, run.’”

Nevertheless, he sees a time in the future when the medical crew will be incorporated into the mix to provide for an added level of training that may be a very important part of training. At our partnership conference this year I had our assistant chief pilots take videos of various emergency procedures in the simulator and show them at the conference, things like inadvertent entry into IMC and autorotations on departure. They got to see how fast that happens, what happens to the instrument displays, and how fast you descend. It was really eye-opening to the point they asked to see more videos. But we deal with 3,000 medical crew members, and bringing them all through Denver would be difficult.” Helweg said Air Methods is looking at other ways, including web-based total crew training. Helweg said Air Methods’s new owner, American Securities, which bought the company for $2.4 billion last year, understands and supports the need to invest in modern training techniques and technology. “Everyone, including our new CEO Steve Gorman, who used to work at Delta Air Lines, is supportive,” he said. “We can only get better.”

continued from preceding page

rotor servo-actuator feedback lever link for correct installation and loose, broken, and missing parts. The inspections specified by the FAA Emergency AD are not limited to visual inspections. The EASA AD requires contacting Leonardo for approved instructions if there is any damage or other findings, while the FAA Emergency AD requires performing any necessary repairs in accordance with FAA-approved procedures. The FAA AD covers seven helicopters on its registry and estimates the cost at $255 per helicopter. Leonardo has produced approximately 70 AW169s and 55 AW189s to date. More than 50 AW169s have been delivered and approximately 150 have been ordered. Air ambulance AW169s are currently in service in the UK, Norway, and Asia.

Simulator training is seen as invaluable in both VFR and IFR operating environments.
Airbus sees stronger need for HEMS twins

by Mark Huber

The stampede to single-engine helicopter air ambulances is likely coming to an end in the U.S., according to Chris Emerson, president of Airbus Helicopters Inc., Airbus Helicopters’ North American arm. “I think you are going to see a pickup on the twins,” Emerson said, citing his company’s own recent sales experience into the air medical market. “Over the last four years in air medical we have sold more twins than singles,” including several large twin orders in the last few years as more operators transition to IFR programs. “They’re all buying twins,” he said.

Emerson said changes in the air medical industry and the growing physical size of patients was leading to a pickup in demand for larger, twin-engine ships. “The needs of the population are changing. The demographics are such that helicopters need to do more. The famous air medical golden hour has given way with the need to get the emergent care on board immediately. It’s getting the equipment and the medical know-how on the helicopter to provide the service immediately, not in the golden hour. An H145 is now a flying hospital.”

Emerson also noted the change in basing models. “There’s a lot more interest in hospital-based models. When you are linked up with a hospital-based system that air transportation cost is a fraction of the entire health care bill that patient is getting. It’s not separated. You’re seeing that where it makes sense in urban environments. Four years ago I had a HEMS customer tell me that the twin-engine market was dead. Today that same customer is buying twins. Why? Because with a twin you can fly neo-natal isolettes and supplement on-scene rescues with more comprehensive service in the helicopter.”

That is not to say that single-engine helicopter air ambulances are going away, Emerson said, but you will be more likely to find them in rural settings. “You will always have on-scene, rural, community-based programs that service populations that are not near trauma centers. Otherwise, you’re in an ambulance forever or at a basic hospital that can’t deal with you.”

But a key reason for selecting a twin to service an urban program, aside from cabin size, is the one engine inoperative (OEI) capability, Emerson said. “If you are in an urban environment, what does your one engine inoperative environment look like? When you get into an urban environment you want OEI performance so that the pilot doesn’t feel it.”

The need for speed and OEI margins is driving interest in the new Airbus H160 medium twin from select air ambulance operators, Emerson said. He thinks the H160 will do well in the high-end air medical market, particularly hospital-based programs with strong transplant programs where the 155-knot speed and range of the H160 will make it an effective hospital-to-hospital solution compared to employing fixed-wing assets. “We’re in talks with several leading programs on the H160,” he said.

Emerson thinks the air medical market is on the upswing. “Today there is a general optimism around growth again,” he said, noting that Airbus has “enjoyed the most multi-ship sales over the last four years into air medical.” But the growth is likely to be measured, characterized more by incremental fleet replacement and strategic base growth as opposed to the large net fleet growth of decades past.

However, Emerson thinks the overall U.S. helicopter market is poised for healthy growth thanks to thinning used inventories and more generous bonus depreciation under the new tax law. “This is the strongest we’ve entered a fourth quarter since I’ve been here—four years. We’re going to hit our annual targets this year before the end of October, which is unreal. It’s a good sign. We’ll continue to see a strong push to the end of the year.

“The impact of the accelerated depreciation and expansion to used aircraft has benefited the market to the extent that you cannot find a good quality used H125 or H145 with less than 8,000 or 9,000 hours because they have all been bought up this year.”

Drone threats reassessed

A significant number of all recreational drone flights sampled were conducted in ways that posed a hazard to navigation, according to a study released last month by Embry-Riddle Aeronautical University researchers and published in the International Journal of Aviation, Aeronautics, and Aerospace. The study used data collected between May 17 and May 29, 2018, that used an Aeroscope deployed on an educational building adjacent to the Daytona Beach (Florida) International Airport (DAB).

The AeroScope detects, identifies, and tracks DJI drones, a company with an estimated 72 percent of the recreational sUAS market. The device tracked 192 separate flights by 73 separate platforms and recorded location, altitude, and time of day. Following the sampling period, the data was downloaded into electronic maps and UAS detection times were correlated with ADS-B data.

Researchers also evaluated sUAS detections against the FAA’s UAS Facility Map (UASFM) established for Daytona Beach. The UASFM shows the maximum altitudes for authorized Part 107 UAS operations around airports that do not require additional safety analysis. “At least 21.5 percent were determined to exceed the maximum defined altitude limits of their UAS Facility Map area,” the study noted. In one case, a sUAS was detected at 90 feet msl within 0.25 nm of the approach path of DAB’s Runway 7L just seconds after an aircraft had approached. The researchers concluded, “Assuming the pilot was performing the published ILS approach, the aircraft would have crossed the Runway 7L threshold crossing at a height of 28 feet agl (88 feet msl). It is highly probable that the aircraft descended through the UAS altitude while on approach.”

Eight drones were detected within one nautical mile of the DAB center point, including one at nearly 200 feet msl and 0.68 nm from the Runway 7L centerline.

UAS detections ranged from as close as 0.83 statute miles (sm) to as far as 10.38 sm from DAB and even closer to other area airports and heliports. According to the study, “Unmanned aircraft operated as close as 0.50 nm to public airports and 0.35 nm to heliports. Of the 192 data points, 96.8 percent were detected within 5 sm of an aerodrome, with 84.2 percent detected within 5 sm of two or more aerodromes.”

The researchers recommended providing drone activity information to pilots of manned aircraft to help reduce the danger of collisions, including making drone Low Altitude Authorization and Notification Capability (LAANC) request information available.

FAA Oversight Under Scrutiny

To address the question of whether or not the FAA can control the swelling U.S. UAS market, the Department of Transportation (DOT) is conducting an audit. “Our prior and ongoing work has shown that [the] FAA is challenged to keep pace with the volume of requests for UAS to operate in controlled airspace near airports,” the DOT’s Inspector General said this week, announcing the audit on the FAA’s role in authorizing small UAS operations.

The IG said the purpose of the audit is to assess the impact of LAANC (Low Altitude Authorization and Notification Capability) on the FAA’s review and approval of UAS airspace requests and to evaluate the agency’s procedures for
coordinating and communicating UAS airspace approvals and notifications between airports, ATC, LAANC service suppliers, and UAS operators.

Assessing Collision Damage
Further study at the University of Dayton Research Institute’s (UDRI) Impact Physics group shows that impacts from small drones can be more damaging to manned aircraft than bird strikes. Researchers evaluated the damage a 2.1-pound DJI Phantom 2 quadcopter could level on the leading edge of a Mooney M20 wing compared to an identically weighted gel “bird.”

The tests simulated the impact of both the drone and the gel bird on the Mooney wing at an impact speed of 238 mph. According to UDRI, “The bird did more apparent damage to the leading edge of the wing, but the Phantom penetrated deeper into the wing and damaged the main spar, which the bird did not do.”

“We wanted to help the aviation community and the drone industry understand the dangers that even recreational drones can pose to manned aircraft before a significant event occurs,” said Kevin Poormon, group leader for impact physics at UDRI.

After calibration work, researchers fired a successful (drone) shot at the Mooney wing. The researchers then fired a similarly weighted gel bird into a different part of the wing to compare results.

Drone Maker Refines Geofencing
Chinese drone-maker DJI, recently announced improved geofencing technology to refine airspace limitations for drone flights near airports. DJI’s updated Geospatial Environment Online (GEO) Version 2.0 is being phased in as revised zones take effect for airspace around airports in the U.S. Upgrades in other parts of the world will follow, the company said.

