LABACE 19
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LATIN AMERICA
Huge Potential
High Risks

FOCUS TRAINING - Behind Every Safe Flight is a Well-Trained Pilot
The Gulfstream G650ERTM recently achieved the fastest longest-range business jet flight in history—flying from Singapore to Tucson, Arizona, 44 minutes quicker than the previous record. With an industry-leading 90-plus world speed records for the Gulfstream G650™ and G650ER, you simply can’t go farther faster.
IT’S FUNDAMENTALLY PART OF BEING HUMAN: We are always attracted to bad news and all kind of fatalities. That’s why financial analysts are constantly kicking off the New Year by filling our TVs, newspapers and magazines with predictions for all sorts of cataclysms. 2019 was no exception, with predictions for the FTSE 100 to tumble, a gloomy year for European equities, the Central Bank to offer less support to growth, the Chinese economy to go into crisis mode, the ongoing fiasco of Brexit, deepening trade conflicts ... and more! Will these shambles affect Business Aviation? I doubt it!

Releasing the General Aviation Manufacturers Association 2018 year-end results at its "State of the Industry" conference, GAMA Chairman and Gulfstream Aerospace President Mark Burns announced that globally, airplane shipments increased 4.7%, to 2,443 units in 2018. Airplane billings increased 1.5%, from $20.2 billion to $20.6 billion. Worldwide, rotorcraft shipments rose 5.4%, from 926 to 976 units. Turboprop airplane shipments also increased, to 601 units, and business jet deliveries went from 677 up to 703 units. And let’s not forget that there were 281 piston rotorcraft deliveries last year, compared to 264 in 2017. "This is the first year since 2013 that we’ve seen all segments up in deliveries," said GAMA President Pete Bunce.

Most recently the Business Aviation community gathered in Geneva for the 19th edition of EBACE, where it was welcomed by an upbeat mood. The inventory in the used aircraft market is back to normal, flight activity in Europe is gaining momentum, and new aircraft models are spurring demand.

Perhaps most importantly, aircraft deliveries are prolific! Just one day after Pilatus reopened its order book for a limited number of 80 PC-24 jets, company chairman Oscar Schwenk announced they had already sold 40 of these available slots. At EBACE, Honda Aircraft President and CEO Michimasa Fujino said that due to a strong demand for the HondaJet Elite, an additional simulator would be necessary.

Now I could go on and on about the success of our OEMs, but there is another reason why Business Aviation will prevail. The decadence of the airline industry!

From airport to airplane, the complete journey has become a nightmare. According to Skycop, a company that stands up for air passenger rights, 2.34 billion (3 times more than the total number of Europe’s population) used European airports last year, with flight rescheduling having doubled in Europe over the same period. Flights being delayed or simply cancelled are becoming more and more frequent, giving you time to shop at the airports, which nowadays have become real shopping malls with runaways! Flying economy means you will be confronted by poor service, disheveled quarters, scrungy looking personnel and a rotten attitude. Of course if business is the reason of your flight, you are probably waiting in a business lounge and you will have better seats and finer company, but you will still be challenged with flight delays and cancellations, near-impossible connections, standing in line at TSA ...etc.!

For all these reasons, Business Aviation will prevail!

“An optimist may see a light where there is none, but why must the pessimist always run to blow it out?”
Rene Descartes
Emblematic Icon of Brazil, the Christ Redeemer’s Statue is welcoming the resurgence of LABACE in Sao Paulo, one of the four Regional Business Aviation Trade Shows, organized in partnership between a Regional Business Aviation Association and the NBAA.

In competition with the training segment, Piper introduced at this year’s SUN’n FUN Fly-In expo, two new value priced additions to its trainer-class line: The Piper Pilot 100 and Pilot 100i. These new products enter the trainer segment at a competitive price point of $259,000 VFR equipped.
According to Forbes, poor knowledge-sharing costs Fortune 500 companies $31.5 billion annually—a number that puts some weight behind the saying that “knowledge is power”. Furthermore, Forbes states that the average worker spends 25% of their day searching for internal information. When time is money, this time can add up fast!

Knowledge sharing doesn’t have to be a huge undertaking. In fact, it can be something as simple as holding a five-minute staff meeting between shifts to discover what happened during the prior shift and what the team can learn from those experiences. What is important is that it happens, as it’s often one of the most efficient ways for organizational members to learn.

Within the realm of Business Aviation, knowledge sharing is particularly important for FBOs, as learning from each other is one of the best ways to manage a business and provide exceptional service. So, what does it look like in practice?

A good place to start is to keep a logbook of events where employees can make note of a situation and how it was resolved, or—perhaps—how it could have been better handled. This logbook can be used as a helpful resource in a variety of ways. For example, employees can use it to keep up-to-date on current happenings and reference it when similar scenarios occur, while managers can choose scenarios from the logbook to go over in meetings as customer service and safety lessons.

But what about beyond the FBO? How can an FBO network learn from its members? With this new tool, FBOs can ask questions by starting a discussion and respond to existing discussions to share their expertise. Furthermore, members can “follow” discussions to stay updated on any additional postings. It’s a simple-to-use tool with high-impact potential for FBO operations, providing for heightened connectivity that encourages knowledge sharing in safety and training.

With the Avfuel Network Discussion Board, independent FBOs no longer need to operate in silos—or collaborate only during face-to-face opportunities, such as conventions. Rather, the individual FBO can benefit from the collective sharing of best practices—and safe operations—with one another. The new FBOs can draw on the experiences of the long-established operations, while the long-established can seek fresh perspectives and assistance from the group.

When we collaborate as a network and share best practices, not only do the FBOs win, so do their customers—making for a stronger network to fly and fuel within.

Marci Ammerman
Vice President of Marketing, Avfuel Corporation

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Online Tools That Support Your Training Needs Anytime

Your Preparation
Get ahead of your training. FlightBag is the interactive app that allows 60 days’ advance access to training materials.

Your Convenience
Learn on your schedule. FlightSafety eLearning offers self-paced online courses that allow instruction from any online portal.

Your Flexibility
Interact online. LiveLearning gives you a front-row seat to instructor-led, web-based courses without leaving your home or office.
CAE EXTENDS PILOT AND CABIN CREW TRAINING AGREEMENT WITH SAS

CAE and SAS announced the extension of their exclusive long-term pilot and cabin crew training contract. Under the terms of the agreement, CAE instructors will deliver Airbus A320, A330, A340 and Boeing 737 full-flight simulator (FFS) pilot training to the airline’s pilots near SAS headquarters, mainly in CAE Copenhagen, CAE Oslo and CAE Stockholm for a further period of five years. In addition, SAS will have access to train on CAE’s Airbus A350 full-flight simulator in CAE London Gatwick and CAE Madrid.

AIR BP AND CNAF EXPAND PARTNERSHIP IN CHINESE AVIATION MARKET

Air BP and China National Aviation Fuel Group (CNAF) announced the signing of a joint venture agreement to operate a general aviation fuel business in Southwest China, covering Sichuan Province, Guizhou Province and Chongqing Municipality. Subject to regulatory approvals, the joint venture, CNAF Air BP General Aviation Fuel Company, intends to support the growth and development of China’s fast-growing general aviation sector – civil aviation other than commercial air transportation – with the intention to expand the scope further in future.

HAI ANNOUNCES RETIREMENT OF PRESIDENT AND CEO MATT ZUCCARO

The Board of Directors for Helicopter Association International (HAI) announced the impending retirement of Matthew Zuccaro, president and CEO, effective June 30, 2020. This date coincides with HAI’s fiscal year and the installation of a new Board of Directors on July 1, 2020. Zuccaro has led the association as President and CEO since November 1, 2005. The Executive Committee of the Board of Directors will use an executive search firm to aid in finding Zuccaro's successor and will consider candidates both internal and external. “The HAI Board of Directors, on behalf of the entire industry, offer our deepest appreciation to Matt for his service,” says outgoing HAI Chair James Wisecup.

TEXTRON CELEBRATES LIGHT JET LEADERSHIP WITH DELIVERY OF 300TH CITATION CJ4

Textron Aviation Inc. celebrated its leadership of the light jet segment with the delivery of the 300th Cessna Citation CJ4, the industry’s top performing aircraft in this segment. The milestone aircraft was delivered to McNeilus Steel, based in Dodge Center, Minnesota. “The Citation CJ4 continues to be a standout in the light jet segment due to its combination of high performance, low operating costs and class-leading cabin amenities,” said Rob Scholl, Textron Aviation senior vice president, Sales and Marketing.
FBO
Exceeding Your Expectations

Americas – Boston/Bedford | Dallas | Houston | Los Angeles/Van Nuys | Nassau
Palm Beach | St. Louis | San Juan | Teterboro | Washington/Dulles

EMEA – Amsterdam | Berlin SXF, TXL | Dubai DWC, DXB | Dusseldorf | Geneva
Jeddah | Medina | Munich | Riyadh | Rotterdam | Vienna | Yanbu | Zurich

Asia Pacific – Brisbane | Brisbane Jet Base | Cairns | Darwin | Perth
Shanghai PVG, SHA | Singapore | Sydney

One Jet Aviation. Many Advantages.
Maintenance, Refurbishment, Completions, FBO, Aircraft Management, Flight Support, Charter, Staffing
FLIGHTSAFETY NOW OFFERS EFVS TOUCHDOWN, ROLLOUT TRAINING FOR GULFSTREAM

FlightSafety International now offers Enhanced Flight Vision System Touchdown and Rollout training for Gulfstream G280, G450, G500, G550, G600 and G650 aircraft. “The development of these courses highlights our commitment to provide training that will enable our Customers to take full advantage of the approval Gulfstream has received for use of the Enhanced Flight Vision System for instrument approaches all the way to touchdown and rollout,” said Dann Runik, senior vice president, Operations. Once the courses are completed, pilots can obtain FAA authorization to engage in EFVS to touchdown operations which will enable them to begin instrument approaches when visibilities are lower than the published approach minimums.

COLLINS AEROSPACE CELEBRATES 45-YEAR RELATIONSHIP WITH AIRBUS

Collins Aerospace Systems celebrated its 45-year relationship with Airbus by delivering the 1,000th nacelle for the A320neo program, delivering the 9,000th V2500 nacelle, and continuing to support the ramp-up of the A220 nacelle program. These milestones were commemorated at a ceremony hosted by Collins Aerospace at its Foley, Alabama facility. More than 900 employees at the facility were joined by leaders from Airbus in the US, as well as Alabama Congressman Bradley Byrne, to mark the milestones. In support of the Airbus A320neo program, Collins has invested hundreds of millions of dollars to expand manufacturing capacity at six global sites.

UNIVERSAL AVIONICS UNVEILS NEXT GEN SOFTWARE-BASED FMS

Universal Avionics (UA), an Elbit Systems Company, introduces the next generation of Flight Management System (FMS), the ClearVision Interactive-FMS (i-FMS). The i-FMS is a software-based FMS designed to be an end-supplier solution for flight management in an Integrated Modular Avionics (IMA) infrastructure. The i-FMS offers the latest in Human-Machine Interface (HMI) by augmenting Head-Up Displays (HUD) and Head-Wearable Displays (HWD) to the flight deck itself, allowing pilots to ‘fly-by-sight.’ Certification is expected during the second half of 2020.

DUNCAN AVIATION INSTALLS ALTO SWITCHES & SPEAKERS

Duncan Aviation’s full-service facility in Battle Creek, Michigan, has installed an ALTO Cadence Cabin Management System (CMS) and speaker system in a Challenger 604. The ALTO system was a perfect fit for this customer, who did not want to replace the existing switches with touchscreen cabin controls. Avionics Sales Representative Justin Vena said: “The ALTO Cadence is an affordable, scalable CMS for customers who like the retro look and tactile sensation of actual switches.”
It’s time to consider CorporateCare® Enhanced.

We offer our customers the industry’s most comprehensive global service network and leading edge digital tools, all focused on getting you to your destination as planned.

It’s time to protect your most precious resource.

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

The future. Rolls-Royce.
**JET AVIATION EXPANDS GLOBAL FBO FOOTPRINT**

The recent groundbreaking at Jet Aviation’s FBO in West Palm Beach, Florida, for new hangar and office space is just the latest step in the company’s efforts to expand and improve its global FBO network, now at 35 locations. The company is investing heavily to ensure its facilities are designed and equipped to meet all the business-aviation needs of its global customer base. Jet Aviation’s FBO business in EMEA and APAC saw significant growth in 2018.

**ROLLS-ROYCE EXPANDS BUSINESS AVIATION SERVICE NETWORK**

Rolls-Royce is strengthening its Business Aviation services infrastructure by expanding the global network of Authorized Service Centers (ASC) for its large CorporateCare customer base. The Authorized Service Centers form an important component of the Rolls-Royce services portfolio and add to the existing global service capabilities. The latest addition to the ASC network is Inflite The Jet Centre at London Stansted Airport, supporting the AE 3007A engines that power the Embraer Legacy 600 and 650 aircraft.

**MORE OF GULFSTREAM’S IN-SERVICE AIRCRAFT APPROVED FOR ADDDED SAFETY FEATURE**

Gulfstream Aerospace Corp. announced its flagship Gulfstream G650ER as well as the G650, G550 and G450 now have US Federal Aviation Administration (FAA) approval for touchdown and rollout using an Enhanced Flight Vision System (EFVS). These aircraft join the company’s new large-cabin G500, which was certified for this operational capability in December 2018, along with the super-midsize G280, which was authorized for this feature in April 2019. Gulfstream’s other new large-cabin aircraft, the Gulfstream G600, will be certified for touchdown and rollout using an EFVS after the aircraft receives its type certification.

**GARMIN G5000 RECEIVES CERTIFICATION FOR CITATION EXCEL/XLS**

Garmin International, Inc. announced the certification of the G5000 integrated flight deck for Textron Aviation’s Citation Excel and Citation XLS. The G5000 integrated avionics suite modernizes the cockpit, significantly reduces operational costs, addresses airspace modernization requirements, and solves long-term concerns related to parts obsolescence. “With close to 50 customer commitments, the market has proven that the ever-popular Citation Excel/XLS is a perfect platform for the G5000,” said Carl Wolf, Garmin vice president of aviation sales and marketing.