DJI has selected PrecisionHawk to provide the data for the system, replacing the company’s previous geospatial data provider. DJI collaborated with the Aircraft Owners and Pilots Association and the American Association of Airport Executives in developing GEO 2.0.

According to DJI, the new system creates three-dimensional “bow tie” safety zones surrounding runway flight paths and uses “complex polygon shapes around other sensitive facilities, rather than just simple circles.” The new restrictions better reflect the actual safety risk, while enabling more flights to the side of runways where the company says the risk is lower. Its geofencing uses GPS and other navigational satellite signals to automatically help prevent drones from flying near sensitive locations such as airports and nuclear power plants. In certain instances, a DJI drone cannot take off or fly in a geofenced area without special authorization.

GEO 2.0 applies the strongest restrictions to a three-quarter-mile-wide rectangle around each runway and the flight paths at either end, where airplanes actually ascend and descend. Less strict restrictions apply to an oval area within 3.7 miles of each runway. This bow-tie shape opens more areas on the sides of runways to beneficial drone uses, as well as low-altitude areas 1.9 miles from the end of a runway, while increasing protection in the locations where traditional aircraft actually fly.

Brendan Schulman, DJI vice president of policy and legal affairs, said, “This is an enormous step forward for safely integrating drones into the airspace based on a more finely-tuned evaluation of risks associated with aircraft approaching and departing different types of airports.”

www.robinsonheli.com

“Robinson Helicopter Company has always done well in our annual survey, but it had an outstanding showing this year.”

“Great company to work with. Tech support staff are knowledgeable and available. Parts supply staff act very quickly. Best OEM to work with in the rotor-wing sector.”

– Vertical Magazine 2018 Airframe Survey

“Robinson is a delight to work with, so they get top marks in all survey categories...”

Professional Pilot – 2018 Helicopter Product Support Survey

www.robinsonheli.com
Pilots can fly an instrument approach and land in visibility as low as 1,000 feet RVR without using natural vision to see the runway with Gulfstream’s new EFVS Landing System.

Gulfstream first to certify EFVS landing system

by Matt Thurber

When owners take delivery of their new Gulfstream G500 or G600, the pilots who fly these new jets will be able to do something unique, land in poor visibility solely by reference to the enhanced flight vision system (EFVS) image on the head-up display, without ever seeing the runway environment or the ground with their natural vision.

This is a remarkable development, given that the new FAA regulations allowing EFVS-to-land operations were issued in December 2016. Gulfstream is the first to achieve this, and it came as something of a surprise, briefly mentioned in a July 2018 statement announcing FAA certification of the G500 (or as it’s known in FAA paperwork circles, the GVII).

According to the flight manual for the G500, “The demonstrated performance of the installed EFVS Landing System meets the criteria of AC 20-167A for EFVS operations conducted in accordance with 14 CFR Part 91.176(a) in visibility conditions sufficient to safely complete the rollout with EFVS function.”

The AFM continues describing the operational procedures for this capability: “The installed EFVS Landing System on the GVII enables EFVS operations to touchdown and rollout allowing the aircraft to continue descent below DA/DH to touchdown and rollout with the EFVS display image providing the only visual cues for landing.”

While it also mentions that pilots might need a letter of authorization (LOA), ops specs, or management specs to conduct EFVS operations, there are other questions raised by this capability. For example, what kind of training do pilots need? Indeed, an LOA is required, and Gulfstream has been working on an LOA template to streamline the process for operators. Training is also necessary, and Gulfstream and FlightSafety International have developed a course for G500 and G600 customers.

Gulfstream was the first business jet manufacturer to certify an EFVS (enhanced vision system)—in 2001—which consists of a cooled infrared sensor and a head-up display (HUD) that depicts the EVS imagery. The idea for EVS came from a Gulfstream pilot who flew in the military with forward-looking infrared (FLIR) systems and thought the technology might benefit business jets. “We built a demonstrator in a surrogate piston airplane and found we could identify the airport environment to descend below decision altitude using sensors like infrared,” said Colin Miller, v-p of flight operations.

Gulfstream engineers worked with the FAA, which modified FAR 91.175 to allow descent below decision altitude or height (DA or DH). With the right equipment, pilots could descend 100 feet below DA/DH, greatly improving the rate of successful approaches and landings in poor visibility.

“We’ve been involved with the FAA in particular in creating the EFVS-to-land rule,” he said, “and with that [new rule] we developed technology to enable our airplanes to do that. We were ready when the rule was released to certify our systems. The G500 was first because it was in certification and we bundled it with that.” Follow-on approvals for other models will come next, he added, as well as including other training providers such as CAE.

For training, it turns out that no changes to simulators are required, according to Stefan Eling, Gulfstream chief pilot, advanced concepts and technology. Essentially, the equipment in the aircraft already met the requirements of the new EFVS advisory circular (AC 20-167A), and it just needed validation that it met the requirements. “Validating the current design complies with the certification requirements of the new operating rule,” he explained.

In the G500 and G600, the HUD is a Rockwell Collins system, and the entire system is designated EVS III. The G650 and late-model G550 and G500 have EVS II, and models before that EVS I. Gulfstream is working on EFVS-to-land for the EVS II and I systems, according to Eling, and has developed a certification plan that has been accepted by the FAA.

For testing of the EFVS Landing System on the G500, Gulfstream pilots flew about 50 approaches, demonstrating that the system helped pilots safely land and roll out without using natural vision to see anything outside other than the EFVS imagery on the HUD.

“We chased the weather,” said Eling. “We would wake up at 2 a.m. and take a look at the weather forecast and try to find the worst-possible visibility on the Atlantic seaboard.”

Both Eling and Miller have flown the system, although Miller wasn’t testing it as part of the certification program. “I’ve flown a number of very low visibility approaches,” said Eling, “and the performance of the camera system that’s in the airplane is outstanding and gives a compelling picture to the pilot that makes it clear that the approach lighting system and the runway touchdown zone environment is very visible. It is a great benefit to operators.”

“It’s clear to me that I can use the infrared image alone,” said Miller. “There is plenty of acuity and great spatial detail.”

While the operational limitation for the EFVS Landing System is 1,000 feet RVR, Gulfstream pilots have tested to much lower visibilities. “I think there’s definite potential for the limit to drop,” he said. “As systems continue to evolve and we work with regulators, there is potential for a lot more. It’s a pretty awesome capability. It’s one of the reasons to operate these aircraft, to be able to go where you want to go when you want to be there.”

News Update

Garmin’s Budget Autopilot Certified in Beech Singles

The FAA has approved Garmin’s GFC 500 autopilot for installation on the Beechcraft Bonanza and Debonair. The STC covers models from the C33 through the C33, although certain serial numbers are excluded. An STC is also under way to install the GFC 500 in the F33A Bonanza. The GFC 500 integrates with the Garmin G5 electronic flight instrument; both retail for less than $10,000 (not including installation). For airplanes already fitted with a G5, a two-axi GFC 500 can be purchased for $6,995.

WhatsApp Now Live on Airtext Satcoms

Low-cost Iridium communication devices are a growing option for smaller business aircraft, but there is a limitation when traveling outside the U.S.—the inability to send and receive text messages from non-U.S. cellphone users. Send Solutions, which makes the Airtext line of portable and installable Iridium satcoms, has resolved that issue by connecting its service with WhatsApp’s text messaging. Airtext users can send and receive text messages to anyone with cellphone service from any provider via WhatsApp. The Airtext satcoms range from a portable $4,950 system for texting only to about $15,000 for an FAA-approved STC’d and PMA’d installable system that also offers voice calls via Iridium.

ABC Gains STC for iPad EFB on Global 6000

Quebec, Canada-based ABC Completions has received an FAA and EASA STC for installation of a mounting system and tablet interface for an iPad-based electronic flight bag in the Bombardier Global 6000. The STC uses DAI International’s GDC-64 tablet adapter interface unit to provide electrical power and aircraft position from the Global’s Rockwell Collins FMS. Optional SiriusXM Weather is also available via the tablet interface. The iPad is housed in a powder-coated aluminum housing affixed to a fully articulated mount.

Appareo Adds Twin Cessnas to ADS-B Solution

Appareo’s approved model list (AML) STC for the Stratus ADS-B Out transponder has been expanded to include twin-engine airplanes, starting with the Cessna 400-series, including the 425 (Corsair and Conquest I) turboprops. The AML-STC now covers 219 airplane, for installation of Appareo’s Stratus ES and ESG 1090-MHz transponders. The Stratus ES can pair with approved position sensors in Garmin and Avidyne navigators, while the ESG includes its own qualified GPS. The Stratus ES/ESG can share an external antenna with most types of portable ADS-B receivers, including Appareo’s own Stratus series of receivers. The ES retails for $2,495 and the ESG for $2,995. M.T.
Chicago Jet’s Falcon 900 InSight upgrade on STC path

by Matt Thurber

Owners of Falcon 900s have a new option for a modern NextGen-capable flight deck: Chicago Jet’s soon-to-be approved InSight Display System, which has received a supplemental type certificate (STC) number from the FAA, in preparation for full STC approval in early 2019. The company also has developed the Pro-Link dual integrated FMS, which adds NextGen capabilities to Pro Line 4-equipped business jets. Chicago Jet offered live demos of its 900 five-display InSight flight deck at NBAA BACE.

The Falcon 900 STC, and soon a similar approval for the Falcon 50, is for installation of four Universal Avionics EFI-1040 InSight displays. “We are moving forward with a four-display option to get the InSight cockpit upgrade STC approved and available to the operators,” said Chicago Jet president Mike Mitera. A fifth InSight display will soon be certified, to replace the original engine indicating system.

The impetus for the Falcon 50/900 upgrade was not only to offer owners a lower-cost new flight deck than is currently available, but also to incorporate NextGen capabilities. These include synthetic vision, according to Chicago Jet, “advanced mapping capability, electronic charts, frequency management, and broadcast weather.” The InSight system can interface with existing components such as attitude and heading sensors, air data computers, radars, traffic systems, radios, and autopilots, and existing TCAS 7.1 and ADS-B systems are not affected by the STC. Included in the upgrade are digital audio control panels, LED glasshelf lights and overhead panel backlighting, and ATC safety voice approval.

The Pro-Link FMS upgrade future-proofs Pro Line 4-equipped jets by adding all the NextGen capabilities that exist now and that are on the near horizon, without the need to upgrade displays. The upgrade includes dual Universal Avionics FMSs and the Pro-Link system.

These capabilities include LPV approaches, controller pilot data link (CPDLC) digital clearances with domestic U.S. data comm and push-to-load functionality, FANS 1/A+ oceanic, and European ATM-Bi. The en route DataComm service in the U.S. begins next month at Indianapolis Center, according to Chicago Jet. ATN-Bi (Aeronautical Telecommunications Network) is already operating in Europe above FL285, and this is similar to en route DataComm and includes push-to-load.

There are two benefits to push-to-load, Mitera explained. One is that when receiving a digital clearance (DCL) on the ground, the clearance can instantly be loaded into the FMS without having to re-type it manually. In the air, push-to-load enables pilots to load an ATC instruction directly into the FMS, again without having to manually enter it and also without having to talk to the controller on the radio. For U.S. pilots flying in Europe, this is particularly helpful when the controller isn’t a native English speaker and also when receiving an instruction with a European 8.33 MHz frequency, which has more digits that could easily be misinterpreted during a voice radio call.

The Pro-Link dual FMS upgrade is slated for certification first on the Gulfstream G200, then the Falcon 50/50EX and 2000/2000EX, followed by other Pro Line 4-equipped jets.

Some NextGen upgrades currently on offer for these aircraft don’t include all the same features, such as ATN-Bi, according to Mitera. “We noticed an increasing awareness by the operators of aircraft equipped with Pro Line 4 avionics that a comprehensive upgrade solution for NextGen compliance was not available or only meets some of their needs,” he explained.

While not required for the Pro-Link upgrade, owners can also opt to replace the old Rockwell Collins Pro Line 4 displays with Universal Avionics InSight displays. “Upgrading legacy navigation equipment with Pro-Link NextGen-capable components provides the one compelling argument for owner/operators to investigate what a considerable return on avionics upgrades will mean for their aviation investment,” he said.

IS&S ThrustSense offers VMC protection

Innovative Solutions & Support will complete ThrustSense autothrottle certification of the Beechcraft King Air early next year with additional capability, including Vmcas mitigation and hot start protection. Further, the company will add hot start protection and in-trail spacing to the STC for the FAA-certified full regime Pilatus PC-12 autothrottle during the same time frame. The King Air and PC-12 ThrustSense systems provide Fade-outlike functionality while providing speed-envelope protection, IS&S said.

For King Air Vmcas mitigation, ThrustSense continually monitors multiple engine parameters and will detect the loss of an engine and then computes the amount of rudder authority loss due to the reduction of airflow over the rudder. It uses this to calculate the reduction in thrust from the remaining engine to prevent excessive yaw.

Real-time yaw monitoring provides additional safety in engine-out conditions. Hot start protection on the King Air and PC-12 warn the pilot of an impending hot start, allowing the pilot to close the fuel cut off lever to protect the engine.

In-trail spacing will be available on the IS&S PC-12 4D NextGen Flight Deck equipped with ThrustSense, enabling the pilot to automatically follow an airplane along its track at a constant speed/distance as requested by ATC.

The IS&S ThrustSense autothrottle is offered as a $68,000 standalone installation integrated with the company’s integrated standby unit (ISU) for the King Air, at a cost of either $325,000 or $225,000 with one or its two of its 4D NextGen flight decks, respectively.

According to IS&S, the integrated autthrottle is the first full-regime system certified for the King Air. From takeoff to landing phases of flight, including go-around, it allows the pilot to automatically control engine power settings and automatically computes and controls power levels to reduce pilot workload.

ThrustSense computes thrust, holds selected speed/torque, and implements appropriate limit protection. When engaged by the pilot, the autothrottle system adjusts the throttles automatically to achieve and hold the selected airspeed guarded by a torque/temperature limit mode.

Protection modes will automatically activate, regardless of autopilot engagement state in an attempt to keep airspeed, torque, and temperature from exceeding predefined targets. During engine out, ThrustSense automatically adjusts the power of the remaining engine below Vmc, mitigating adverse yaw and allowing the aircraft to safely accelerate under full control. The use of the autothrottle ensures stabilized approaches by controlling speeds in descent, preventing the airplane from getting too slow or too fast and protecting against overtorque and overtemp.

The ThrustSense control panel executes software to control the autothrottle actuator and is available in different sizes for various cockpit configurations. The thrust computer in the control panel computes and controls torque during all flight phases including climb. If the pilot manually adjusts the power lever and approaches torque or temperature limits, the autothrottle will warn the pilot. The control panel features a high-resolution LCD display with full LED backlighting for improved reliability. ThrustSense can be installed with minimum modifications to the existing flight deck and no structural modifications to existing throttle quadrants. M.H.
Viking Air to take over Q400 program

by Gregory Polek

Bombardier will sell its Q400 turboprop program to Viking Air parent Longview Aviation for $350 million as part of a streamlining exercise expected to include the elimination of some 5,000 jobs over the next 12 to 18 months, the company announced last month. Bombardier also said it agreed to sell its business aircraft training unit to CAE for $645 million. The company expects both transactions to close by the second half of 2019 and generate net proceeds after assumption of certain liabilities, fees, and closing adjustments of $900 million.

The sale of the Q Series turboprop line leaves the CRJ regional jet as the sole remaining commercial aircraft program for Bombardier Aerospace, which sold a controlling stake in its most ambitious program to Airbus in July. The manufacturer confirmed last month. Bombardier completed negotiations over the C Series sale, it predicted a bright future for the Q400, and during a June 21 briefing with reporters in Mirabel, Quebec, Bombardier Commercial Aircraft president Fred Cromer endeavored to erase any lingering notion that the company’s recent sale of its turboprop assembly site in Downsview, Ontario, could signal a waning commitment by the company to the Toronto area. At the time, the Q400 appeared to have begun to recover some sales momentum after several years of dominance in the turboprop market by rival ATR. A firm order for 10 airplanes in an 82-seat layout from Ethiopian Airlines in April raised hope that an earlier order for 50 nine-ty-seaters in September 2018 from India’s SpiceJet amounted to more than a temporary reprieve for the big propjet.

Now it appears that Cromer’s talk about lowering program costs to improve the Q400’s market competitiveness signaled more than a possible effort to outsource the manufacture of certain subassemblies. Further initiatives include an effort to “right-size” and redeploy its central aerospace engineering team. Bombardier plans to send key engineering team members to other business segments, the largest group moving to Business Aircraft. It also plans to establish a new Advanced Technologies Office (ATO) led by François Cara, who the company has named chief technology officer. The ATO will focus on systems design and engineering, including applying experience from Bombardier’s aerospace programs to its rail transportation business.

Bombardier estimates the resulting reduction of some 5,000 positions across the organization will lead to an annual savings of $250 million at full run rate, which it expects to occur by 2021.