**EBACE OPERATORS CROSS ATLANTIC ON AVFUEL’S SAJF**

In an effort to further carbon neutrality goals, Avfuel made sustainable alternative jet fuel available to operators headed to EBACE out of Republic Airport at Sheltair FRG. Avfuel supplied 8,000 gallons of SAJF to the FBO to fuel transatlantic operators headed to EBACE-dedicated destinations (such as Farnborough, England, Geneva, Switzerland and others) beginning May 15. To supply the fuel for this occasion, Avfuel acquired a concentrated delivery of SAJF from Gevo, Inc., and blended it with petroleum-based jet fuel. This mixture was then tested for fuel quality and to ensure it met ASTM D1655 standards—simply making it jet fuel.
Keep your eyes on the sky – we’ll handle the rest

When your flight operations become complex, Collins Aerospace makes your mission our sole objective. With intuitive end-to-end solutions that make flying more enjoyable, safe and productive, we anticipate your challenges so you can focus on flying.

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ARINC® FLIGHT AND CABIN SOLUTIONS
- Comprehensive flight planning
- Cabin and flight deck connectivity solutions
- International trip support
- FOS® scheduling
- Competitive fuel services
Quick Lane

Textron Aviation Announces New Aircraft Maintenance Data Hub

Textron Aviation Inc. has announced a new Aircraft Maintenance Data Hub for owners and operators of Beechcraft, Cessna and Hawker aircraft. The new data hub will be available in summer 2019 and will offer a more comprehensive record of all aircraft maintenance performed on Textron Aviation products by working with multiple industry tracking system providers. “This new data hub will offer customers more choices in their tracking system and a comprehensive picture of maintenance records across all their Textron Aviation products,” said Kriya Shortt, Textron Aviation SVP, Global Customer Support.

First HondaJet Elite with Gogo Avance L3 Wi-Fi Installed by Banyan

Banyan Air Service announced the completion of an installation of a Gogo AVANCE L3 Wi-Fi system in a HondaJet Elite; the first install of its kind in the country. This project was strictly a standalone avionics install and was quoted with respect to man hours at 15 business days. This install provided inflight connectivity domestically for a startup charter business whose dream is to move into a fleet of HondaJets (10+). The week after delivering the above HondaJet Elite, Banyan accepted another HondaJet Elite to perform a hybrid installation.

West Star Aviation Granted ODA No-PNL Privileges

West Star has been granted “NO-Program Notification Letter (PNL) Projects” on FMS, CVR, FANS, Iridium DLU and Conquest RVSM. Under their Organization Designation Authorization (ODA) this authorization allows projects at all four main locations to be completed without submittal of a program notification letter (PNL). This authorization allows West Star to issue, amend or reissue STCs without submittal of a PNL on the above certification projects.

JPNA Places World’s First Order for Subaru Bell 412EPX

Bell Helicopter, a Textron Inc. company, and SUBARU CORPORATION announced that the Japan National Police Agency (JPNA) has placed the first order for a SUBARU BELL 412EPX. Mitch Snyder, president and chief executive officer, commented: “These aircraft will contribute to the overall safety and security of the people in Japan’s Iwate Prefecture. We look forward to further collaboration and continued success with SUBARU for many years to come.”

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Piper Expands Key Western US Dealer Partnerships

Piper Aircraft, Inc. has realigned and expanded the sales and service territories for three key, independent Piper dealer partners located in the Western US: Cutter Aviation, KCAC Aviation and Western Aircraft. “With an eye to the future we are growing our product lines, our customer services and the business opportunities for proven dealer partners,” said Ron Gunnarson, VP of Sales, Marketing, and Customer Support.

JSSI Parts & Leasing Signs Supply Chain Services Agreement with Contour Aviation

JSSI Parts & Leasing has signed a new supply chain services agreement with Contour Aviation to provide extensive parts procurement, logistics and billing support to Contour Aviation’s diverse fleet of business jets. Jim Sellers, president, JSSI Parts & Leasing, said: “Each year, we support more than 8,000 maintenance events for clients across virtually every make and model of aircraft. With over 30 years of expertise to draw on, and the global buying power of JSSI behind us, we are uniquely positioned to support the Contour fleet and bring significant time and cost savings to their business.”
THE LAST 18 MONTHS OF PLANNING, BUILDING, AND STAFFING OUR PROVO, UTAH, PAINT TEAM HAS CULMINATED IN A BEAUTIFUL RESULT: THIS CUSTOM BLACK-TO-CHARCOAL FADE ON A GLOBAL 5000. THE COMPLICATED PAINT SCHEME WAS OUR FIRST FULL PAINT AT THE NEW HANGAR, AND THE FINISHED WORK MADE OUR CUSTOMER EXTREMELY HAPPY.

- DIRECTOR OF PAINT OPERATIONS DOUG BOHAC
AIRBUS AND SAFRAN HELICOPTER ENGINES TEAM UP FOR GREENER VERTICAL FLIGHT

Airbus Helicopters and Safran Helicopter Engines are teaming up to prepare the future of cleaner, quieter and more efficient vertical flight, ahead of the upcoming Horizon Europe research programme which should be carried out during the next decade. A Letter of Intent was signed at the Paris Air Show between the two companies which formalized their willingness to jointly demonstrate future technologies that will significantly contribute to the reduction of CO2 emissions and sound levels for future vertical take-off and landing (VTOL) platforms.

UAS CELEBRATES INNOVATION IN BUSINESS AVIATION INDUSTRY AWARD

Global trip support solutions provider UAS International Trip Support (UAS) has been lauded as winner of the Innovation in Business Aviation Category at the 2019 fourth annual Sapphire Pegasus Business Aviation Awards. The award and certificate was formally presented at the gala dinner during The Caribbean Aviation Meet-up event in St Maarten. The award is the fourth endorsement for UAS at the awards, which recognize excellence in the EMEA region.

RUAG SELLS BIZAV SITES IN GENEVA, LUGANO

As part of its new strategic alignment, RUAG, the international technology group, is selling its Swiss business aviation sites. The buyer of the sites at the Geneva-Cointrin and Lugano-Agno airports is the French aerospace group Dassault Aviation. All of the 87 employees will be taken over by the new owner. The successful sale of RUAG Business Aviation AG is the first step to realign the portfolio of RUAG. The said group will acquire all shares of RUAG Business Aviation AG. This also includes all 73 members of staff at the Geneva site as well as the 14 members of staff at the Lugano site.

PC-24 LANDS ON GRASS RUNWAY IN GOODWOOD FOR THE FESTIVAL OF SPEED

A first in England at the legendary Festival of Speed, the Pilatus PC-24 Super Versatile Jet landed on the grass runway 06/24, which is only 2,621 feet long (799 meters) at Goodwood Aerodrome. The PC-24 is the first ever business jet to land on very short and unpaved runways, allowing access to almost twice as many airports than other jets. The PC-24 has obtained initial certification from the European Aviation Safety Agency (EASA) and the US Federal Aviation Administration (FAA) for use on dirt and gravel runways. The PC-24 has also been certified for steep approaches, as required for the approach into London City Airport, for example.
Climate change is becoming a priority for everyone.

We’re passionate about creating a greener future. Which is why we’re investing in lower carbon and biofuels initiatives. We’ve already supplied biofuel made from used non-palm cooking oil. These fuels can reduce the carbon footprint of aviation fuel by up to 80% over their full life cycle.

Our waste is quite literally fuelling a lower carbon future.
STANDARDAERO SELECTED BY IASL TO PROVIDE PT6A & PW123 SUPPORT SERVICES

StandardAero recently signed a multi-year agreement with Island Aviation Services Limited (IASL) to provide support for the Pratt & Whitney (P&W) PT6A-27 and PW123 turboprops. These engines power the fleets of Twin Otter and Dash 8 aircraft operated by Maldivian, the national airline of the Maldives. StandardAero will support IASL’s engines from its PT6A Designated Overhaul Facility (DOF) in Brisbane, QLD, Australia and from its PW100 DOFs in Summerside, PE, Canada and Gonesse, France.

SMARTSKY ENTERS FINAL PHASE OF INFLIGHT NETWORK DEPLOYMENT USING 5G TECH

SmartSky Networks has initiated the final site completion phase of its next generation Air-to-Ground (ATG) network for Business and Commercial Aviation, launching later in 2019. SmartSky’s airborne network, which began its nationwide deployment a few years ago, incorporates many 5G wireless technologies that have been experienced during a large number of highly successful inflight demonstrations for the media and market. It has received the critical threshold regulatory certifications from the Federal Aviation Administration and the Federal Communications Commission.

GOGO TO LAUNCH 5G NETWORK IN 2021

Gogo, global provider of broadband connectivity products and services for aviation, announced its plans to build a 5G network for aviation. The new ATG network will be designed for use on Business Aviation aircraft, commercial regional jets, and smaller mainline jets operating within the contiguous US and Canada. Gogo expects the network to be available for business and commercial aviation in 2021.

SR TECHNICS NOW AUTHORIZED REPAIR STATION OF DIEHL AVIATION GILCHING

MRO service provider SR Technics has been selected as the exclusive authorized repair station for Diehl Aviation Gilching in Asia Pacific. As the exclusive authorized repair station, SR Technics Malaysia provides Diehl Aviation Gilching with an in-region repair facility to bring them closer to their customers in Asia Pacific. SR Technics is already a recognized MRO service provider in the region and can now support its customers with quality value-added services on Diehl Aviation Gilching components, with the backing of an OEM.
With 30 years of proven expertise and data, we know precisely what it takes to maintain and support your aircraft at every stage of its life cycle.

**Acquisition** advice to depend on. **Maintenance** programs to stabilize your budget and add value to your aircraft. **Parts** delivered to you on time and in budget. **Leasing** solutions you can rely on.

**IT’S TIME FOR A BETTER APPROACH.**
ELBIT SYSTEMS REPORTS FIRST QUARTER 2019 RESULTS

Elbit Systems Ltd. the international high-technology company, reported its consolidated results for the first quarter.

Revenues in the first quarter of 2019 were $1,021.7 million, as compared to $818.5 million in the first quarter of 2018. The strong growth was mainly driven by the consolidation of IMI and Universal performance in the first quarter of 2019.

Non-GAAP gross profit amounted to $283.4 million (27.7% of revenues) in the first quarter of 2019, as compared to $239.8 million (29.3% of revenues) in the first quarter of 2018. GAAP gross profit in the first quarter of 2019 was $277.6 million (27.2% of revenues), as compared to $235.4 million (28.8% of revenues) in the first quarter of 2018.

The company’s backlog of orders as of March 31, 2019 totaled $9,658 million as compared to $8,046 million as of March 31, 2018. Approximately 59% of the current backlog is attributable to orders from outside Israel. Approximately 61% of the current backlog is scheduled to be performed during 2019 and 2020.

Operating cash flow generated in the three months ended March 31, 2019 was $46.5 million, as compared to $147.9 million used in the three months ended March 31, 2018.

Bezhalel (Butzi) Machlis, president and CEO of Elbit Systems, commented: “The results of the first quarter of 2019 mark the first full quarter that includes the results of IMI. I am pleased with our results, especially the 25% growth in revenue with a well-diversified global presence in which our major geographic regions grew on an absolute basis. Our economies of scale enabled us to maintain a similar level of operating margins despite lower gross margins following the IMI acquisition. The significant increase in our backlog and the progress in the integration of IMI into the company, support our long-term growth potential.”

SUCCESSFUL BUSINESS YEAR 2018 FOR PILATUS

The business year 2018 was an exceptionally successful one for Pilatus, but also a challenging one. At around 1.1 billion Swiss francs, sales revenue was brought back to the billion mark again. The 128 aircraft delivered in total included the first PC-24 – a milestone in the company history. All in all, 18 PC-24s were handed over to customers in the past year.

Financial 2018 was better than the previous year. At 1,092 million Swiss francs, sales revenue surpassed the one billion mark for the first time since 2015. The operating result totals 157 million Swiss francs. And the future looks good: following incoming orders worth 1 billion Swiss francs, the current order volume stands at 2.1 billion Swiss francs – the equivalent of just under two years of sales revenue. A total of 128 aircraft were delivered to customers – 18 PC-24s, 80 PC-12 NGs, 27 PC-21s and three PC-6s.

PC-24 in Focus

The delivery of the first PC-24 to the first customer in February 2018 marked a milestone in the development phase spanning over eleven years. The brand-new Super Versatile Jet was the focus of much work throughout 2018: besides bringing PC-24 series production operations up to speed, the customer service unit and entire service network also switched to "live" mode. Pilatus continued to make improvements to the PC-24 in parallel, pushing ahead with various post-certification test programmes aimed at delivering all aircraft capabilities promised to customers at the outset. The next milestone is just around the corner: the reopening of the PC-24 order book.

Customer Service Business Grows in Both Pillars

Whilst the military sector is hugely important to Pilatus, the lack of new trainer fleet contracts in 2018 is not unduly worrying: Pilatus is focused on the necessary upstream work and has reinforced its sales efforts in this area. Constant growth in after-sales business is encouraging.

The Business Unit General Aviation also saw continued expansion of its customer service operations. The volume of PC-24s in operation grows with every week that passes, generating similar growth in the number of customers requiring support. The network of Authorized Pilatus Centers was further strengthened to offer customers around the world the level of service they are entitled to expect in the business aircraft league.

Preparing for Success in the Future

At the end of 2018 the Pilatus Group employed 2,283 people, including 127 apprentices. Over 150 new jobs were created. 93 percent of all employees work in Switzerland. At the headquarters in Stans work progresses on the construction of the new structure assembly hall: this new center of competence for airframe construction operations will be commissioned in spring 2019 – a clear sign of commitment to the location in Switzerland.

The new completion center run by the US subsidiary Pilatus Business Aircraft Ltd in Broomfield, Colorado, opened in the autumn. In Adelaide, preparatory work continued for the construction of a new, company-owned building for the subsidiary, Pilatus Australia Pty Ltd.

Commenting on these results, Chairman Oscar J. Schwenk remarked: “I am pleased to note that financial 2018 was a very successful year for us. A year in which a great deal of energy went into performing much detailed work. Work which will take us forward throughout the coming year, creating added benefit for our customers. The good financial results of the past year will also benefit our employees under our profit-sharing programme. In addition to an extra month’s salary, they have also been paid a bonus of 1.5 salaries. Our next challenge is already in sight: the imminent re-opening of the PC-24 order book. This is the year in which the reputation of the PC-24 and all other related services will be established. We are consistent in our efforts towards that goal, thereby consolidating our success and our future.”
AVIA SOLUTIONS GROUP’S NET PROFIT REACHES €14.05M IN 2018

Avia Solutions Group, the largest aviation services and solutions company group from Central & Eastern Europe, earned €420 million in consolidated revenue in 2018, a 25% increase from the year before (€337 million). Avia Solutions Group consolidated net profit increased by 96% to €14.05 million (€7.1 million in 2017).