SkyWest’s E2s cut from order backlog

Sending another signal that hopes for a relaxation of U.S. airline pilot union scope clauses have dimmed, Embraer has removed from its backlog an order for 100 E175-E2s from Utah-based SkyWest, the manufacturer confirmed last month. However, the terms of the order, placed in 2013 upon the program’s launch, have not changed, said Embraer CFO Nelson Salgado during the company’s third-quarter earnings call with investment analysts.

The removal of the 100 aircraft from the order backlog comes soon after the cancelation of an order for 24 E190s by JetBlue, which opted instead to replace its current fleet of E190s with Airbus A220s. The two moves together contributed to a reduction in Embraer’s backlog from $17.4 billion at the end of June to $13.6 billion at the end of September.

The uncertainty about the SkyWest order derives from restrictions written into the pilot contracts of the three major U.S. airlines that effectively limit the maximum takeoff weights of the airplanes flying for their regional affiliates to 86,000 pounds. Although both the E175-E2 and the Mitsubishi MRJ90 can meet the 76-seat capacity limitations in those scope clauses through configuration in a two-class cabin layout, neither airplane can meet the mtow limits, effectively disqualifying them from use by U.S. regional airlines.

Embraer, which claims an 85-percent share of the 76-seat market in the U.S., continues to advertise the current GE CF34-powered E175 as a cost-effective alternative to the E2 in the U.S. For its part, Mitsubishi has said it believes the smaller of its two MRJ variants, the MRJ70, will fill the need for 76-seat lift in a single-class configuration. It does not expect that airplane to reach the market until 2022, however.

Mitsubishi, in fact, has placed more emphasis on improvements to the smaller variant as pilot unions appear unlikely to relax the weight limitations in the next round of bargaining. “We are operating under the assumption that fundamentally there will be limited change [to scope clauses],” conceded Mitsubishi MRJ chief development officer and head of program management Alex Bellamy in a recent interview with AIN.

G.P.
Airbus A330-800 flies, testing to last 300 hours

by Gregory Polek

The first Airbus A330-800 took off on November 6 from Blagnac Airport in Toulouse for its maiden flight over southwestern France. The aircraft, MSN1888, will perform dedicated flight-physics tests required for the smaller variant of the A330neo family, launched in 2014 as a more fuel-efficient replacement for the A330-200.

Plans call for the Rolls-Royce Trent 7000-powered A330-800’s certification development to last around 300 flight-test hours, allowing for planned EASA approval next year. Its sibling, the larger A330-900, recently completed its development testing and certification program, validating the A330neo family’s common engines, systems, cabin, and flight and ground operations.

An October 15 purchase agreement with Kuwait Airways for eight A330-800s gave Airbus a badly needed launch customer for the A330-800, whose previous initial customer, Hawaiian Airlines, canceled its commitment for six examples in favor of Boeing 787-9s in late February.

Firm orders for the A330neo topped 224 from 14 customers at the end of September, but all for the -900. Delta Air Lines signed as the launch customer of the A330neo and TAP Air Portugal as the launch operator. Air Asia X remains the biggest customer, holding an order for 66.

Upgrades of the A330-200 and -300 respectively, the A330-800 and A330-900 can seat 257 and 287 passengers in a typical three-class configuration. The -800 offers a capacity of up to 406 in a high-density LCC configuration.

Boeing guidance on Max stall protection under fire

by Gregory Polek

Boeing failed to communicate with 737 Max operators new procedures for addressing cases in which the airplane’s automatic stall prevention system commands the nose of the airplane downward, potentially resulting in the kind of steep dive that appears to have led to the October 29 fatal crash of Lion Air Flight 610, according to U.S. pilot union officials.

Meant to improve pitch response at high angles of attack and prevent pilots from raising the airplane’s nose too high, the maneuvering characteristics augmentation system (MCAS) in the 737 Max 8 and Max 9 does not appear in the 737 NG. Engineers made the change to address differing stall characteristics in the Max resulting from its larger and heavier CFM Leap-1B engines. MCAS can, however, force the airplane into a dive under circumstances such as faulty inputs from its angle of attack sensors, potentially leading to a crash, according to an emergency airworthiness directive issued by the FAA.

The November 7 AD required a revision to the chapters in the airplane flight manual dedicated to certificate limitations and operating procedures for addressing runaway stabilizer. It also highlighted the procedures to follow in the event of runaway horizontal trim caused by faulty angle-of-attack inputs to the airplane’s flight control system. According to the AD, analysis performed by Boeing showed the defect could lead to repeated nose-down trim commands of the horizontal stabilizer, thereby compromising aircraft controllability and leading to excessive nose-down attitude, “significant” altitude loss, and, ultimately, a crash.

The directive came a day after Boeing issued an operations manual bulletin in response to investigators’ findings that the Lion Air 737 Max 8 that crashed into the Java Sea on October 29 experienced erroneous input from one of the sensors. The Boeing bulletin directed 737 Max operators to follow existing procedures to address circumstances of false input from the airplane’s angle of attack (AOA) sensors.

For operators, part of the appeal of the Max centered on the ease with which NG pilots could transition to the new model with minimal training differences and no additional simulator time. In fact, the latest revision of the FAA’s Flight Standardization Board Report for the Boeing 737 family, dated October 17, does not call for any differences training related to the MCAS.

Air Astana to launch Kazakh LCC

Kazakhstan’s Air Astana plans to begin operating its own low-cost airline named FlyAstana in mid-2019 with four of its Airbus A320s in an all-economy, 180-seat configuration. Speaking with AIN before a public announcement, Air Astana CEO Peter Foster said the fleet will grow to at least 15 airplanes by 2022. Plans call for FlyAstana’s network to consist of new and present routes now flown by Air Astana, which has contracted with S7 Technics in Moscow to perform aircraft reconfiguration and painting.

“Initially [FlyAstana] was conceived as a defensive strategy in response to local airlines, as well as Air Arabia, Wizz Air, and Russia’s Pobeda, all of whom are increasingly aggressive in this market,” Foster told AIN. “We intend to enter the market aggressively and grow new markets.”

He added that a study revealed a low incidence of air travel per capita of 0.22 trips per year in Kazakhstan. “For a country of our size and income level [that] presents a huge opportunity to grow total market, if we execute correctly,” said Foster.

Foster credits the founder of Indian low-fare carrier IndiGo, Rahul Bhatia, for planting the seeds for the concept over dinner in Delhi last October. “We look at India and see a highly successful airline, IndiGo, and expect to follow its example,” he said.

Challenges include undeveloped infrastructure, as Kazakhstan’s airports still haven’t fully equipped themselves with buses or ramps to allow travelers to service an aircraft when it arrives at a stand, for example. “The principal challenge will be airports’ infrastructure and the ability to turn around the aircraft in thirty to forty minutes,” explained Foster.

Ancillaries will prove crucial to the business plan of FlyAstana, 20 percent of whose revenues would come from seat selection, in-flight food, and baggage charges, said Foster.

Plans call for FlyAstana to operate from multiple airline bases in Kazakhstan, the identity of which Air Astana expects to reveal in the coming months. Astana International Airport, the carrier’s secondary hub that hosts Air Astana’s Aviation Technical Center, ranks as a strong contender. However, FlyAstana cannot make Astana its hub for flights to Russia once it starts to fly internationally unless Air Astana drops its Russian routes. While Kazakhstan and Russia have agreed to allow 14 flights per week and add one more carrier each, the pact does not allow the additional airlines to maintain an affiliation with the respective countries’ national carriers, explained Yolanta Strikitsa of London-based Strikitsa Consulting.

She added that while an LCC model could work on routes such as Karaganda-St Petersburg or Almaty-Yekaterinburg, more attractive LCC routes will present themselves in neighboring Central Asian capitals and cities, China, and the Middle East.

Kazakhstan’s Samruk-Kazyna Fund owns a controlling stake in both Air Astana and Almaty-based LCC Qazaq Air, prompting Strikitsa to raise concern about the competitive implications. “The Kazakh market is not large enough for both new LCCs, especially since they belong to the same owner,” said Strikitsa. On whether the move to launch a new LCC could augur consolidation, Foster explained: “It’s not an aim but may be a consequence.”

N.M.
ARSA Challenges NTSB Repair Station Revocation Order

The Aeronautical Repair Station Association (ARSA) filed an amicus (friend of the court) brief to the U.S. Court of Appeals for the District of Columbia, asking the court to reverse the NTSB’s action to uphold the FAA’s revocation of the repair station certificate of Arlington, Texas-based AeroBearings “for improperly overhauling and repairing turbine engine bearings.”

In its original revocation, the FAA claimed that “AeroBearings routinely disassembles, inspects, and overhauls turbine engine bearings without possessing the data necessary to perform key aspects of that safety critical work. The FAA further alleges that the repair station intentionally falsified documents certifying that these repairs were accomplished in accordance with appropriate data and federal safety regulations.”

According to ARSA, the FAA’s order of revocation “alleged falsification of multiple maintenance releases based on incomplete information in block 12 of FAA Form 8330-3. During the original proceedings, the inspector agreed there was no false or incorrect information on any of the forms; the entries were simply incomplete.” FAR Parts 43 and 145 do not require inclusion of “maintenance record” information in block 12, ARSA explained.

According to ARSA, the NTSB’s order means maintenance providers that don’t include the complete maintenance record in the maintenance release have been falsifying maintenance records for many years.

Textron Aviation Expands Canada MRO

In a sign of further consolidation of the business aviation MRO segment, Textron Aviation has purchased assets of Calgary, Canada-based Aspect Aircraft Maintenance and formed a new subsidiary—Textron Aviation Canada—to expand the company’s maintenance capabilities. The acquisition of the Asset assets is “the first phase of the expansion,” according to Textron Aviation.

Textron Aviation already bases one of its mobile service units (MSU) at Aspect Aircraft, and it is establishing a new MSU in Toronto. The Calgary MSU operates under a Canada-approved maintenance organization certification, which covers MRO on Citations, King Airs, and Hawkers. Textron Aviation will add technicians to the Calgary MSU team and expand AOG support and services such as limited inspection items and engine maintenance.

“Today there are more than 500 Citation, King Air, and Hawker aircraft operating throughout Canada,” said Textron Aviation senior vice president customer service Kriya Shortt. “With our customers flying in nearly every corner of the globe, it’s essential that we’re always within their reach.” The Canada subsidiary joins new Textron Aviation service capabilities established this year that include four new MSU bases in North America and a Biggin Hill Airport line maintenance station near London.

Dallas Airmotive Completes Consolidation, Boosts Hiring

Dallas Airmotive, a BBA Aviation Global Engine Services (GES) company, has completed its consolidation of four locations into one facility at Dallas Fort Worth International Airport, where the company has more than 400 employees. With business growth trending upward, Dallas Airmotive is supporting a continued initiative to bolster its employee base with increased hiring efforts. The company said the growth of its personnel will help to foster relationships with customers seeking aftermarket aircraft engine repair and overhaul services. BBA Aviation also named Hugh McElroy president and COO of the group’s GES companies. McElroy has 16 years of experience with BBA and is rejoicing the team after a three-year absence to work as CEO of Dallas Lighthouse for the Blind.

“GES continues to be a predominant provider of engine MRO support and with the recent facility upgrades and other operational improvements, I believe we are well positioned for continued success,” said McElroy.

StandardAero Boosts Capacity at Miami Location

StandardAero has completed a 30,000-sq-ft expansion project at its Miami facility that included a clean room, an additional vacuum furnace, and water jet cleaning capabilities. The addition will make the location the largest provider of aerospace combustor overhauls in North America and the world’s second largest, according to StandardAero, which acquired the former privately held Jet Aviation Specialists facility last year.

“Since becoming a part of the StandardAero family in 2017, we have enjoyed the support and resources that the company has brought to bear on our Miami operations,” said Diego Beltran, the facility’s vice president and general manager.

Boeing, Flightdocs Ink Exclusive Partnership

Under a multi-year agreement announced during NBAA 2018, Boeing will be the exclusive marketer and sales agent for Flightdocs Enterprise platform, a full-service maintenance, compliance, and inventory management solution for the business and general aviation market. The companies also signed a memorandum of understanding (MOU) to integrate Flightdocs Enterprise with Boeing Global Services’ portfolio of companies, products, and services, including Aviall, Inventory Locator Services, and Jeppesen.

William Ampofo, vice president of business and general aviation at Boeing Global Services, said the partnership “will deliver end-to-end, industry-first solutions to business and general aviation operators,” as the two companies collaborate to offer enhanced, cloud-based aviation maintenance, compliance, and inventory management software.

Gulfstream Adds To PBI Service Center

Gulfstream Aerospace will construct a larger service center at its Palm Beach International Airport (PBI) location in Florida, the latest in a spate of recently announced service space expansions. Its planned 115,000-sq-ft PBI facility will include offices, back shops, and an approximately 75,000-sq-ft hangar located adjacent to a planned FBO operated by sister company Jet Aviation. The two companies will invest more than $50 million in the project, and the combined facilities will cover more than 169,000 sq ft. Groundbreaking is scheduled for later this year, with the opening expected by the first quarter of 2020. The expansion will replace the smaller facility Gulfstream now operates at PBI and create some 50 jobs, doubling Gulfstream’s workforce at the location.

Gulfstream has recently announced a 50,000-sq-ft expansion of its Van Nuys, California maintenance facility, co-branded with Jet Aviation, set to open in early next year. Meanwhile, its Appleton, Wisconsin completion and service facility is in the midst of a 200,000-sq-ft upgrade scheduled to come online in the second quarter of 2019. Another 200,000 sq ft of service space is being added to Gulfstream’s Savannah, Georgia headquarters, bringing the company’s total footprint at the site to almost one million square feet. It is also building a 200,000-sq-ft service facility at Farnborough Airport in the UK.

Wyvern Partners with MRO Insider To Provide Audits

Wyvern has partnered with MRO Insider to provide an audit standard and audit services called MRO Audit. As an operator-driven quote comparison tool, MRO Insider currently features more than 100 subscribed maintenance facilities and 400 corporate aircraft. According to Wyvern, its MRO Audit tool can be tailored to any of MRO Insider’s maintenance facilities and aircraft.

MRO Audit is a product that builds upon Wyvern’s existing audit programs. The new audit features an MRO audit program manual, audit tools, audit processes and procedures, audit report templates, and audit tracking software. MRO Insider provides a free service for aircraft owners and operators to submit RFQs after evaluating subscribed maintenance facility profiles and associated customer reviews on the website. Maintenance facilities electing to have their profiles on the website pay a monthly fee for a company listing and associated quoting ability.
REGISTER NOW

Attendees: Register at rotor.org/register by January 18, 2019 and Save at Least 40%

EXHIBIT NOW

Exhibitors: Apply for space at rotor.org/exhibit and reach 18,000 industry professionals from 82 countries

Make the Connection

March 4–7, 2019 • Atlanta
Georgia World Congress Center
Exhibits Open March 5–7
#haiexpo19

EXHIBITOR VIDEO

ATTENDEE VIDEO
Bent Wing Flight Services’s newly completed FBO has given Florida’s Amelia Island a new landmark. Viewed from the air, the terminal at Fernandina Beach Municipal Airport resembles the famed F4U Corsair fighter, known for its cranked wings.

New FBO Terminal ‘Lands’ at Florida Airport
Bent Wing Flight Services, the lone FBO at Florida’s Fernandina Beach Municipal Airport (FHB), has begun operations from its new terminal. Designed to represent a World War II F4U Corsair fighter in honor of the pilots who flew the “Bent Wing Bird” from the Navy training field that later became FHB, it features a nose section, skylight “cockpit,” and tail as well as the distinctive inverted gull wings that earned the airplane its nickname.

The interior includes a two-story glass-enclosed lobby with a half-scale Corsair replica suspended from the ceiling. Furnished with a custom reception desk crafted from the fuselage and wing flap of a WWII T-6 trainer and aviation-themed leather seating, the terminal offers a comfortable crew lounge with shower facilities, flight planning room, crew cars, two conference rooms, a coffee bistro, car rental, and pilot/gift shop. The location also provides full- and self-service fueling options, hangar space, and concierge service.

“American Aero FTW continues to set the pace for the industry when it comes to safety management and risk mitigation,” said IS-BAH program director Terry Yeomans. “By doing so, they demonstrate their leadership in creating a performance-based, risk-averse culture that is centered on excellence.”

Driven by safety management system (SMS) culture, IS-BAH focuses on all aspects of FBO operations. Stage 1 of the program confirms that SMS infrastructure is established and that all safety management activities are appropriately targeted. Stage 2 ensures that any safety risks are being effectively managed, while Stage 3 verifies that safety management activities are fully integrated into the FBO and that a positive safety culture is being sustained.

New Jersey’s Capital Airport to Get New FBO
FlightServ, which began providing FBO services at New Jersey’s Trenton Mercer Airport at the beginning of last year, has received permission from the county and the airport authority to build a new FBO and hangar facility. The company has secured a ground lease on a 22-acre site at the end of Runway 34, which was formerly occupied by the U.S. military’s Naval Warfare Center. FlightServ—a sister to private lift provider Aviation Charters, which has operated at the airport since 1985—broke ground last month on a modern FBO with corporate tenant offices and 80,000 sq ft of hangar space, large enough to accommodate the latest ultra-long-range business jets.

The Avfuel-branded location will also offer general aviation tie-downs, a delcing facility, and a 44,000-gallon tank farm for jet-A and avgas when the facility opens by the end of next year.