Can you make this quotation mark as ""The 2018 was another successful year for Avia Solutions Group. We consistently followed our strategy and ambitious development targets, and by winning trust of major global aviation companies by providing high-quality and flexible services, we have managed to keep steady growth rate of at least 25% for the past 7 years,” says Jonas Janukenas, CEO of Avia Solutions Group.

All the major group business segments increased revenue in 2018: aircraft maintenance, repair and overhaul segment (FL Technics, Storm Aviation and Jet Maintenance Solutions) revenue grew by 16% to €157.5 million, aircraft ground handling and fueling (Baltic Ground Services) – 31% to €204.5 million, crew training and staffing (BAA Training and AviationCV) – 12% to €20 million, private jet charter, flight and tour operations (KlasJet and Kidy Tour) – 39% to €36.4 million.

Avia Solutions Group invested €38.9 million in 2018: €10.5 million were allocated for BAA Training installing 2 Airbus and Boeing full flight simulators at Vilnius ( Lithuania) training center, €11.3 million for acquisition of railway freight business BGS Rail in Ukraine, and €6.2 million for purchase of logistic & fueling trucks for Baltic Ground Services.

In 2018 Group’s MRO company FL Technics signed a long-term contract with Lufthansa group companies, FL Technics Indonesia earned Part-145 certificate from U.S Federal Aviation Authority to provide maintenance and repair services to aircraft originating from the US or those with parts from the United States. FL Technicsestablished FL ARI - joint venture with China Airlines Leasing Group Holdings Limited (CALC) and its subsidiary Aircraft Recycling International (ARD) that will service aircraft in Harbin (China).

Group’s aviation training company BAA Training installed 2 full flight simulators in Vilnius (Lithuania), started construction of training center in Ho Chi Minh City (Vietnam) and opened Ab Initio flight base in Lleida-Alguaire international airport (Spain) to ensure all-year-round training.

Avia Solutions Group aircraft ground handling and fueling company Baltic Ground Services expanded its presence to 16 airports and established new railway freight transport company BGS Rail in Ukraine.

“We caught a good momentum and we will continue with ambitious development in 2019. We will service aircraft at our joint venture FL ARI 15,000 square meters hangar in Harbin, we will install 4 real flight simulators at the BAA Training Center in Ho Chi Minh City, as well as will begin construction of 6 real flight simulators center in Zhengzhou, China, which should open its doors in 2020", comments Janukenas, CEO of Avia Solutions Group.

CAE REPORTS RECORD 4Q AND FULL FISCAL YEAR 2018 RESULTS

CAE reported revenue of $1.0 billion for the fourth quarter of fiscal year 2019, up 42% from the fourth quarter last year. Fourth quarter net income attributable to equity holders was $122.3 million ($0.46 per share) compared to $82.3 million ($0.31 per share) last year. Net income before specific items in the fourth quarter was $127.5 million ($0.48 per share), which represents a 55% EPS increase over the same period last year.

Annual fiscal 2019 revenue was $3.3 billion, up 17% from the prior year. Annual net income attributable to equity holders was $330.0 million ($1.23 per share) compared to $346.0 million ($1.28 per share) in fiscal year 2018. Before specific items, net income was $335.2 million ($1.25 per share) this year, compared to $297.9 million ($1.11 per share) last year, which represents a 13% EPS increase over the same period last year. All financial information is in Canadian dollars.

Fourth quarter civil revenue was $593.4 million, up 50% compared to the same quarter last year, and segment operating income was $115.5 million (19.5% of revenue) compared to $74.5 million in the fourth quarter last year. Fourth quarter civil segment operating income before specific items was $122.3 million (20.6% of revenue), up 64% compared to the fourth quarter last year. Fourth quarter civil training center utilization was 75%.

Annual civil revenue was $1.9 billion, up 15% compared to last year, and segment operating income was $343.3 million (18.4% of revenue). Annual segment operating income before specific items was $351.1 million (18.7% of revenue) this year and $311.8 million (19.2% of revenue) last year, representing a 13% increase. Annual civil training center utilization was 76%, reflecting continued strong usage of existing simulators and the recent deployment of additional simulator capacity to meet new demand from customers.

The civil book-to-sales ratio was 1.87x for the quarter and 1.48x for the last 12 months. The civil backlog at the end of the year was a record $5.0 billion, which is up 22% from the prior year period.

Free cash flow from continuing operations was $116.8 million for the quarter compared to $117.3 million in the fourth quarter last year. Free cash flow for the year was $323.8 million, compared to $288.9 million in the same period last year. The cash conversion ratio for fiscal year 2019 was 98%. Income taxes this quarter were $19.3 million, representing an effective tax rate of 13%, compared to 8% for the fourth quarter last year. The tax rate this quarter was higher due to the change in the mix of income from various jurisdictions and due to a lower recognition of deferred tax assets in Europe. Also this quarter, the company recognized deferred tax assets in Canada that were mostly offset by tax audits. Excluding the effect of the net deferred tax assets and the tax audits in Canada, the income tax rate would have been 20% this quarter. On the same basis, the income tax rate for the year would have been 19%.

Growth and maintenance capital expenditures totaled $96.2 million this quarter and $251.8 million for the year.

Net debt at the end of the year was $1,882.2 million for a net debt-to-capital ratio of 43.9%. This compares to net debt of $649.4 million and a net debt-to-total capital ratio of 22.0% at the end of the last year. CAE issued US$450 million of unsecured senior notes and US$150 million term loans to fund the acquisition of Bombardier’s BAT Business and to monetize its existing future royalty obligations to the aircraft manufacturer.

Return on capital employed was 11.9% or 12.9% before the impacts of the recently acquired Bombardier BAT Business, compared to 14.7% last year or 12.7% before specific items.
StandardAero has appointed Roger Ross as president of the company’s Airlines & Fleets division. He will be located at the company’s Scottsdale, Arizona, headquarters office and be responsible for the largest division of StandardAero, with multiple sites in the US, Canada, Europe, Africa and Australia. “We are fortunate to have Roger join our executive team and look forward to his knowledge and experience in our path forward. His operational expertise comes at a perfect time to help us to successfully execute our aggressive growth objectives,” said Russell Ford, chairman and CEO of StandardAero.

FlightSafety International announced that Suren Meras has been promoted to executive director, Operations for the company’s global network of business and commercial aviation Learning Centers. Meras’ responsibilities include pilot, maintenance, cabin safety, dispatch and instructor training as well as customer support, courseware development and simulator operations.

FlightSafety International also announced that Patricia Arundell-Lampe has been promoted to senior vice president and chief financial officer. “Trish is an outstanding executive who has consistently demonstrated her ability to effectively lead FlightSafety’s finance organization and contribute to our financial and business success,” said David Davenport, president & CEO. She will assume responsibility for all financial matters for the company.

The National Business Aviation Association (NBAA) applauded Bob Quinn, the association’s Central regional representative, who retired June 30, after 13 years of service on behalf of NBAA members in Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Nebraska, Ohio and Wisconsin. Since joining NBAA in 2006, Quinn has been a tireless advocate for the interests of Business Aviation in the Midwest.

Jet Support Services, Inc. (JSSI) has announced that Ash Reddy has been appointed to the new role of vice president, global strategy and corporate development. Reddy will be responsible for identifying, developing and executing organic and inorganic strategic initiatives globally for all JSSI business units. The new role includes long-range strategic planning, driving synergies across the organization and linking business trends to enterprise strategies and opportunities.

Marc Bouliane, vice president of Strategic Business Development for Universal Avionics (UA), announced that Robert Randall has been appointed to the newly created position of director of Strategic Business Development. In his new position, Randall will lead market development activities with OEMs (airframes and avionics), refocus and expand UA’s proposal process and contribute to the development of strategic partnerships to complement UA’s offering.

Meanwhile, at Universal Avionics, Bob Sanchez has been appointed to the newly created position of director of Government Business Development. In his new position, Sanchez will oversee the efforts to promote UA’s commercial products to government customers worldwide.

SR Technics announced the appointment of Abdel Farah as Area Sales director for the Asia, Australia and Indonesia market. Farah joined SR Technics in February 2015 as a customer program manager, moving to the commercial department in March 2019 with the responsibility of the marketing and sales strategy as well as customer relations. With over 20 years of service in the Aircraft Maintenance Repair & Overhaul business, Farah is an experienced aviation professional, who is based in Melbourne, Australia. Abdel will also serve as – Managing Director – SR Technics Australia Pty Ltd.

TAG Aviation has announced the appointment of Pete Belby as director of Flight Operations for the UK and Malta. Belby joins TAG Aviation (UK) Ltd directly from Cobham Aviation Services where he has been the Director of Flight Operations, UK Special Mission, for the last three years. Prior to this role he worked for the organization as a Type Rating Instructor and Examiner which involved undertaking secondments to the Far East, Europe and Africa where he was responsible for delivering Operational Readiness Training.

Jet Aviation announced that David Best has been appointed as the new SVP & General Manager, Regional Operations US. Best succeeds David Paddock, who was recently announced as the new president of the Jet Aviation Group.

West Star Aviation announced that John Lowe has been named the new satellite manager at their Chicago, IL (PWK) location. Lowe will be responsible for the managerial oversight of the 24/7 on call mobile facility and staff. Lowe has over 36 years of aviation experience and has previously held various leadership roles in the industry as crew chief, director of maintenance, chief inspector and accounts manager.

Duncan Aviation recently announced Scott Stoki as the new engine overhauling manager. In this position, he oversees the day-to-day operations of the Duncan Aviation Turbine Engine Maintenance facility located in Lincoln, Nebraska. Stoki says: “With the addition of the new 20,000 lb.-thrust-class test cell along with added and expanded capabilities, I want to keep that momentum going and bring this shop and team to its full potential.”

Also at Duncan Aviation, Luke Swager has transitioned to manager of Customer Service for Duncan Aviation’s Battle Creek, Michigan, location. Swager began his career with the Duncan Aviation facility in Battle Creek as an Airframe Mechanic on the Falcon/Israeli Aerospace Industries team. He became project manager in 2005, assistant manager of Customer Service in 2013, and in January 2019, he assumed his new role with the company.

John Petersen has accepted the position of Duncan Aviation’s regional manager for the Northwest region of the United States. As an 11-year resident of Puyallup, Washington, Petersen brings with him a vast knowledge of the area and strong relationships with many of Duncan Aviation’s customers.

Anna Mascolo has been appointed vice president of Shell’s aviation business, taking over from Anne Anderson who is moving to a senior leadership role in Shell’s Chemicals business.
In April 2019, EBAA along with 15 other associations signed a joint statement – We are all ONE in the sky – calling for an extensive public awareness campaign and mandatory training and certificate/license relevant to operations, as well as facilitation of incident reporting. These proposed action areas would lay the foundations for safe drone integration in- and cooperation with the current aviation framework.

Following the publication of the Commission Delegated Regulation (EU) 2019/945 and Commission Implementing Regulation (EU) 2019/947 on 11 June, EBAA is happy to see that the new rules reflect a proportionality with respect to the nature and risk level of the operations performed.

This is in line with the long-standing Performance-Based approach that EASA emphasizes in their yearly edition of the European Plan for Aviation Safety (EPAS). The Regulation takes notice of the operational characteristics of the unmanned systems and proposes an appropriate risk assessment of each operational scenario and environment. Whenever low-risk operations within the “Specific” category are planned, operators may submit a declaration towards their authority, should these operations fit within a pre-defined standard scenario.

What’s Next?
According to EASA’s press release on the EU wide drone rules, these two new pieces of regulatory material will enter into force in the next 20 days following the publication, but will only be applicable one year from now. This will allow the operators to progressively adopt the rules and make sure they comply with all the specifications. Starting with these regulations, the unmanned aviation community enters a one-year transition period, at the end of which the registration of UAS in the certified category becomes mandatory. This process aims at enabling the free circulation of drones in the EU while setting the standard for safe operations that protect the privacy of the EU citizens.

From June 2020 onwards, the operators of UAS in the open category over 250g or lighter than 250g, but fitted with sensors able to capture personal data, as well as of drones in the specific category, will have to be registered.

To pave the road, EASA will publish the Acceptable Means of Compliance (AMC) and Guidance Material (GM) in October 2019, together with the first five pre-defined risk-assessments.

In the same month, EASA will publish an Opinion proposing to add two standard scenarios covering low risk operations (rural Visual Line of Sight - VLOS and urban...
Beyond Visual Line of Sight (BVLOS), as an amendment to the European Implementing Act. The following steps would see this opinion transposed into a legislative act by the EC and, following a positive vote from the EU member states, adopted.

EASA expects that in June 2020, based on an authorization granted by the local NAA, operations falling in the “Specific” category may be conducted. The authorization will be granted as long as the applicant complies with the risk assessment and procedures defined by the EU Regulation or uses one of the pre-defined risk assessments as AMC.

June 2020 will also mark the moment when drone users can start operating in limited “Open” category, gradually over a time span of 2 years, first with drones with a weight of less than 500g in areas where overflying people is not to be expected. Progressively, drones with weight up to 2 kg could be operated up to 50 m horizontal distance from people and finally, heavier drones (> 25 kg) may be operated at 150 m horizontal distance of residential, recreational and industrial areas, whenever overflying people is not to be expected during the entire duration of the flight.

According to EASA’s timeline, national authorizations, certificates and declarations would be fully converted to the new EU system until June 2021 and all model clubs and associations should receive an authorization by the NAA before June 2022.

Our Interpretation

The two significant differences between pre-defined risk assessment and standard scenarios refer to the risk level and the procedure the operator needs to follow prior to engaging in any operations. Should the operator wish to perform a low risk operation that is described through one of the standard scenarios, they may use it as a basis to justify submitting a declaration. This approach has the advantage that the operator does not need to apply and wait for an authorization to be issued. On the contrary, if the operations involve a significant degree of risk, the operators may make use of the pre-defined risk assessments to prove compliance with the regulatory requirements.

We were pleased to see that, following the EASA Counter Drone Task Force’s recommendations, the UAS operators and remote pilots are encouraged to make sure they hold all the information on the applicable national and European rules and regulations, before engaging in any operations. These should include, but not be limited to safety and security of operations, privacy and data protection, insurance and liability, as well as the environmental protection aspects.

Furthermore, the Light UAS Operator Certificate (LUC) is equivalent to the Air Operator Certificate (AOC), which means a safety target level equivalent to the one in manned aviation. The most welcome aspect is the requirement for a Safety Management System (SMS) in which the operator needs to document all safety management key processes, such as safety reporting and internal investigations, compliance monitoring and training and safety promotion.