Another New FBO in the Works in Hawaii
Two months after it was announced that Hawaii’s Kona Ellison Onizuka International Airport would receive a new FBO terminal and private aviation hangar project comes word of a second. Av8 Partners, a consortium of companies that includes Airport Business Solutions, has been granted a 55-year ground lease at the south end of the airport, where it plans to break ground soon on a new complex.

The Kona Jet Center will include a 7,000-sq-ft terminal with a 40-foot-high atrium, lounges, conference rooms, Wi-Fi throughout the property, two large hangars capable of sheltering the latest ultra-long-range bizjets, and a 50,000-gallon fuel farm.

The company expects the FBO to be operational by the end of 2019. It has selected Avfuel as its fuel supplier and will employ local customer service representatives who will be trained in the Ritz-Carlton aviation program, as well as NATA Safety 1st-educated line staff.

Florida Airport Wraps Major Runway Rehab
Fort Myers, Florida’s Page Field has completed a nearly two-year-long runway and taxiway rehabilitation project. Work on Runway 5/23 and its associated taxiways began in January 2017, milling the runway down and overlaying new pavement. The $19 million first stage of the project also saw the rehabilitation of Taxiway A and its connectors and a realignment of Taxiway C, which involved full-depth pavement removal and reconstruction. In addition, the airfield lighting vault (ALV) was demolished and replaced with a new ALV and backup generator, while new taxiway and runway LED edge lights were installed. PAPI systems were also added, along with other navigational equipment updates.

The second stage of the project, which cost an additional $8 million, concentrated on Runway 13/31 with a two-inch mill and overlay on the center keel of the runway, while the outer edges had full depth replacement. Taxiway E was also extended from the E2 connection to the end of Runway 13. As in the previous phase, LED lighting was installed along with new signage.

At its Avfuel-branded FBO, the Fort Myers airport is currently engaged in a new $6.5 million hangar and ramp project, which began in May. It is constructing a 25,000-sq-ft hangar with office space, and an additional 54,000 sq ft of ramp, which is expected to be completed in the spring.

Second FBO Coming To Wichita Airport
Kansas aviation services provider Clemens Aviation has received the green light to establish a new FBO at Wichita Colonel James Jabara Airport (AAO). The company, which provides aircraft handling at nearby privately owned Lloyd Stearman Field and operates aircraft management/charter and maintenance businesses there, plans to break ground early next year on a $9 million, full-service complex at Jabara. Its Jabara facility will include a 60,000-sq-ft hangar capable of sheltering the latest big business jets and an adjoining 8,000-sq-ft terminal.

When completed by the end of next year’s third quarter, it will give the airport its second FBO. According to company owner Dwayne Clemens, the expansion into AAO will include Clemens’s Part 135 charter division, as well as Part 145 heavy maintenance. The company also operates a fuel division, which allows it to buy directly from the refineries as an independent unbranded dealer, which Clemens told AIN should allow it to pass fuel price savings along to customers.

Sky Valet Completes Ibiza FBO Renovation
European FBO operator Sky Valet completed a major renovation of its FBO in the business aviation terminal at Ibiza Airport in Spain’s Balearic Islands. The company, one of two service providers at the tourism destination, moved into the terminal a year ago and immediately began the modernization project. Its remodeled facility offers 6,200 sq ft (575 sq m) of space for luxury passenger lounges, dedicated security screening, conference room, offices, and crew lounge with snooze rooms and showers, as well as an additional 2,150-sq-ft welcome and transit area.

Sky Valet Spain also offers full ramp services for aircraft of any type with its dedicated handling team. The company has 22 locations throughout France, Spain, and Portugal.
Because her treatment isn’t just around the corner.

Brooklyn D., is a burn patient from New York receiving treatment at Shriners Children’s Hospital in Cincinnati. She has received over 26 free PALS Flights.

Patient AirLift Services - PALS Flights
connecting people in need, like Brooklyn,
with Charitable Aviation

www.PALSflight.org • 631-694-PALS (7257)
Volunteer, Request a PALS Flight, Make a Donation
A preliminary report issued by Iran’s Air-Crash Accident Investigation Board on September 30 identifies widening discrepancies between the left and right airspeed indicators as the first anomaly in a sequence that ended in the destruction of the aircraft less than nine minutes later. All three crew members and eight passengers on the Turkish-registered corporate jet were killed when it struck a mountainside at an altitude of about 7,500 feet. The airplane had departed from Dubai’s Sharjah Airport in the United Arab Emirates an hour and a half earlier with an intended destination of Turkey’s Istanbul-Ataturk Airport.

Three and a half minutes after a sector handoff at Flight Level 360, the pilot requested and received clearance to climb to FL380. Reaching FL379, the pilot reported a malfunction and began descending to FL370 without waiting for a clearance. Airspeed as measured by radar decreased from 360 to 316 knots during the climb, then to 288 knots as the pilot reported a continued descent to FL340. Five and a half minutes after the initial climb request, the pilot reported being unable to maintain altitude at FL340. A garbled response to the controller’s request to state a requested flight level was the last transmission received from the aircraft, whose airspeed and altitude continued to decrease until it disappeared from radar three minutes later.

Investigators recovered the jet’s flight data and cockpit voice recorders, which revealed that its left- and right-side airspeed indicators began to diverge while it was still in level flight at FL360. This apparent unannounced climb was initiated when the discrepancy reached 10 knots, triggering a warning chime. The left ASI initially showed increasing airspeed while the right indicated a continuing decrease; thrust was reduced to idle as the airplane climbed through FL370. A series of stall warnings and stick shaker activations followed an initial overwash warning (presumably triggered by the left-side airspeed readout). The flight crew never completed the Quick Reference Handbook’s procedures for resolving unreliable airspeed indications, and after disconnecting the autopilot, the captain ignored the first officer’s repeated admonitions to lower the nose, instead responding to the second officer’s repeated climb request, the pilot reported being unable to maintain altitude at FL340. The airplane climbed through FL370.

A collision with a flock of snow geese caused the loss of an EMS helicopter en route to pick up a patient. The pilot and both medical crew members were killed when the Air Methods helicopter hit the bank of a reservoir shortly before 7 p.m., two hours after sunset on a moonless night. In its finding of probable cause, the NTSB noted that “multiple bird remains, identified as snow geese, were located in the cockpit and embedded in the pilot’s clothing and boot.”

While the pilot appeared to have been using night vision goggles, the lack of moonlight or ground illumination at the scene made it unlikely he could have seen the birds in time to avoid the collision. “It could not be determined if the bird strikes jammed the pilot’s controls and/or incapacitated the pilot.”

The material on this page is based on reports by the official agencies of the countries having the responsibility for aircraft accident and incident investigations. It is not intended to judge or evaluate the ability of any person, living or dead, and is presented here for informational purposes.

**Challenger Accident Followed Discrepant Airspeed Readings**

**Coast Guard Suspends Search for Missing Turboprop**

**Three Dead in Wanaka Helicopter Accident**

**Coast Guard Suspends Search for Missing Turboprop**

**FINAL REPORTS**

**Precise Cause Undetermined in Maltese Crash**

**Bird Strikes Bring Down HEMS Flight**

**Leicester City FC Owner Among Helo Crash Victims**

**Fatigue Contributed to Gear-Up Landing**

**by David Jack Kenny**

**November 2017, STUTTGART, ARKANSAS**

A collision with a flock of snow geese caused the loss of an EMS helicopter en route to pick up a patient. The pilot and both medical crew members were killed when the Air Methods helicopter hit the bank of a reservoir shortly before 7 p.m., two hours after sunset on a moonless night. In its finding of probable cause, the NTSB noted that “multiple bird remains, identified as snow geese, were located in the cockpit and embedded in the pilot’s clothing and boot.”

While the pilot appeared to have been using night vision goggles, the lack of moonlight or ground illumination at the scene made it unlikely he could have seen the birds in time to avoid the collision. “It could not be determined if the bird strikes jammed the pilot’s controls and/or incapacitated the pilot.”

**by David Jack Kenny**

**November 2017, STUTTGART, ARKANSAS**

A collision with a flock of snow geese caused the loss of an EMS helicopter en route to pick up a patient. The pilot and both medical crew members were killed when the Air Methods helicopter hit the bank of a reservoir shortly before 7 p.m., two hours after sunset on a moonless night. In its finding of probable cause, the NTSB noted that “multiple bird remains, identified as snow geese, were located in the cockpit and embedded in the pilot’s clothing and boot.”

While the pilot appeared to have been using night vision goggles, the lack of moonlight or ground illumination at the scene made it unlikely he could have seen the birds in time to avoid the collision. “It could not be determined if the bird strikes jammed the pilot’s controls and/or incapacitated the pilot.”
Take the future of flight to a higher note

SINGAPORE AIRSHOW 2020

Asia’s largest aerospace and defence event

The show returns in 2020 to propel your business to new heights. Strike a chord with global industry leaders, gain access to top decision makers in this thriving region, and impress them with your latest technologies and innovations.

HIGHLIGHTS FROM SINGAPORE AIRSHOW 2018

1,062 participating companies from 50 countries
287 VIP delegations from 91 countries and regions
54,151 trade attendees from 147 countries and regions
1,464 meetings conducted during the exhibition
**9th Annual Jetnet iQ Global Business Aviation Summit**

**Save your seat now, and you’ll also save $300.** Register by December 31, 2018, and receive the Early Bird rate for the hottest ticket in aviation. 2019 Summit speakers and panelists are a virtual “Who’s Who” of business aviation—experts with unique perspectives on the industry’s present and future. Join the discussion with global leaders, and sharpen your competitive edge with accurate and timely predictions. Register now online.

**INGITING IDEAS. PROVOKING CHANGE.**

**NEW INSIGHTS. NEW PREDICTIONS.**

June 4-5 | The Ritz-Carlton New York, Westchester

Three Renaissance Square, White Plains, NY

Registration: jetnet.com/summit

**Closing the Gap on Safety, Efficiency and Customer Service at FWA Aero Center**

**People in Aviation**

Compiled by Alexa Ruxroth

**Dennis Moore**

**Ben Nematzadeh**

**Vivi Liu**

Castle & Cooke promoted Tony Marlow to president of the company’s aviation division. Marlow previously oversaw the company’s FBOs as vice president. He has been with the company since 2008.

Johan Segring was appointed vice president and director of Stock Inmarsat appointed Kang Tang vice president of business and general aviation.

Dennis Moore joined Aviation Maintenance Professionals as CEO. Moore has held leadership roles at Rubbermaid, Petmate, and AAT.

Robert Wilson joined TurbineAero as chief executive officer. Wilson was formerly president of business and general aviation.

JetAviva is transitioning its leadership, with Cyrus Sigari, the current CEO and co-founder of the company, taking the role of executive chairman, effective at the beginning of next year. Tim White, JetAviva’s president, will succeed Sigari as CEO, while managing partner Dustin Cordier will step in as president to succeed White.

Wayne Starling was named executive director of the International Aircraft Dealers Association (IADA). Starling was recently the senior vice president and national sales manager for PNC Aviation finance and will provide support and direction for IADA in his new role.

Ben Nematzadeh has been appointed director of client services and employee development for Air 7.

Mente Group appointed Neil Kunicky managing director for the East Coast.

Bailey Wong has been promoted to director of customers and communications for NATA compliance services (NATACS).

Vivi Liu joined Asian Sky Group as business development director. Liu has a decade of industry experience and recently served as business development manager for Hong Kong Jet.

George Rolls was appointed director of private jets for Air Charter Service. Alion Aviation announced Paul Fronczak as director of operations.

Sona Adams has been appointed managing director of Northern, Central, and Western Europe for Air BP. Adams joined the group in 2001 and served as executive assistant to the CEO of BP Downstream during the past year.

Pro Star Aviation announced Sean Peterson as general manager of the company. Cutter Aviation appointed Chris Muise to client relationship manager for TBM aircraft clients and promoted Leo Hernandez to manager of aircraft service.

Special Services Corp. hired Doug Rumminger as a dispatcher. Premium Jet added Peter Baiker and Matthias Gramlich to its charter sales team.

Corey Bothwell has joined Heron Aviation’s sales and dispatch team.

Gulfstream Aerospace’s Thomas Horne has been inducted as a fellow in the Society of Experimental Test Pilots. Horne currently serves as the director of flight operations test for Gulfstream and was a flight test engineer and F-16 fighter pilot in the U.S. Air Force before joining the company.

Crina Sentaru joined Heron Aviation’s CAMO team.

**Final Flights**

Cheri Rudd, who served as the gatekeeper at NBAA as the manager of office coordination for nearly 30 years, died unexpectedly October 15. Rudd joined the association in 1990 as a receptionist after holding a number of similar posts in various other Washington, D.C. organizations.

“We at NBAA are heartbroken to have lost our friend and colleague Cheri Rudd,” said NBAA president and CEO Ed Bolen. “Cheri was an extraordinary human being and a true professional.”

Rudd was among the first employees to be inducted into the “Order of the Orange Crate,” a recognition of staff members who “make NBAA a great organization,” the association said.

Vince Dostert, co-founder of Muskegon-based Executive Air Transport, passed away October 4 at the age of 94. Dostert, who took his first flight at the age of four in 1928, began his aviation career after graduating from high school in 1942 and joined the service during World War II flying C-46s.

After the war, he continued with the Air National Guard and flew for Francis Aviation in Lansing, Michigan. In 1959, he joined forces with friend Muriel Brown to launch Executive Air Transport, a Beechcraft dealer and charter operator. Dostert remained with the business until it was sold in 1971. He subsequently became a chief pilot for Misco Corp., a precision casting company later acquired by Howmet, remaining until his retirement in 1987.

Survived by four children, he was predeceased by his wife of more than 65 years, Alma.
**Within 6 Months**

**Dec. 31, 2018 NEW**

**U.S.: Revised ATP Certification Standards**

The FAA has proposed for comments revised Airline Transport Pilot type rating airman certification standards. The standards have not been updated in more than 10 years. Comments are due December 31.

Jan. 1, 2019

**EASA: CVRs and Underwater Locators**

By Jan. 1, 2019 the European Aviation Safety Agency (EASA) will require upgraded CVRs and underwater locating devices (ULDs). New ULDs must be capable of transmitting for at least 90 days instead of 30 days. Airplanes with an mtow of at least 59,500 pounds, with more than 19 passenger seats and performing transoceanic flights must be retrofitted with an additional ULD with “very long detection range.” Also, all CVRs with a 30-minute recording duration must be replaced by units with two-hour recording capability.

Jan. 2, 2019 **NEW**

**U.S.: N.Y. Helo Route Mandate**

The regulation mandating that pilots operating civil helicopters under VFR use a designated New York North Shore Helicopter Route when operating along that area of Long Island is scheduled to expire on Aug. 6, 2020. The FAA is seeking comments to determine if the mandate should be extended.

Jan. 15, 2019 **NEW**

**EASA: Runway Alerting Systems**

The European Aviation Safety Agency has issued a notice of proposed amendment to require the installation of a runway overrun awareness and alerting system on Part 25 large airplane operated in commercial air transportation. Comments are due by Jan. 15, 2019.

Jan. 31, 2019

**Canada: CRM Requirements**

Transport Canada has introduced so-called “contemporary” crew resource management training standards applicable to commercial aircraft operations, including air taxis. The new requirements go into effect Jan. 31, 2019. This latest iteration of CRM now includes the concept of threat and error management, which “advocates the careful analysis of potential hazards and taking the appropriate steps to avoid, trap, or mitigate threats and manage errors before they lead to an undesired aircraft state.”

Feb. 14, 2019

**U.S.: Air-taxi and Broker Disclosure Rules**

The DOT has issued final rules to toughen the requirements to better protect charter passengers from unscrupulous operators and brokers. The new requirements, effective Feb. 14, 2019, stem from several accidents in the early 2000s in which the NTSB investigations revealed illegal operations, unclear delineation between broker and operator, murky responsibilities, and poor federal oversight of the air-taxi business.

Feb. 28, 2019 **DELAYED**

**Australia: Fuel Requirement Rules**

New rules covering minimum fuel requirements for all Australian aircraft were scheduled to start on Nov. 8, 2018 but have now been extended to Feb. 28, 2019. The rules re-introduce a 30-minute fixed fuel reserve requirement, reduce reserve requirements for day VFR operations in small piston or turboprop airplanes and require pilots to conduct in-flight fuel management with regular fuel quantity checks.

**Beyond 12 Months**

**Jan. 1, 2020 and June 7, 2020**

**ADS-B Out Mandates**

**Jan. 1, 2020 and Jan. 1, 2023**

**Aircraft CO₂ Emissions**

**Jan. 1, 2021** **NEW**

**EASA: Cockpit Voice Recorders**

Cockpit voice recorders with a recording duration of at least 25 hours will be required on commercial airplanes with an mtow of 60,000 pounds or more manufactured from Jan. 1, 2021.
A flight in Clay Lacy’s P-51 Mustang for then-15-year-old Seattle resident Brian Kirkdoffer solidified the now-president and CEO’s passion for aviation and marked the onset of a career with Clay Lacy Aviation. In the company’s 50th year of operation, Kirkdoffer is steering it into the future after serving for almost 30 years. From washing airplanes and sweeping hangars to spearheading new facilities, Kirkdoffer has donned almost every hat at the company. Had it not been for direct influence from Clay Lacy himself, however, Kirkdoffer may have followed a very different career path. AIN got the chance to ask him about different phases in his career and aspects of his management style.