Our Recommendation

Under the Regulation, member states may issue national regulations covering scenarios outside the scope of the Basic Regulation (EU) 2018/1139. However, this might go against the desire to harmonize regulations and create a level playing field in the European unmanned aviation market. While technology is evolving rapidly in the unmanned aircraft industry, the regulation development curve often lags far behind. Thus, member states would most likely already have established regulations fitting to a higher level of technological development by the time a suitable European Regulation will be in place. To that extent, we would encourage the development of national regulations while making sure that the NAAs stay in close contact with EASA to ensure a state of equity and fair competition.

Due to the similarities in the business model between UAS and Business Aviation operations, especially in terms of size and profile of the operations, the EBAA is continuously engaged in promoting the unmanned aviation community and supporting their integration in the current framework.

The EBAA team is working on a more elaborate document reflecting the association’s position with respect to the current and upcoming regulations, all while offering concerned members an overview of what to expect in terms of their interactions with the unmanned vehicles.

For questions and comments, please get in touch with the Safety Team at safety@ebaa.org.
The global Business Aviation industry continues to embrace new technologies as it looks to the exciting possibilities in its future. This forward-looking spirit is seen throughout an impressive roster of international events sponsored by the National Business Aviation Association (NBAA) including the recently concluded European Business Aviation Convention & Exhibition (EBACE) in Geneva.

Co-hosted by the European Business Aviation Association (EBAA) and NBAA, the 2019 edition of EBACE built upon its status as Europe’s premier Business Aviation event. Attendees came to Geneva from more than 80 countries to network with their peers and discuss the latest developments affecting Business Aviation across Europe and around the globe.

EBACE2019 also highlighted emerging technologies within the industry, perhaps most notably sustainable flight and urban air mobility. The first-ever EBACE Innovation Pavilion featured three distinctive electric vertical takeoff and landing (eVTOL) aircraft and concepts, while the adjacent Innovation Zone hosted a panel discussion on eVTOL and the urban air mobility revolution.

The event’s Opening Keynote Session also looked to the industry’s future. Volocopter CEO Florian Reuter described his company’s eVTOL air taxi as “the perfect complement and addition to Business Aviation.” UK Member of Parliament Grant Shapps called Business Aviation “essential” and predicted that EBACE, “will be here in another decade’s time with this exhibition bigger and more important than ever.”

While EBACE2019 demonstrated the industry’s evolution, it’s important to note that innovation has long been a hallmark of other NBAA-sponsored events, including the annual Asian Business Aviation Conference & Exhibition (ABACE) and the association’s own Business Aviation Convention & Exhibition (NBAA-BACE.)

Held earlier this year in Shanghai and jointly hosted by NBAA and the Shanghai Airport Authority (SAA) and coordinated with the Asian Business Aviation Association (AsBAA), ABACE2019 featured keynote addresses that examined the emerging role of eVTOL, as well as several urban air mobility vehicle concepts from companies across the region.

This technology also played an important part at last year’s NBAA-BACE in Orlando, FL with two keynote addresses headlined by visionaries pioneering the future of Business Aviation. Uber Elevate CEO Eric Allison shared the company’s plans for fostering urban mobility, while Solar Impulse Chair Bertrand Piccard told his story of flying around the world without a drop of fuel.
Of course, innovation has long been a staple of Business Aviation. EBACE2019 continued this tradition, in part by promoting environmental sustainability and reducing the industry’s carbon footprint. Of the 58 aircraft on static display, 23 arrived at Geneva powered by sustainable alternative jet fuel (SAF) as part of the inaugural EBACE SAF “fly-in” that followed an industrywide “Fueling the Future” demonstration day held at London TAG Farnborough Airport immediately before the show’s opening.

Our industry also faces an ongoing challenge in attracting the next generation of industry professionals, so every NBAA-sponsored event includes a dedicated Careers in Business Aviation Day for area students who wish to learn about the industry and explore potential career opportunities.

EBACE and other NBAA-sponsored industry events not only look toward tomorrow; however, they also highlight the most exciting and innovative aircraft, products and services available today, making these events truly “can’t miss” opportunities where companies may introduce their latest offerings before an international audience.

For example, the EBACE2019 static display included several “firsts” among aircraft manufacturers, including the first display of Embraer’s Praetor 600 following its certification in Europe, the U.S. and Brazil, while ABACE2019 hosted the first international appearance of Bombardier’s Global 7500. Last year, NBAA-BACE featured the unveiling of Embraer’s Praetor 500 and 600 business jets and the debut of an advanced electric-hybrid propulsion system for eVTOL aircraft from Honeywell.

Taking place Oct. 22-24 in Las Vegas, NV, the 2019 edition of NBAA-BACE promises to build on this tradition of showcasing an extensive array of emerging, next-generation technologies and key new product introductions demonstrating how the international Business Aviation community continues to evolve before our eyes.

I encourage BART International readers to attend ABACE and EBACE in 2020 and join the estimated 25,000 industry professionals who will attend NBAA-BACE this October, to witness firsthand the many ways our industry continues to embrace new ideas, advanced technologies and – above all – the promise of an exciting future.

Additionally, the Federal Aviation Administration (FAA) has made efforts to alert various stakeholders, issuing a Safety Alert for Operators (SAFO), two Special Airworthiness Information Bulletins (SAIBs) in 2018 and 2019, and the Office of Airport Safety and Standards sent a letter to airports providing further background and recommendations.

The report strongly urged “all stakeholders to review this report and use it to review their particular segment of the overall system and make immediate and appropriate changes, once identified, and continually monitor, check and re-check to ensure the proper processes and procedures are, and remain, in place.”

The working group charged industry associations with continued communications and educational efforts with their members, and called on the industry to “request an emergency exemption from the rules requiring DEF in on-airport equipment from the EPA.”

“The working group members and broader community must and will remain vigilant in monitoring the entire system, reinforcing where needed, and act quickly, if another event unfortunately occurs,” the report noted in its summary.

In addition to NBAA, the working group is comprised of representatives from the Aircraft Owners and Pilots Association, Avfuel, CommScope, Dassault Falcon Jet, Fair Wind Air Charter, the FAA, FBO Partners, Epic Fuels, the General Aviation Manufacturers Association, GAMMON Technical Products, Gulfstream, Murray Equipment Inc., Midwest Aviation, the National Air Transportation Association, Phillips 66, Sheltair, Signature Flight Support, TAC Air, Total Control Systems, Truckee Tahoe Airport, Union Pacific and World Fuel Services.
LABACE at São Paulo's Congonhas Airport is the largest Business Aviation only event in Latin America. The annual trade show attracts attendees from all over the region. This year, it will take place from August 13 to August 15.

LABACE is one of only four NBAA global partnership tradeshows. The show is celebrating its 16th anniversary this year. The organizers have done their math and found out that during the last 15 years, LABACE has attracted 1,830 exhibitors and over 145,000 visitors. In all, 1,830 exhibitors have shown their products and services and 650 aircraft have made their way to the static displays.

Most probably, LABACE 2019 will be the last time that the event will be held at the Congonhas Airport as the apron on which the show was located has been leased to a local store company that has plans to build a store in that area. The construction of the new building should begin shortly after LABACE 2019, forcing the organizers to search a new home airport for the show. They are in discussions with the Campo de Marte Airport operator to host the show from 2020 on. The airport is located north of São Paulo's city center and is the country's busiest Business Aviation airport and features a single 5,250 ft long runway.

São Paulo is Brazil's epicenter for Business Aviation and for rotorcraft. There's no other city anywhere in the world with more corporate and business helicopter movements than São Paulo. No wonder that at last year's event, Bell, Airbus Helicopters and Leonardo were present with their corporate rotorcraft offerings. Helicopters will play an important role at this year's LABACE once again.

The show in Brazil is Embraer's home turf. The manufacturer will have a meaningful presence at the show as 2019 is a milestone year for Embraer in more than one way. The company is celebrating its 50 anniversary, looking back at a rich history of dedication, commitment and challenges. The celebrations won't be focused on the retrospective only; they will offer a perspective, too. Embraer has built a remarkable portfolio of business aircraft from the entry-level Phenom 100, the best-selling Phenom 300, the Legacy 450,
Legacy 500, the two new Praetor jets up to the Legacy 650 and 650ER and to the top-of-the line offering, the Lineage 1000 bizliner. The company intends to play an important role on the global stage of Business Aviation no matter what the future will bring.

Embraer is currently setting up a joint-venture with the Boeing company to produce and market the Embraer E-Jet regional jet family. It is most likely that Embraer Executive Aircraft will be left as the only business unit to continue to bear the name Embraer as Boeing has announced that it will not keep the name for the joint venture. Instead, it will be named Boeing Brasil Commercial (BBC) with the Brazilian spelling Brasil instead of the English Brazil, being a recognition of the country’s achievement for the joint venture.

Embraer’s new Praetor 600 super midsize jet – which was launched in October 2018 together with its smaller sibling Praetor 500 – was recently certified by Brazil’s ANAC, the US Federal Aviation Administration (FAA) as well as by Europe’s EASA. It made headlines in Europe when it completed its first transatlantic flight using sustainable alternative jet fuel (SAJF) on its way from Teterboro, New Jersey, to Farnborough in the United Kingdom, prior to coming to EBACE in Geneva. At the Paris Air Show in June, Embraer showed the Praetor 600 in the flying display in the sky over Le Bourget as the only business aircraft besides Dassault Aviation’s Falcon 8X.

The Praetor 600 is the first super midsize jet with a full fly-by-wire (FBW) flight control system. It features an active turbulence reduction system that not only makes every flight the smoothest, but also the most efficient, states the manufacturer. The new jet is the best performing super midsize jet, surpassing all its main design goals and becoming capable of flying beyond 4,000 nautical miles in long-range cruise speed or beyond 3,700 nautical miles at Mach .80 from runways shorter than 4,500 ft, complemented by an outstanding payload capability.

There’s no doubt that the major exhibitors of past LABACEs will be returning for this year’s event, because the market is coming back. The political and economic uncertainty has changed and optimism is prevailing in the Brazilian economy. The French manufacturer Dassault Aviation has a strong presence in the country with its factory-owned Sorocaba service center. Dassault Falcon aircraft proves to be popular in Brazil with their combination of range and take-off and landing capabilities.

Dassault Aviation has given a status report on its newest jet, the Falcon 6X. It has begun manufacturing major parts as the program tracks to assembly of the first aircraft early next year. The Falcon 6X will make its first flight in 2021 and begin deliveries in 2022.

The Pratt & Whitney Canada’s PW812D powered twinjet features a maximum range of 5,500 nm (10,186 km). It can fly directly from São Paulo to Chicago or from Los Angeles to London at Mach 0.85. The Falcon 6X offers the largest cabin cross section of any purpose-built business jet as well as the quietest and most comfortable cabin of any aircraft in its class.

The Pratt & Whitney Canada’s PW812D turbofan of the 6X has accumulated over 1,000 hours of runtime on their test bench in Montréal, Canada, using five development engines. To date, P&WC has accumulated more than 13,000 hours on the variant of the geared turbofan (GTF) core at the heart of the Dassault-specific PW812D. The GTF core is shared by 16 different engine applications that have amassed more than 585,000 flight hours in all. “The PW812D engine program continues to achieve milestones in line with the initial program plan, with high-risk tests almost all completed,” said Eric Trappier, CEO and president of Dassault Aviation.

Gulfstream Aerospace showed its soon-to-be certified flagship the G600 at LABACE 2018 for the first time in South America. Departing from major cities in Brazil, the G600 can reach
the continental United States and Europe nonstop at speeds from Mach 0.85 to Mach 0.90. The aircraft is also capable of reaching Africa and parts of the Middle East nonstop. As the market in the region is recovering, the manufacturer is confident about the region, which has proved to be beneficial for Gulfstream. More than 205 Gulfstream aircraft were based in Latin America at the end of 2018; nearly 70 percent of these business jets were large-cabin models such as the Gulfstream G650ER, Gulfstream G650 and Gulfstream G550. Mexico, Brazil and Venezuela were the three largest Gulfstream operator bases within the region, with approximately 100, 45 and 25 aircraft, respectively. The fleet in Brazil alone has grown nearly 10 percent since 2013.

At LABACE 2018, Textron Aviation had a prominent presence at the show with its Cessna Citation Latitude, Cessna Citation CJ3+, Cessna Citation M2, Beechcraft King Air 350i, Beechcraft King Air C90GTx, Cessna Grand Caravan EX and Beechcraft Baron G58 aircraft on display. It is expected that the Wichita, Kansas, manufacturer will return to LABACE 2019 with a similar impressive line-up. There’s a chance that the Citation Longitude could make its South America debut.

Last year saw an impressive list of new aircraft type at LABACE. Honda Aircraft’s HondaJet debuted at the show as well as Piper Aircraft’s M600 turboprop single. Both manufacturers have local dealers which have seen a tremendous interest in these new aircraft. It is expected that both dealers J.P. Martins Aviação for Piper Aircraft and Lider Aviação for Honda Aircraft will both be at the show again to spur additional interest for their offerings.

But not only OEMs are planning to attend LABACE 2019. CAE, the Canadian training provider and simulator manufacturer, has also announced to come to São Paulo for LABACE. CAE wants to raise the awareness of a potential pilot shortage, especially in the Business Aviation. The company expects that the number of cockpit crews of business jets will increase to 65,000 by 2028. That’s an 18 percent increase over the current 55,000 business jet pilots. However, according to findings of the CAE market researchers, there will be major changes. Due to departures to the airlines and age-related retirements, Business Aviation needs about 40,000 new pilots by 2028, just to maintain today’s level. In addition, there is an additional need of around 10,000 new pilots to cope with the expected growth of the industry. In other words, in ten years, according to the authors of the study, almost the entire pilot population will be exchanged within the Business Aviation community!
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The PC-24 (top) is the first business jet operable from short unprepared runways.

Latin America seems to meet all the requirements for a prosperous Business Aviation industry. The region stretches across enormous distances, economic centers are far apart from each other and the ground-based infrastructure does not support travelling between the centers in a timely manner. In most cases, there isn’t even a railway system in place, not to mention the absence of a high-speed train system to support business travel. Airlines connect only the larger cities and do not serve smaller communities accordingly. But in most countries there is a net of airfields and smaller airports which are suitable for business aircraft. The stage should be perfectly set for Business Aviation. But it’s not.

Latin America (which consists of Central and South America) is home to a large fleet of business aircraft. Three of the region’s countries even make it to the top ten business fleets by country. Brazil – the largest country in the region – holds its second place in the ranking behind the US with 1,539 business aircraft, followed by Mexico with 1,414 units and Venezuela with 765 aircraft according to Boeing.

Business travel in Latin America is set to double within the next 20 years. But the region’s growth potential continues to be challenged by economic and political uncertainty as well as in some countries by a lack of modern airport infrastructure. Volker K. Thomalla reports
to JetNet iQ’s numbers from January this year. These countries feature fleets which are larger than those of Germany, Australia, the United Kingdom, France and China. According to Honeywell Aerospace’s latest Business Aviation Outlook from October last year, Latin America is home to 12 percent of the global business jet fleet. But the average aircraft age in South America is higher than in other parts of the world, including Africa. Hence there’s much more pressure on the aircraft owners and operators to modernize their fleets. A large quantity of new aircraft coming to Latin America will be replacements of aircraft which have come to the end of their useful service life. There’s a huge potential for aircraft sales in the region.

But the market is not as stable nor predictable as in other regions. Brazil’s business aircraft fleet for example fluctuates with the increase and decrease of commodity prices. Despite having the largest fleet of business aircraft outside the US, the country still has only a very limited number of runways suitable to business jets, which is a major hurdle in further developing the industry. The only business jet in production which is certified to operate from unprepared runways is the Pilatus PC-24.

Brazil is in the process of privatizing airports to attract investments in the infrastructure, but this process takes time. Generally speaking, the infrastructure and the security at airports in the country and in the region is much better than foreign visitors expect. In Mexico and Brazil, there are even dedicated Business Aviation airports like Toluca close to Mexico City or Sorocaba near São Paulo which offer a choice of world-class FBO facilities.

Universal Aviation Mexico, a joint venture between Avemex and Universal Weather and Aviation, has recently officially opened its new US$ 3.5 million hangar at Toluca International Airport. The hangar offers 50,000 square feet of space, including 32,000 square feet built-in office space and 17,200 square feet of storage space. “Both based and transient, non-based operators at Toluca have struggled to find parking and hangarage due to shortages in recent years at this already congested airport. That challenge is only exacerbated during high-traffic periods in Mexico City, so we made this investment in this fifth Universal Aviation Mexico hangar at Toluca to meet that growing demand,” said Greg Evans, Chairman, Universal.

Business aircraft manufacturers are investing in South America, too. Dassault Aviation’s factory owned service center Dassault Aircraft Service Sorocaba just recently celebrated its
There are well over 850 Cessna Citation business jets based in Latin America, more than from any other manufacturer. For 37 years now, the Wichita, Kansas, based OEM has partnered with TAM Aviação Executiva to sell and support aircraft in the region. In 2017, Textron Aviation expanded 1CALL, the company’s AOG support resource to customers across Central and South America. Textron is working with TAM Aviação Executiva as well as with Central Charter de Colombia to provide AOG support for customers flying in the region.

Brazil is the only country in Latin America which has a notable Business Aviation industry. Embraer Executive Aircraft of São José dos Campos is the only Latin American business jet manufacturer. The company is already celebrating its 50th anniversary and has developed an impressive product range of business aircraft, from the light jets Phenom 100EV and Phenom 300E over the midsize and Super Midsize Legacy 450/500 and Praetor 500/600 jets up to the bizliner type Lineage 1000. Embraer will join forces with Boeing in a new joint-venture which will produce the E-Jet regional jet family in the future – and eventually lose the name Embraer, but not the Business Aviation unit. Once, Boeing Brazil is established, Embraer Executive Jets will relocate its production to Gavião Peixoto, where the company will continue to build the Legacy 450/500 as well as the Praetor 500/600. From there, the aircraft will be flown as green aircraft to Melbourne, Florida, where they will be completed and handed over to customers.

In January this year, Francisco Zozaya has been appointed to the new role of president of Jet Support Services, Inc. (JSSI) Latin America. Before joining JSSI, he spent more than a decade as pre-owned director for Aerolíneas Ejecutivas (ALE) in Mexico, where he managed the pre-owned aircraft sales and acquisitions business unit. He established an extensive network within the global aviation broker and financial communities and with OEMs and MROs, while facilitating key industry alliances for the largest Business Aviation company in Latin America.
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He knows the Business Aviation market in the region very well. In his new position, he leads all activities of JSSI, the independent provider of maintenance support and financial services to the aviation industry throughout Latin America. At EBACE, BART International discussed with him the state of the industry in Latin America. He said: “We had some very interesting years. Mexican customers were not hit by the crisis we’ve seen in the region. Mexico has one of the largest business aircraft fleet in the region with well over 1,000 aircraft. 2018 was a great year in Mexico for Business Aviation. Now, we see a different panorama. Right now, it’s a bit quiet. On average, we saw around 100 transactions per year in Mexico alone.”

According to Zozaya, Brazil seems to be upfront again. “After having a few periods of socialist presidents, everyone is feeling much more confident. Multiple big iron aircraft are coming back to Brazil”, he said.

On the other hand, Venezuela is still experiencing a deep economic and political crisis, which last for some years. The country experiences an unprecedented inflation rate and a political instability situation. The number of business aircraft has, surprisingly enough, not fluctuated so far, but right now, there is no Business Aviation activity in the country at all. The US Department of Transportation (DOT) has even issued an order in May this year to immediately suspend all foreign air transportation between the US and Venezuela on all US and foreign air carriers, including charter flights. “This order is a rare move by the DOT and highlights the significant risks of travel to and within Venezuela at this time,” commented Brian Koester, NBAA’s senior manager of flight operations and regulations. “Business aircraft operators, if not subject to the DOT order or related NOTAM, are still encouraged to exercise extreme caution in flight operations to, from or over Venezuela.”

“Venezuela is dead as a business aircraft market, right now”, summarized JSSI’s Francisco Zozaya. But once, the crisis has been solved, Venezuela will come back as a market with a huge potential for business aircraft and related services.

Zozaya sees Central America and the Caribbean as a quiet region. Countries like Puerto Rico, the Dominican Republic and Guatemala are good for 15 business aircraft transactions each per year. Zozaya sees that Chile is doing extremely well compared to previous years in terms of business aircraft transactions. The number of turbine-powered business aircraft in the country rose from 122 in 2017 to 130 at the end of 2018, which is an increase of 8.8 percent within a year. This development reflects the economic development of Chile. According to the World Bank, Chile has been one of Latin America’s fastest-growing economies in recent decades thanks to a solid macroeconomic framework, which enabled the country to reduce the population living in poverty (on US$ 5.5 per day) from 30 percent in 2000 to 6.4 percent in 2017.

He acknowledges that the Latin American market is a much more educated market than it used to be. The market has become much more entrepreneurial with the buyers looking much deeper in the numbers. “The typical aircraft owner in Latin America is different from the one in the US,” he says.

JSSI sees promising opportunities in Latin America because the customers now want to enroll into maintenance programs, contrary to previous decades. They see the advantages of maintenance programs and the value they add to the aircraft. Zozaya is optimistic to increase the number of enrolled customers into JSSI’s program largely within the next five years in the region as JSSI’s services spectrum is extremely wide.

Honeywell Aerospace forecasts in its latest Business Aviation Outlook that about 12 percent of all new jet purchases within the next five years will be from Latin America. Compared to 2017, the expected purchase plans dipped by 7 percent, largely due to Venezuela, and a decrease in purchase decisions in Mexico which are related to some uncertainty in conjunction with the future of the NAFTA free trade agreement with Canada and the US. Brazil is countering the trend with an increase in short-term purchase plans, which could not counterbalance the deficit in other countries in the region.

Taking into account the vast distances that business travelers have to cover within the region, it is no surprise that they like going fast. JetNet IQ of Utica in New York has asked in its Q1 survey what business aircraft operators think about the statement “I believe that a supersonic business jet will be in service in the next ten years”. While 34.4 percent of the European participants of the survey disagreed and only 14.1 percent strongly agreed, the answers from Latin America and the Caribbean looked very different. Only 5.0 percent of the participants from that region disagreed with this statement, while 43.3 percent strongly agreed that they believe that a supersonic jet will be in service within the next ten years.

The appetite for business aircraft in Latin America is strong, but in some cases, the economic and political environment is just not suitable to support the demand. Where there is a chance, there’s risk.
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In the lead up to this summer’s Latin America Business Aviation Conference and Exhibition (LABACE) in Sao Paulo, the experts at Universal Aviation Brazil discuss what Business Aviation operators need to know before they go.

EVERYTHING YOU NEED TO KNOW FOR YOUR BIZAV FLIGHT TO BRAZIL
Generally speaking, airport availability, infrastructure, and services in Brazil are of a high quality for business jet operators and airport restrictions are not onerous. However, challenges do exist, including some unique operational elements like its slot system, which should be taken into consideration. For example, Brazilian flight planning regulations are complex—with many details involved in successfully completing Brazilian flight-plan requests.

“Most operators don’t realize how detailed this process can be until they’re faced with it,” says Adonis Bastos, Operations Supervisor, Universal Aviation Brazil. “It’s always best to enlist the assistance of a ground handler with local knowledge and the latest updates on NOTAMs file your flight plan.”

Any missing or incorrect information will cause a flight plan to be rejected. Even the smallest of errors or omissions will trigger rejections. When a flight plan is rejected, it must be corrected and re-submitted with the necessary information. This is usually easier for local pilots who can call ATC and communicate in their native language to make corrections. The process can, however, be more complicated for pilots who do not speak Portuguese.

Flight plan corrections may be submitted by phone to ATC or via AFTN, but all change requests must be made by either a pilot or a certified dispatcher. “So, if it’s simply a case of missing information in remarks 18, you may have a certified dispatcher or pilot make the required changes with ATC,” says Universal. “You’ll then wait another 45 minutes to depart in order for the re-filed flight plan to become active.”

There are detailed requirements for correctly completing remarks 18 of the ICAO portion of the flight plan. Remarks must include the landing permit number (when the next destination is within Brazil), the name of the aircraft operator, the previous departure airport, and receipt number from INFRAERO for landing fees that have been paid. Another unique characteristic is to be aware of remarks 18 or the flight plan is validated at 1600 (ETA) after your Estimated Time of Arrival.

For a permit, you’ll need to provide standard aircraft, passenger and crew details, including certificate of airworthiness, registration, insurance with third-party liability coverage, crew type rated licenses and first class medical certificates. Brazil’s Civil Aviation Authority (CAA) requires at least 48 hours’ notice to process landing permit requests. Permits are valid for planned day of arrival with a deviation of 24 hours prior and 48 hours after your Estimated Time of Arrival (ETA).

Your permit will be validated after arrival when customs is cleared. Customs decides on the timeframe of your permit, which can be a maximum of 60 days. If you want to stay beyond the approved date, 15 days is required to revise the permit, but it may be approved within a shorter timeframe at CAA’s discretion. Permit revisions are required for crew changes or if your arrival is beyond the approved deviation. No revision is necessary for changes in passengers, destination, departure point, or schedule if it’s still within the permitted deviation. ATC will check to make sure your permit is valid and that fees have been paid before validating a flight plan.

After landing in Brazil, operators must pay landing fees prior to an onward flight plan being validated, regardless of the next destination, even if it’s a tech stop. Landing permit charges are standard, regardless of aircraft type, and included in the landing fee, which must be paid after arrival to the airport authorities, prior to departure to your next destination. Upon payment, you’ll be given a number, which must be put in “remarks 18” when filing your flight plan.

All landing fees must be paid before a flight plan will be validated. After a flight plan is validated, it takes 45 minutes to become active, and you may not depart before this time. Once a flight plan becomes active, it’s only valid for 45 minutes, and any delays must be advised within 30 minutes after initial scheduled departure time. For example, if your fees are paid and the flight plan is validated at 1600
local, the earliest you may depart is 1545 local, and the latest the flight plan remains valid for is 1645 local. If you wish to delay departure beyond 1645 local, you must advise by 1615 local, which is within 30 minutes of the latest flight plan remains valid.

“While you can delay your flight plan multiple times, it’s important to understand that additional landing fees will be applied,” explains Universal. “Therefore, in case of delays, it’s advisable to pay for an additional 1-2 hours’ worth of landing fees upfront as this will avoid additional delays from repayment, which will cost you additional time to complete.”

To depart earlier than planned, you’ll have to submit a new flight plan rather than a revision.

**Parking, Ground Handling and Fuel**

Aircraft parking availability is the first consideration when looking at an extended stay in Brazil. Furthermore, Prior Permission Required (PPRs) are utilized only for aircraft parking purposes at Vitoria, Brazil (SBVT), and Guarulhos, Sao Paulo, Brazil (SBGR) and Campinas, Brazil (SBKP). This is determined by local authorities at a later time. To obtain a PPR, send the tail number, firm schedule, and operator information to airport authorities, or to your ground handler, who can request this for your trip. Requests should be made as early as possible due to frequent lack of aircraft parking spaces at these airports.

Scheduled commercial operations take priority over general aviation (GA). Commercial-traffic volume is growing 20-30% per year, putting a strain on GA parking. “If aircraft parking is an issue at your desired airport, it’s recommended to obtain Plan “B” and possibly Plan “C” options from your ground handler for alternate parking or to drop passengers and reposition,” notes Universal.

Although hangar space for corporate aircraft is generally not available in Brazil, the condition of the tarmac, taxiways, and runways is good throughout the country. You can also expect full service ground handling at major locations such as Rio de Janeiro, all three Sao Paulo airports, Brasilia, Manaus, Recife, and Salvador. However, many smaller domestic airports in Brazil may not have ground handlers available and English-speaking personnel at ATC or the terminal may be inadequate. It’s possible to reposition ground handlers to any location, either traveling aboard the aircraft or sent in advance via airline, at the operator’s request.

You’ll need to supply schedule, crew and passenger information, aircraft registration, certificate of airworthiness, worldwide insurance, and both pilot-in-command (PIC) and second-in-command (SIC) airline transport licenses (ATP) and ‘first class’ medical certificates. Without this information in advance, ground handling permits, and aircraft parking cannot be set up. A landing permit must be obtained prior to any operation into Brazil if you’re making more than one stop, and most locations require a minimum of 48 hours’ notice.

If you require a domestic landing permit to operate domestically within Brazil, your ground handler will need at least 48 hours’ notice and require all necessary documentation in advance. If no domestic landing permit is needed – in the case of operators flying to only one international airport within Brazil – 24 hours’ advance notice is sufficient. For international tech stops, 24 hours’ advance notification is adequate. Note that, in Brazil, a tech stop is defined as only one stop within Brazil for fuel at an AOE.