**On early days in Seattle:**
“|I was fortunate that Clay Lacy was flying out of Seattle for United Airlines. He got me started with flying and soloed me. We kept in touch as I [attended] the University of Washington. My degree was in business administration with an emphasis on finance, so I was going to go to Europe for a little while and travel and then come back and work in finance in either New York or San Francisco.”

Lacy suggested that instead of spending his money traveling, Kirkdoffer could come to California and Lacy would train him to be a Learjet copilot. He took the bait. “Around 1990, he wanted to see if he could get Clay Lacy Aviation Seattle going. The plan was for me to come to Seattle to be copilot of a Lear 35. I’d be head of getting new business, the hangar sweeper, the airplane cleaner, whatever it took.” But Kirkdoffer recognized the opportunity in California was better because “they were so busy there it didn’t make a lot of sense to fly less in Seattle. So, I stayed, and have been there for 29 years. That’s how I got hooked in with Clay Lacy Aviation.”

**On “paying it forward”:**
“I like to be a coach more than I like to be a boss. I love recruiting great people. I love empowering and training great people to do great things. I enjoy seeing their successes. People did that with me, and nothing makes me happier than seeing team members enjoy what they are doing and feel fulfilled in doing so. People have to want to do a good job. As management, we need to make sure they are empowered and have the resources to do so.

“When I flew a trip, I never felt it was 100 percent perfect. There was always something I could have done a little bit better. I try to instill that to management at Clay Lacy. Every day, try to be better than you were yesterday. If all 500 people are doing that, then spectacular things happen.”

**On focus:**
During one of their early flights together, Lacy imparted wisdom and a lesson upon Kirkdoffer that continues to echo through-out the company’s operation today.

“We were up in the air with the autopilot on, but I was worried about another airplane that was in maintenance. Clay looked at me and said, ‘You’re not thinking about this flight right now. Listen, when you’re flying these airplanes, it’s the only thing that should be on your mind, getting from A to B safely.’ I thought, he was absolutely right; and it’s an example of the infrastructure at Clay Lacy designed to make sure pilots are focused on getting from A to B safely—and exceeding client expectations—without other distractions. Our three things are safety, service, and value. In that order.”

**On meeting the workforce challenge:**
“We are fortunate in that Clay set a foundation to hire great people, empower them, and have them do great things. We need great people providing exceptional aviation experience for our clients. That is the vision that was held when Clay started the company and we are still doing that today.”

Clay Lacy Aviation is in its third year of offering maintenance technician scholarships through L.A. Unified School District’s North Valley Occupational Center (NVOC). The scholarship provides financial assistance with funds for tuition, tools, and FAA exam fees at NVOC’s Aviation Center located at Van Nuys Airport. The scholarship helped to support 46 students in the first two years and 29 of those students have continued with careers in aviation.

“We want to keep the aviation ecosystem as strong as possible, and it starts with making sure bright young minds get passionate about aviation. We’ve helped a lot of students continue their careers in aviation that otherwise couldn’t afford to do so.”

**On taking the reins in the mid-1990s:**
“The economic conditions were such that we had a couple of hangars that were sparsely occupied or empty. I had to go out and find people to rent these hangars. I [recommended] trying to get clients that would use all of our services. We now have over 100 aircraft that we manage, and I still have some of the same team today that was with me then.”

“Clay is a bit older than me, so there needed to be a transition. We talked about it for years, and that became my focus; how do I make that happen? I felt it was best for our employees and clients, so that was the thing that motivated me to take over majority ownership of the company.”

**On expansion and the future:**
“What’s very exciting for the future of Clay Lacy Aviation is that we have this foundation of 50 years but we have energy and enthusiasm like a startup. We’re focusing on how can we do innovative things to make a significant positive impact on the aviation industry.

After clients repeatedly asked why the company was not doing more in the Northeast, Clay Lacy Aviation acquired Key Air, an aircraft charter and management firm in Oxford, Connecticut, in 2016.

“We don’t acquire much. My preference is for more organic growth, but that opportunity has been great.”

**On FBO industry consolidation:**
“I think it’s good in many aspects for the industry but we offer a distinct competitive advantage because we are not part of that consolidation [financed by] financial investors. A financial investor is making a decision to invest based upon a financial return. Sometimes, the shareholders are looking for a financial return instead of a superior client experience that is not always aligned with what is best for clients.”

**On taking risks:**
“We’ve never acquired another company that was the size of Key Air. It had a great legacy, people, and culture that really fit into us, but it was a huge risk. I’m a very conservative person and you want conservative people running aviation assets.”

**On career-life balance:**
“My biggest passion outside of aviation is my family. I have a wonderful wife and two boys. When I was flying, I was gone a lot. So, you have to find that right kind of work-life balance.”

This is the premier business aviation conference for schedulers and dispatchers with over 2,900 attendees and over 460 exhibiting companies.
DECEMBER

AIRCRAFT ACQUISITION PLANNING SEMINAR...

EASA 12TH ROTORCRAFT SYMPOSIUM...

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 produce AINtv.com videos.

See ainonline.com for a comprehensive long-range aviation events calendar.

MARCH 2019

HELI-EXPO...
March 4-7, Georgia World Congress Center, Atlanta, GA. Info: (703) 683-8646, rotor@rotor.org; https://heliexpo.rotor.org/.

5TH ANNUAL SINGAPORE AVIATION SAFETY SEMINAR...
March 5-7, Singapore. Info: https://flightsafety.org/events/.


NBAA REGIONAL FORUM...
March 14, William P. Hobby Airport, Houston, TX. Info: www.nbaa.org.

WOMEN IN AVIATION...

AIA INTERNATIONAL CONVENTION & TRADE SHOW...
March 25-28, Palm Springs Convention Center, Palm Springs, California. Info: (816) 347-8400; debbim@aea.net; http://www.aea.net/convention.

APRIL 2019

SUN ‘N’ FUN INT’L FLY-IN EXPO...

COMMERCIAL UAV EXPO EUROPE...
April 8-10, RAI Amsterdam, Amsterdam, The Netherlands. Info: https://www.expouav.com/europe/.

ASIAN BUSINESS AVIATION CONFERENCE & EXHIBITION...
April 16-18, Shanghai Hongqiao International Airport, Shanghai China. Info: info@abace.aero; https://abace.aero/2019/.

MAY 2019

EUROPEAN BUSINESS AVIATION CONVENTION & EXHIBITION...
May 21-23, Palexpo Convention Center, Geneva, Switzerland. Info: info@ebace.aero; https://ebace.aero/2019/.

JUNE 2019

NBAA REGIONAL FORUM...

PILATUS OWNERS AND PILOTS ASSOCIATION ANNUAL CONVENTION...

PARIS AIRSHOW...

ISLE OF MAN AVIATION CONFERENCE...

JULY 2019

ASA ANNUAL CONFERENCE...
July 14-16, Hotel Omni Mont-Royal, Montreal, QC. Info: www.aviationsuppliers.org/annual-conference.

EAA AIRVENTURE...

AUGUST 2019

LATIN AMERICAN BUSINESS AVIATION CONVENTION & EXHIBITION...

OCTOBER 2019

NBAA-BACE BUSINESS AVIATION CONVENTION & EXHIBITION...
October 22-24, Las Vegas Convention Center, Las Vegas NV. Info: (800) 635-6622; www.nbaa.org/events/bace/2019/.

NOVEMBER 2019

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

AFRICAN AIR EXPO...November 27-29, King Shaka International Airport, Durban, South Africa. Info: http://africanairexpo.com/.
A SPECIAL THANK YOU TO OUR EVENT SPONSORS

The Fund an Angel Cocktail Reception was an invaluable networking opportunity at this year’s NBAA Business Aviation Convention & Exhibition. The reception was a memorable experience as it featured an exciting live and silent auction. Proceeds benefited Corporate Angel Network, which organizes free flights for cancer patients to treatment centers that help bring them closer to a cure.

Thank you to all those who attended this year!

"Corporate Angel Network has helped to open up trials and treatments for Ava that we otherwise could not afford. We are so blessed to have them on her team. They help to make sure that she gets the medical care that she needs.”

-Ava’s Parents
In nature, the falcon is a fierce fighter. In business, the Falcon 8X is just as powerful and agile. Every inch reflects its military DNA, with lean and mean aerodynamics and advanced Digital Flight Controls to get you to places others can’t. Nothing flies like a Falcon because no other jet is built like one. Fierce. Fast. Agile. Falcon 8X.