Speaking of fuel, it’s recommended that your ground handler set up and confirm jet fuel delivery well before arrival. This way, they can have the fuel truck on location and waiting for you before the ETD. You’ll be fueled by the same trucks – Petrobras or Shell – that service commercial airlines, and you may face 1-2-hour delivery delays if the fuel uplift hasn’t been arranged and confirmed in advance. Communication between the ground handler and the fueler is done by email when there’s a fuel release involved. Short-notice fuel requests, and confirmations of fuel uplifts, are done via phone.

**A Unique Approach to Slots**

The airport-slot process in Brazil has unique elements, and it’s important to understand how the system works when planning Business Aviation flights. “Airport slots will not be confirmed until relatively close to your time of arrival and departure, so you’ll need to consider options if requested airport slots are not available,” says Universal. “Your third-party provider can assist in finding workable airport-slot solutions.”

Airport slots are required at Congonhas, Sao Paulo, Brazil (SBSP), Florianopolis, Brazil (SBFL) and Curitiba, Brazil (SBCT) and may be needed at Brasilia, Brazil (SBBR) and Porto Seguro, Brazil (SBPS).
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during high-traffic or event periods. Airport slots are only available (released) online 25 hours prior to your ETA and you will only be able to request slots within this period. In Brazil, airport slots are controlled by the Department of Airspace Control. However, it's always important to verify if your destination airport has slot requirements, since this could change due to traffic or seasonal events.

Airport slot requests are usually made through a ground handler who will obtain slot reservations via a website. The handler must have a previous registration to the slot website. When operating a non-Brazilian-registered aircraft domestically within Brazil, your ground handler will need a copy of your domestic overflight permit (AVANAC), airworthiness, registration, a firm schedule, your tail number, and the slot letter to authorize your handler to apply for slots on your behalf. This is the case whether or not you are operating as a private non-revenue or charter (non-scheduled commercial) flight. For tech stops, your ground handler will only require overflight permits, airworthiness and registration, firm schedule, and tail number.

Airport arrival and departure slots in Brazil have a deviation of – 15 minutes and + 30 minutes of the slot time. For arrivals only, some flexibility in airport slot deviation is allowed at ATC’s discretion. In terms of back-up options, that depends on whether you’re arriving or departing. For departure only, if no airport slots are available, you may request an ‘opportunity slot’ and wait for the first opening that comes up after someone cancels a flight. To request an opportunity slot, the pilot or certified dispatcher must go to ATC in person. Requests cannot be made by phone, fax or e-mail. For arrival, if your requested airport slot is not available, you may have to change your flight plan for the appropriate airport slot provided, or you may have to file a flight plan to another city near the location desired and, while airborne, ask ATC for authorization to land using an opportunity slot.

**See You in Brazil!**
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When it comes to safety training, Air Commodore Dai Whittingham has something to say. “Operators and plane manufacturers are keeping safety training to an absolute minimum,” says the UK Flight Safety Committee’s Chief Executive. “Under pressure to keep costs low, the industry has less desire to provide training.”

Needless to say, this opinion is not one shared by the Business Aviation industry, but it is good for starting a lively conversation on a very important topic. In talking to a range of OEMs, pilots and passengers in preparing this article, it is clear that OEMs work to keep costs down, which can mean keeping training costs down. On the other hand, business aircraft owners, who very often are also passengers, want to fly in total safety and therefore require well-trained pilots.

What this all means is that at the end of the day, the ball is in the training companies’ court, who have no choice but to find new ways to cut costs while providing efficient pilot training. To accomplish this cost/efficiency balance, some companies are leveraging the latest in technology to roll-out a range of integrated services that reduce the complexity of managing pilot training before, during and after full-flight simulator sessions.

One such company is CAE, who recently announced such cutting-edge digital solutions as its new Electronic Training Suite, which includes lesson plans, instructor grading and records. “Lesson plans are created in conjunction with operators and consist of a series of training tasks to be performed in each training session, while the grading capabilities allow instructors to assess task performance as well as pilot competencies,” explains CAE Group President, Civil Aviation Training Solutions Nick Leontidis.

CAE has also developed a Standard Operating Procedures (SOP) Management Tool configured in collaboration with operators and aimed at augmenting the instructors’ ability to identify pilot proficiency gaps. “Both of these tools are clear examples of how CAE is working hard to offer cost-effective training solutions that meet rising demand,” adds Leontidis.

Likewise, FlightSafety International recently announced that the Dassault FalconEye Combined Vision System HUD has been incorporated into its Falcon 900LX simulator in Dallas, as well as Falcon 8X and Falcon 2000LXS simulators in Paris. It will also be installed in a new Falcon 2000LXS/900LX interchangeable simulator, which is scheduled to be available for training at the Teterboro Learning Center in October 2019.

“Incorporating the Dassault FalconEye HUD into our simulators for the Falcon 900LX, Falcon 2000LXS, Falcon 2000S, and Falcon 8X highlights FlightSafety’s commitment to develop and deliver training programs that meet the current and upcoming requirements of our Customers,” says Steve Gross, Senior Vice President, Commercial.
Joining Forces

A larger scale and more complex solution to cutting costs while enhancing training and services is through mergers and joint ventures. This is the approach taken by FlightSafety International and TRU Simulation + Training, a Textron Inc. company, who joined forces to form FlightSafety Textron Aviation Training. The new joint venture will provide training services for Textron’s business and general aviation aircraft.

According to company CEO Brian Moore, the new company started operations on April 1st of this year and will offer training for 48 Cessna, Cessna Citation, Beechcraft, Beechjet, King Air and Hawker aircraft models at 16 locations, with a total staff of 800, 100 of which came over from TRU Simulation + Training.

In addition to the aforementioned technology upgrades, CAE is also turning to acquisitions as a means of expanding its Business Aviation footprint. Last November, the company signed an agreement with Bombardier to acquire its Business Aircraft Training (BAT) business for an enterprise value of $645 million. All the required conditions for closing have now been met.

The acquisition significantly expands CAE’s ability to address the training market for customers operating Bombardier business jets which, at more than 4,800 aircraft, is one of the largest in-service fleets of business aircraft in the world. The acquisition also serves to provide CAE with a loyal customer base and an established recurring training business that is highly complementary to CAE’s network. Bombardier BAT also comes with a modern fleet of full-flight simulators and training devices covering the Bombardier Learjet, Challenger and Global product lines, including the latest large cabin Global 5500, 6500 and 7500 business jets.

With this agreement, CAE will be adding 12 Bombardier Business Aviation full-flight simulators located in Dallas and Montreal to its training network (including one deployment already planned for CAE’s fiscal year 2021), for a total of 29 such simulators available for training worldwide, with further growth planned in the near-to mid-term.

But don’t expect CAE to stop here. “We’re still hungry for growth and looking for further acquisitions if the right opportunities arise,” notes Leontidis.

A Look Across the Pond

A similar trend can be seen in Europe. For example, as of 2017, all of the Lufthansa Group’s flight schools have been united under the European Flight Academy brand. As such, the previous training centers operated by Lufthansa Flight Training, Swiss Aviation Training,
Pilot Training Network, the Bremen Commercial Flight School, and the Airline Training Center Arizona have merged to support future pilots with over 50 training planes and state-of-the-art simulators at a variety of locations in Germany, Switzerland, and the United States.

BAA Training, a subsidiary of Avia Solutions Group, provides pilot type rating and recurrent training on more than 15 aircraft types, using 110 full flight simulators in 40 locations worldwide. Headquartered in Vilnius, Lithuania, the company has Ab Initio flight bases in Lithuania and Spain, operating a fleet of 17 aircraft. It is currently in the process of expanding its European training capabilities with the addition of a training center in Rome, Italy, where two full flight simulators will be installed in 2019-2020. The company also has facilities in Vietnam (Ho Chi Minh) and China (Henan Province).

A topic close to BAA Training’s heart is pilot fatigue. The company cites EASA, which estimates that pilots are experiencing unusually high levels of fatigue as they are increasingly asked to fly up to the limits of what is legally allowed. It is believed that pilot fatigue contributes to 15-20% of all fatal air accidents related to human error, with duties of more than 10 hours at the less favorable times of the day and disruptive schedules being noted as the biggest sources of fatigue. According to EASA, night flights, regardless of their length, cause excessive fatigue to the crew and critically disrupt the human body’s internal clock and wake-sleep cycle. In this respect, EASA is planning to review the rulemaking or safety promotion actions and the prioritization of rulemaking in its next safety programming cycle in 2020.

**Simulation vs the Real Deal**

The recent Boeing 737 Max crashes have put safety management courses back in the spotlight. Loss of Control In-flight (LOC-I) remains the number one cause of fatal accidents and, as such, is a significant risk to flight operations. According to the US Commercial Aviation Safety Team (CAST) and General Aviation Joint Steering Committee (GAJSC) data, within the last 10 years, LOC-I was responsible for roughly 45% of all fatalities. Because of numbers like these, Upset Prevention and Recovery Training (UPRT) has gained a lot of interest in recent years. EASA has even gone as far as requiring all operators to incorporate such courses into their pilot training programs.

Although most large pilot training companies have integrated these courses into their training, others believe that real in-flight training is the only way to go. These companies are quick to point out that not long ago, simulators weren’t able to faithfully reproduce certain situations, such as continuous and instant accelerations and sudden changes of outside air temperature. Lacking sufficient fidelity outside the normal envelope for upset training applications, they argue that simulators could teach an inappropriate and unsafe recovery technique or lead to over stressing the simulated aircraft model beyond its physical limits, which could be considered an inappropriate and counter-productive use of simulation.
Fortunately, technology has greatly advanced, meaning actual aircraft training may no longer be essential. Below we look at some of the latest training options – both in the sim and in the sky.

**Upset Prevention and Recovery Training (UPRT)**

Three years ago, FlightSafety International started delivering techniques for recovering an out of control aircraft. For this purpose, the company developed a Gulfstream G550 simulator with full stall data. The course includes four hours of theory on such advanced topics as low/high speed aerodynamics, stability, and control, aircraft performance, and upset recovery technique, and four hours of simulator time to allow pilots to recognize, experience, and recover from full aerodynamic stall and speeds in excess of VMO/MMO.

According to Dann Runik, Senior Vice-President of Operations and Executive Director, Advanced Training Programs at Flight Safety, approximately 1,500 pilots have already followed the course, which is available at the company’s Learning Center in Savannah, Georgia.

FlightSafety has also upgraded a Gulfstream GIV simulator to the new FlightSafety VITAL 1100 Visual System – a move that significantly enhances training by providing highly detailed mission-specific imagery with vastly improved scene content and exceptional environmental effects. “FlightSafety’s APRT presents compelling scenarios that allow pilots to safely experience and recover from historically accurate, in-flight upset events in a way that would be far too dangerous to experience in an actual aircraft,” explains Runik.

In association with Aviation Performance Solutions (APS), CAE is also offering UPRT courses, including comprehensive web-based academic, in-flight, and full-flight simulator programs. According to Captain Jean Liardon, Senior Advisor Emirates-CAE Flight training, LOC-I is indisputably one of the leading causes of aircraft crashes and crash-related fatalities worldwide. “Rivaled only by Controlled Flight into Terrain (CFIT), LOC-I highlights a serious deficiency in a pilot’s ability to deal with a variety of unusual flight attitudes and flight envelope excursions,” he says. “Regrettably, current pilot training regulatory standards and certification requirements do not address this skill deficiency.”

The three-day UPRT course provides a comprehensive understanding and practical live aircraft training in CAE’s Grob G120TP aircraft.

Last year, APS released an all-new UPRT program uniquely designed for the Multi-engine Turboprop (METP) pilot. This course is founded upon 15 years of UPRT services to US Army King Air operators, arguably operating in the most demanding operation of multi-engine turboprop aircraft in the world. The APS team has integrated web-based preparatory, high performance prop on-aircraft, and multi-engine turboprop simulator training programs into a comprehensive and effective three-day course, integrating UPRT simulation in night, weather, and low altitude operations.

SIMCOM Aviation Training, which was bought last year by Directional Aviation, operates training centers in Orlando and Scottsdale, as well as in the United Kingdom, also provides UPRT courses. In 2017, it partnered with Patty Wagstaff Aviation Safety to provide such courses. Led by one of the most celebrated female aerobatic pilots in history, Wagstaff and her team of instructors have walked hundreds of students from around the world through these courses.

The company owns and operates 48 flight training devices and full flight simulators, providing training to approximately 6,500 pilots each year. In 2018, it added a new Citation Mustang full flight simulator at its Scottsdale Arizona Training Center. Last year, it also bought Turbine Solutions, the in-aircraft training supplier for the Daher TBM series aircraft, providing simulator based training sessions and additional in-aircraft training support.

Since 1981, California-based Flight Research has been offering UPRT courses, utilizing among other more conventional aircraft, North American Sabreliners and AerMacchi Impalas. Both of which emulate the aircraft its customers fly. Pilots learn in flight how to handle extreme upset scenarios, including extreme nose high and low upsets, bank angles upsets from 70 to 180 degrees, upright and inverted spin recovery, neutral, pro, and anti-aileron inputs and stall recovery.
“One can’t beat real in-flight training, as for example in a simulator, a student cannot get the inverted feeling and simulate the queasiness, nor the stress and confusion caused by encountering higher G loads and the other sensations that come from an unusual attitude,” says Flight Research CEO William Korner. Other smaller training companies and pilot schools also offer UPRT courses, including Prevailance Aerospace, based in Chesapeake, VA, which uses a fleet of Extra 330LXs to train flight crews to recognize and recover from unusual attitudes and aircraft upsets.

Steep Approaches, Advanced Rejected Takeoff Go/No-Go

FlightSafety International will soon offer a specialized London City airport steep approach operations training program for Gulfstream G650 pilots. FlightSafety courseware developers and simulation engineers worked with their counterparts at Gulfstream to develop this new program, which includes an eLearning module, ground school, and simulator session at a Learning Center. Topics include an overview of the London City airport and regulatory requirements, followed by modules on arrivals, approaches and landings, ground operations, departures, noise abatement, and Human Factors / CRM Elements as required.

The company is also offering a four-hour course on Advanced Rejected Takeoff Go/No-go. Of vital importance for crew members, during the course each will face up to 18 different scenarios, requiring a decision by the flight crew to either continue the takeoff or abort. In addition to promoting go/no-go decision-making proficiency, this invaluable course also gives pilots an opportunity to fly their aircraft under the high stress demands of an emergency return to the airport in the case of an extreme emergency after takeoff. Each pilot will have the opportunity to practice multiple emergency return scenarios to proficiency.

Advanced Energy Management

Considering that in-flight loss of control represents the single greatest cause of fatal aviation accidents in the last decade, most instructors believe that advanced energy management courses are necessary. Such courses, which present compelling scenarios that allow pilots to safely experience and recover from historically accurate, fatal, in-flight upset events, are simply far too dangerous to experience in an actual aircraft. This is why new simulators now incorporate an aerodynamic model that replicates the flight envelope from full aerodynamic stall to speeds well beyond VMO/MMO, which allows pilots to recognize, experience, and recover from in-flight loss of control in the safe and controlled environment of a simulator.

These courses also help to increase knowledge about aerodynamics and develop new skills that are critical to safe operations, thus greatly reducing unstable approaches. Courses focus on the physics of operating aircraft during the descent phase of flight, meaning pilots learn the tools available to understand their “energy state” at any given point on the descent. By utilizing these tools, pilots will be able to predict in advance whether or not they will meet stabilized approach criteria while still very far out from touchdown.

An Eye Towards Tomorrow

According to the last CAE Business Jet Pilot Demand Outlook, over the next decade, 10,000 new business jet pilots will be required to sustain growth and 40,000 new business jet pilots will be needed to support retirement attrition across the segment, not to mention the recurrent training of the already qualified pilots. Given these perspectives, one can now fully understand why Research and Markets projects that the global simulators market has a compound annual growth rate of 4.78% and should grow to $20.99 billion in 2022.

Judging by what we’ve learned in the report, the training industry is well-positioned to meet this growing demand and, in doing so, ensure a culture of safety that begins with well-trained pilots.
How does CAE elevate your training experience?

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2. By offering relevant up-to-date OEM supported interactive training classes
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Your worldwide training partner of choice
EBACE 2019 was by far the greenest edition yet – with the spotlight being on the many sustainable innovations happening across the industry.

Marc Grangier and Volker K. Thomalla report

EBACE 2019, which took place from May 21 to May 23 in Geneva, will definitely not be remembered for the number of deals made. That’s because only one major contract was announced during the event. Although others were surely made, they just weren’t publicly announced – a practice that is far less exciting!

The show also attracted fewer exhibitors than previous years. In fact, organizers did not publish a concrete number, just saying that there were “nearly 400 exhibitors” on site. The exact number of visitors at EBACE 2019 also seems to fall under the trade secret.

But this secrecy is a piece of nonsense, as talking with exhibitors, everyone said they were satisfied with the quality of visitors. Furthermore, the show’s major topics of “Sustainability”, “Innovation” and “Future of Business Aviation” were welcomed by attendees and exhibitors alike.

To highlight just how serious everyone was about these themes, no less than 23 of the 58 aircraft on the static display came to Geneva fueled by sustainable alternative jet fuels (SAJF).

“This week’s record-setting EBACE SAJF Fly-In is a milestone in Business Aviation’s commitment to sustainability and reducing carbon emissions,” said EBAA Chairman of the Board of Governors Jürgen Wiese. “We are proud that Europe’s leading Business Aviation event, which has always showcased innovation, is proving the viability and value of alternative fuels.”

The EBACE SAJF Fly-in was an industry-wide initiative supported by Air BP, Avfuel, Aviator, Bombardier, Cirrus Aircraft, Daher, Dassault Aviation, Diamond Aircraft, Embraer, Gulfstream, JSSI, Neste, Textron Aviation, TAG Aviation Airport Farnborough and World Fuel Services.

Innovation on Display

“The excitement and enthusiasm surrounding this year’s show has been palpable throughout the week,” summarized EBAA General Secretary Athar Husain Khan. “EBACE 2019 was characterized by new products, new business models, new investment opportunities and a new generation of aviation professionals determined to make their mark.”

“Business Aviation continues changing right before our eyes, and here at EBACE, we have seen and touched the industry’s future,” added NBAA President and Chief Executive Officer Ed Bolen. “We’re finishing EBACE inspired by a vision of sustainable flight, urban air mobility and other game-changing innovations.”

Here we look at some of the new products and innovations on display during the show.
Dassault Aviation

Discussing its newest Falcon Jet, the Falcon 6X, Dassault Aviation announced that it has completed the Critical Design Review (CDR) for the new twinjet and has frozen the detailed design of the aircraft. The company has already begun manufacturing major parts as the program tracks to assembly of the first aircraft by early 2020, with first flight to follow in 2021 and deliveries beginning in 2022.

“Our design teams and partners have done an excellent job so far,” said Dassault Aviation Chairman and CEO Eric Trappier. “Completing the design review this month and releasing the aircraft to the manufacturing process is a significant milestone as it demonstrates our confidence in the airframe and engine design, as well as in the collaborative process we have put in place with our global partners.”

According to the manufacturer, the Falcon 6X offers the largest cabin cross section of any purpose-built business jet and the quietest and most comfortable cabin of any aircraft in its class. The Pratt & Whitney Canada PW812D 13,000-14,000 lbs thrust turbofan that will power the 6X has accumulated nearly 1,000 hours of runtime on the test bench in Montreal, Canada, using five development engines. To date, P&WC has accumulated more than 13,000 hours on the variant of the geared turbofan (GTF) core at the heart of the Dassault-specific PW812D. The GTF core is shared by 16 different engine applications that have amassed more than 585,000 flight hours in all.

Embraer Executive Aircraft

Embraer unveiled two new aircraft at NBAA-BACE last October: The midsize Praetor 500 and the super-midsize Praetor 600. In April this year, the Brazilian Aviation authority ANAC certified the Praetor 600. At EBACE, the company announced that both the FAA and EASA have also certified the aircraft type.

“Now certified by the key aviation safety agencies of the world, the Praetor 600 has proven to be the most disruptive and technologically advanced super-midsize business jet to enter the market, paving the way to begin deliveries now in the second quarter,” said Embraer Executive Aircraft president and CEO Michael Amalfitano. “Just over six months since its launch, the Praetor 600 has already been outperforming its certification goals, raising expectations of the ideal super-midsize.”

At the launch, the manufacturer had envisioned a range of 3,900 nautical miles (7,223 kilometers) at long-range cruise and IFR reserves. Now, the Praetor 600 is certified with 4,018 nautical miles (7,441 kilometers). Even at a cruising speed of Mach 0.80 and IFR reserves, the new jet has surpassed its targets by featuring a range of 3,719 nautical miles (6,888 kilometers) instead of the targeted 3,605 nautical miles (6,676 kilometers).

Firm orders for the $21 million (EUR 18.8 million) aircraft are already in the order book for more than one year of production.

Textron Aviation

Textron Aviation had delivered more aircraft to Europe than any other manufacturer, with 1,800 jet and turboprop aircraft currently being operated by European customers. Furthermore, 75% of all midsize jets delivered to Europe were Citations. With numbers like these, it’s no surprise the company is expanding its service footprint in the region by doubling the size of its European Distribution Center (EUDC) in Dusselsdorf.
BLESSING
Bombardier was among the companies that supported the SAJF Fly-in initiative.

“...Bombardier was among the companies that supported the SAJF Fly-in initiative. “The expansion of the parts distribution center in Düsseldorf will increase available part numbers to nearly 35,000 items across Europe, including all six service center parts rooms,” said Brad Thress, Textron Aviation senior vice president, Parts, Programs and Flight Operations. “The additional space keeps us ahead of growing demand and ready to support our customers at any time.”

Flying Colours Corp.
MRO and Completions company Flying Colours Corp. came to EBACE celebrating 30 years of operations. To
Bombardier proudly mentioned that its Global 7500 has demonstrated its unmatched performance capabilities with the first ever non-stop flight from London City Airport to Los Angeles, CA. The recent flight was carried out by a flight test vehicle (FTV5) called “The Masterpiece,” configured with the equivalent weight of a fully fitted interior, including a stateroom and shower, and 2,400 lbs. of additional payload, representing about 11 passengers and their baggage.

Boudreault also disclosed that Hong Kong aircraft management company HK Bellawings Jet Ltd. had signed a letter of intent (LOI) for five new Global 7500s, as part of the initial agreement signed in May last year. Furthermore, the Canadian company announced it had added enhanced interior repair and refurbishment activities at its service center at London Biggin Hill Airport. Austrian-based F/List will partner with Bombardier on the development of this enhanced interior shop.

Gulfstream

Gulfstream has been demonstrating the capabilities and maturity of the G600 since the first aircraft flew December 17, 2016. To date, the five G600 aircraft in the flight-test program have completed more than 845 flights.

Burns also told BART that his company has begun operations at TAG Farnborough Airport by offering aircraft line maintenance from its service center at London Luton Airport, approximately 55 miles (88 kilometers) from Farnborough, remains fully operational for scheduled and unscheduled maintenance. Meanwhile, construction of the company’s new 220,060-square-foot/20,444-square-meter maintenance, repair and overhaul (MRO) facility at TAG Farnborough Airport began earlier May. Announced a year ago, the MRO is scheduled to open in the third quarter of 2020 and will serve as Gulfstream’s main resource for customers in the London area, Europe’s busiest Business Aviation hub.

Honda Aircraft

In order to increase its training capacity after the introduction of the HondaJet Elite in 2018, Honda Aircraft is appraising different locations for the simulator. Honda Aircraft President and CEO Michimasa Fujino said at EBACE that due to a strong demand on the Continent, the new trainer would likely be sheltered in Europe.

Getting on with their expansion plans of their North Carolina facility,
Honda Aircraft is investing $15.5 million, developing a new 82,000 square feet building to render the production more efficient with automation technologies.

**Rolls-Royce**

Rolls-Royce announced that the first sets of Pearl 15 production standard engines were delivered to Bombardier and have been fitted to the first Global 6500. While Bombardier has started interior completion work on the first customer aircraft, the Rolls-Royce site in Dahlewitz, Germany, is ramping up the Pearl 15 production. Flight testing is on track to support the aircraft certification and entry into service later this year. Rolls-Royce is also strengthening its Business Aviation services infrastructure by expanding the global network of Authorized Service Centers (ASC) for its large CorporateCare customer base (at EBACE, the company disclosed it had signed its 100th customer for an enhanced version of its CorporateCare service contract). The latest addition to the ASC network is Inflite The Jet Center at London Stansted Airport, which supports the AE 3007A engines that power the Embraer Legacy 600 and 650 aircraft. Rolls-Royce now has 77 ASCs located at strategic hubs in the US, Europe, Middle East and Asia.

**Pratt & Whitney**

Pratt & Whitney is adding three new services to its popular pay-per-hour engine maintenance program, the Eagle Service Plan (ESP). Customers with select engine models and ESP plans can now benefit from oil analysis, global engine connectivity and flyaway kits. The newly added oil analysis technology offered to ESP customers is more sensitive than traditional methods, allowing it to detect deterioration of oil-wetted parts such as carbon seals hundreds of hours before there could be a potential issue. This helps to turn unplanned engine maintenance into scheduled maintenance, so customers can better plan their flying time and costs.

**Jet Aviation**

Jet Aviation is expanding and improving its global FBO network. The company plans to provide FBO services from a newly refurbished 600 square-meter state-of-the-art, double-story facility at Riyadh’s King Khalid International Airport (KKIA) by the end of 2019, its 40th anniversary year in Saudi Arabia. Recently, the company signed an FBO service agreement with Wijet, a Paris-based Business Aviation operator. Jet Aviation currently operates nine FBOs in Europe, including Geneva and Zurich, Switzerland; Amsterdam and Rotterdam, The Netherlands; Berlin (Schonefeld and Tegel), Dusseldorf and Munich, Germany; and Vienna, Austria. In October 2018, it acquired the former KLM Jet Center FBOs in Amsterdam and Rotterdam, and later gained IS-BAH Stage 2 certification for all its European FBOs, (with the exception of Amsterdam and Rotterdam) in December. The company is currently aligning its processes with the former KLM Jet Center and intends to receive IS-BAH certification for the Dutch locations before the end of 2019. Jet Aviation also signed an agreement with Collins Aerospace to buy 150 units of its GFLU-2100 multi-mode receiver for ADS-B upgrades before the January 1st 2020 deadline.

**JSSI**

JSSI Parts & Leasing, a division of Jet Support Services, Inc. (JSSI), has signed a new supply chain services agreement with Contour Aviation. JSSI Parts & Leasing will provide extensive parts procurement, logistics, and billing support to Contour Aviation’s business jets fleet. Under the agreement, the JSSI Parts & Leasing parts procurement staff will support all part requests for Contour’s jets, from the initial request through to ensuring on-time delivery. The team receives itemized orders and provides logistics support and tracking services throughout the order process, including daily parts update reports, shipment updates and core return support. They will also evaluate invoices and purchase orders and coordinate with vendors regarding delayed core billings. Sophisticated consumption analysis and forecasts will be utilized to assist with advanced planning and accurate cost projections, with periodic program and cost performance reviews.

**StandardAero**

StandardAero’s engine MRO facility in Gonesse, France, recently celebrated the delivery of its 1,500th Pratt & Whitney Canada PT6A turboprop engine. The Gonesse facility, which is located mid-way between Le Bourget and Roissy Charles de Gaulle Airport in Paris, is a Pratt & Whitney Canada Designated Overhaul Facility (DOF) for both the PT6A and the larger PW100 turboprop engine. Gonesse has over 40 years’ maintenance, repair and overhaul experience on the PT6A, having processed its first engine in 1975, and also supports the PT6A operator community with mobile repair team (MRT) services. Today, the facility has approvals for nine models of the PT6A family, including the widely used PT6A-41/-42 models, plus the PT6A-64, which powers the Daher TBM 700. The Gonesse facility was recently reselected by Daher as the PT6A engine MRO services provider for its TBM aircraft based in Europe, StandardAero having originally been selected by Daher in 2016.
Comlux
Comlux announced the sale of one Global 7500 and one Challenger 650 to two different customers, as well as the signing of a contract for Aircraft Management and Operation for the Challenger 650. Both transactions were performed by Comlux Transactions, the aircraft sales, acquisition and consulting branch of the Comlux Group. The Global 7500, belonging to the Comlux portfolio, was sold to an undisclosed customer in the United States and is due for delivery in 2020. The Challenger 650 entered into service earlier in May. Based in Russia, it is operated under Comlux Malta EASA AOC.

Collins Aerospace
As business aircraft owners in the United States continue working to meet the looming ADS-B Out year-end mandate, European operators are investigating options for completing their upgrades by Europe’s June 7, 2020 deadline. Collins Aerospace has validated several supplemental type certificates (STCs) outside of the United States to meet rising demand. A number of certifications are already approved by EASA, with a few remaining approvals targeted for completion by early this summer.

According to JP Rivet, Director of Marketing/Business Development for Business and Regional Avionics for Collins Aerospace in Europe, Middle East and Africa, there are several considerations European operators should explore as they look ahead to upgrading their aircraft. “First, although the European mandate does not dictate the same GPS performance levels as the FAA for aircraft operating in US airspace, aircraft that will be – or have the potential to be – flying in the US will need to be updated at the higher levels,” he says. “Owners should consider future uses of their aircraft when upgrading to ensure they can go wherever they want whenever they want, especially given that there are mandates for ADS-B Out in place throughout the world”.

At EBACE, Collins also showcased its next-generation Evolution seat, which combines commercial first-class seating with executive aircraft seating. The new seat provides greater room inside the cabin due to its unique recline design, allowing for close-to-bulkhead installations. Additionally, with a one-touch control, the seat adjusts immediately to the proper takeoff and landing positions, as well as providing a ‘zero gravity’ recline position to reduce pressure points during flight.

RUAG MRO International/GoGo
RUAG MRO International’s Geneva facility recently installed on the GoGo Avance L5 system on a Dassault Falcon 900DX on the basis of a Supplemental Type Certificate (STC), designed by Dassault Falcon Jet Corp, and specifically validated for this project by EASA. The GoGo Avance L5 system installation was part of a more extended and complex cabin upgrade project focusing on modernization and enhanced comfort, including the integration of a state-of-the-art InFlight Entertainment (IFE) system.

Gogo Business also announced it plans to build a 5G network for aviation. The new air-to-ground (ATG) network, which should be available in 2022, will be designed for use on Business Aviation aircraft, commercial regional jets, and smaller mainline jets operating within the contiguous United States and Canada.

AT WORK
RUAG equips Falcon 900DX with Gogo Avance L5 (top). Jet Aviation and Collins Aerospace were among the busy stands.
PILATUS PC-24 SALES SOAR

As we mentioned it in our previous issue, Pilatus re-opened its PC-24 order-book during last EBACE show to sell a second batch of 80 aircraft. Success was immediate and there is already a long waiting list. Delivery positions for the new orders are programmed for late 2020 and 2021. The base price of the PC-24 is now US$ 10.7 million in standard version and approximately US$ 11.2 million for a well-equipped aircraft. BART International has asked Oscar J. Schwenk, chairman of Pilatus, his impressions.

BART: Your strategy to develop a super versatile jet worked very well. You are delighted with the success of your new twinjet, aren’t you?

Oscar J. Schwenk: Demand for the PC-24 has been phenomenal. From day one, there has been keen interest from various customer segments all over the world. Feedback from the first PC-24 operators is extremely positive, with special mention for the aircraft’s versatility, its spacious, quiet cabin and incredible performance. These remarks, plus the high degree of attention which the aircraft commands, all confirm our chosen PC-24 strategy.

BART: Tell us more about the additional certification.

Schwenk: The greater part of our recent efforts was devoted to obtaining post-certification in several areas. Extensive tests involving 150 landings on unpaved runways in Canada and Europe finally resulted in the all-important certification allowing the PC-24 to use this type of runway. In Europe, for example, we tested the PC-24’s capabilities at Woodbridge airfield in northeast London. We are delighted to deliver on the promises we made regarding the “off-road” use of our super versatile jet. The pictures of the first landing on an unpaved runway were seen around the world – over half a million viewers watched the video on YouTube alone. Additional certification was also required for steep approaches. In 2018, the PC-24 obtained certification for steep approaches with angles of up to 6.6 degrees. This excellent outcome was preceded by extensive testing at London City Airport and Lugano Agno Airport in Switzerland. Concerning landing on unpaved runways, the very first PC-24 of the Royal Flying Doctor Service of Australia (RFDS Central Operations) with serial number 118 arrived in Australia on 29 April 2019. A few days later, its first landings on unpaved strips went ahead in Kingoonya, a small and almost totally abandoned farming settlement in the central outback of the State of South Australia. And after the flight, the RFDS pilots told us that their PC-24 could fly exactly the same missions as their PC-12s, simply much faster.

BART: How many aircraft have been delivered to date?

Schwenk: Pilatus has already handed over 30 PC-24s since the first customer delivery in February 2018. The PC-24 fleet leader, serial number 101 belonging to PlaneSense, has already flown over 1,100 hours in its first 15 months of operation. The PC-24 fleet as a whole has clocked up over 5,000 hours of safe airborne time – an impressive result for a newly launched business jet. We plan on delivering about 40 PC-24s in 2019, stepping up production to 50 aircraft in 2020 and 60 the year after. In order to increase the rate of production, new developments in production are very much focused on our Structure Assembly Hall South – Hall S for short. Excavation work began in April 2018. The new building will provide a competence center for airframe production work, and is due for completion by mid-2019. Hall S will reinforce our existing core competencies in airframe development and production. The new Structure Assembly Hall sends a clear signal of our commitment to Switzerland as a location for industry and research. Automation and intelligent logistics processes are vital to achieving competitive airframe construction operations. The new Hall S will deliver some 118,400 square feet (11,000 square meters) of production area and will be built using regional timber, just like the existing Assembly Hall 25. At 656 feet (200 meters). It will be 50 percent longer. Up to 200 employees previously stationed at different locations throughout Central Switzerland will come together in the new hall from summer 2019. Our ultimate goal is to establish globally competitive assembly production operations at the new location by 2024. Work in the new hall will focus on the PC-24. Until now, due to shortage of space and cost, part of our series production structure assembly operations was outsourced to locations outside Switzerland. Automation will deliver a reduction in costs, allowing us to bring work back to Switzerland from locations abroad. The new Structure Assembly Hall will house all the processes required for the autonomous production of aircraft airframes. This will ensure the shortest possible logistical operations. We were somewhat surprised to note higher costs and a much steeper learning curve than expected. A supply chain which has not yet been fully stabilized was a source of problems. More personnel were required than planned.

BART: What are your plans concerning the future of the PC-12, as competitors such as the Cessna Denali are about to enter the market?

Schwenk: The PC-12 has been on the market for some 25 years – with upgrades, of course. Constant investment in improving the PC-12 has driven the service life and success of this aircraft on and on. Its global fleet has grown to over 1,650 aircraft and demand remains high. However, to efficiently compete with new single-turboprop aircraft about to enter the market, our company has been working very hard for several years on improvements but don’t worry, we will soon be ready and will shortly disclose a proper answer – most certainly at next NBAA. And do expect a big surprise!
SAVE THE DATE FOR THE PREMIER BUSINESS AVIATION EVENT IN EUROPE

Join thousands of business leaders, government officials, manufacturers, flight department personnel and all those involved in business aviation for the European Business Aviation Convention & Exhibition (EBACE2020), which will take place at Geneva’s magnificent Palexpo from 26 to 28 May. This is the perfect venue for investors considering aviation as a business opportunity; companies thinking of using an aircraft for business; and flight departments who have long used aircraft as a valuable business tool. Save the date and visit the website to learn more.
The next big aerospace events taking place this summer are EAA AirVenture Oshkosh, on July 23–29, 2018, and LABACE, in Sao Paulo, on the 13-15 August 2019. LABACE is one of the four NBAA’s partnerships trade shows worldwide and the Latin American largest Business Aviation event.

Oshkosh describes itself as “The World’s Greatest Aviation Celebration”, featuring warbirds, vintage, homebuilts, ultralights and much more.

The events couldn’t be more different, but BART International contacted avionics companies to find out if a) they would be attending and b) what they would be displaying and promoting.

BendixKing will be at Oshkosh (stand 289-292) and will be showing its new AeroVue Touch Integrated Flight Deck, which was unveiled at the 2019 AERO Friedrichshafen trade show. This advanced Class III cockpit system includes three smart, high-resolution touchscreen displays that incorporate all required functions into one lightweight, panel-mounted flight deck. The system is easily customizable, allowing aircraft manufacturers to create their own unique interface that shows different information applicable to a variety of aircraft, including electric aircraft and future vehicles for urban air mobility.

Stephane Fymat, BendixKing’s VP Marketing and Product Management, said: “AeroVue Touch is suitable for everything from Part 23 Class I aircraft, up to Part 23 Class III. In its
larger configuration for Class III aircraft it can have three displays, an autopilot, and a transponder. It is also very affordable, with prices starting at $99,000. That’s an introductory price that may go up after Oshkosh.”

Fymat said the feature that makes AeroVue Touch attractive is its simplicity.

“Installing AeroVue Touch in your aircraft is very simple. There are no separate computer units and a lot less wiring,” said Fymat. “Take out four screws and a display comes out. The last feature is connectivity. AeroView Touch is a connected flight deck and data generated on the aircraft can be streamed to the ground in real time,” he said.

BendixKing will also be showing AeroPoint, its new engine monitoring solution.

Because Duncan Aviation is an Authorized Elite Repair Partner, it is located in the BendixKing Pavilion at Oshkosh.

Chris Gress, Duncan Aviation Parts and Rotables Sales Business Development Manager, said: “Duncan Aviation Parts and Component Repair Services supports all fixed wing and rotorcraft aircraft with avionics and accessories repair/overhaul services from private owners of small aircraft, to MROs, flight departments, domestic and international operators, avionics shops, other maintenance providers, government entities and others.

“We have access to large inventories of legacy aircraft parts for sale, including those for Cessna, Beech, and Piper. Stop by our booth for a chance to win a Bose Pilot Headset.”

Allan Orsi, Duncan Aviation Regional Manager, Brazil, added: “At LABACE, we will be located at Booth #2003, where we will be on hand to say hello to our good customers and friends and talk with prospects about our nose-to-tail service capabilities at Lincoln, Nebraska; Battle Creek Michigan; and Provo, Utah; our increased investments in engine repair, overhaul and Rapid Response AOG services; satellite avionics services at locations such as TEB and FXE; avionics and airframe AOG services.

“We will also have representatives available to talk about Duncan Aviation’s Parts and Components Repair Services. We repair a wide range of avionics, instruments, accessories and landing gear and have a good customer base in South America.

“We also have several team members who speak multiple languages to better help our customers for whom English is not their native language.”

Garmin said it will be at both LABACE and Oshkosh.

It will be displaying its full range of equipment, but particularly its GPS 175/GNX 375. PS 175 and GNXTM 375 GPS navigators with Localizer Performance with Vertical guidance (LPV) approach capability.

Pilots receive the benefits of high-integrity WAAS/SBAS GPS guidance in a compact, (6.25-inches wide by 2-inches tall) design that is both cost-effective and easy to incorporate into an existing avionics stack.

The GPS 175/GNX 375 include a WAAS/SBAS GPS that is IFR approach-capable. Dedicated pages within the GPS 175 include a moving map, flight plan, nearest, procedures, waypoint information and terrain pages, and the GNX 375 adds traffic and weather pages.

The addition of a dedicated direct-to button on the touchscreen offers quick access to direct airport or waypoint navigation. Customizable data fields and short cuts on the moving map to pilot-selectable pages such as the nearest airport allow for quick, one-touch access to important information in-flight.

The GNX 375 has all of the capability of the GPS 175 and adds Automatic Dependent Surveillance-Broadcast (ADS-B) Out, as well as dual-link ADS-B In via a built-in transponder.

Carl Wolf, Garmin’s vice president of aviation sales and marketing, said: “Many aircraft have not been equipped with WAAS/LPV or ADS-B due to the lack of a compelling value proposition for owners of these aircraft.

“The GPS 175 and GNX 375 offer WAAS/LPV approaches and optional ADS-B In/Out with an impressive array of features, performance, and compelling value.”

Garmin’s certification efforts on G3X Touch were also huge as its STC covers nearly 500 aircraft.

It says it will be hosting live training seminars at the Garmin exhibit every
Universal Avionics has unveiled its next-generation software-based FMS.

Garmin said it also hopes to be able to announce something for LABACE that may be of importance to its customers in South America, but it wouldn’t be drawn on what.

Gogo says it will be at Oshkosh (stand 444), but not LABACE, and made an important announcement recently that could be of interest to Oshkosh visitors.

Gogo has announced plans to build a 5G network for aviation. The new air-to-ground (ATG) network will be designed for use on Business Aviation aircraft, commercial regional jets, and smaller mainline jets operating within the contiguous United States and Canada.

The company expects the network to be available for business and commercial aviation in 2021.

SmartSky Networks says they will be at Oshkosh speaking about innovation in aviation at the Lindbergh Innovation Forum.

The company is now in its final site completion phase of its next-generation Air-to-Ground (ATG) network for business and commercial aviation, launching later in 2019.

SmartSky’s airborne network, which began its nationwide deployment a few years ago, incorporates many 5G wireless technologies that have been experienced during a large number of successful inflight demonstrations for the media and market.

Other avionics companies at Oshkosh include Advanced Panel Systems, Avilution, Dragonair Aviation, Dynon, Epic Optix, GE Aviation, NexAir Avionics, Sarasota Avionics, SiriusXM Radio, SportairUSA, TruTrak Flight Systems and Wingbug.

Satcom Direct says it will be exhibiting at LABACE and will be promoting the SD Xperience portfolio and the benefits that its FlexExec connectivity brings to the existing portfolio.

FlexExec gives Business Aviation operators the ability to budget hourly connectivity rates for the first time ever. The “Power-by-the-Hour” plan, only available through the SD Xperience portfolio, provides clients with greater flexibility to plan for maintenance and down time.

The hourly rate is inclusive of the full ecosystem of SD services, meaning cabin connectivity, datalink, scheduling, cybersecurity, post-flight reporting and more are all included, on a single consolidated monthly invoice.

It will also be promoting its cybersecurity solutions for Business Aviation after noting a year-on-year increase of attempted cybersecurity attacks on Business Aviation aircraft subscribed to its multi-layered Cybersecurity Threat Monitoring module.

SD says 81% of around 600 subscribed aircraft have experienced a cyber event that has been thwarted by the its service. In addition, the seriousness of the attempted attacks have amplified with a 154% increase in critical and high-level threats up from the same period last year.

Josh Wheeler, Senior Director of Cybersecurity at SD said: “These perpetrators making particularly nasty threats invariably involve a group of black-hat hackers working in a closed network that continuously attack aircraft.

“This determined, networked approach is harder to mitigate, but our sophisticated threat monitoring approach combines technology with human intervention to effectively detect, block, and prevent threats.”

The SD Threat Monitoring module, accessible through the SD Pro dashboard, constantly monitors all inbound and outbound threats from some 600 tails subscribed to the 24/7 monitoring service.

Universal Avionics won’t be at either show, but its products may be promoted via vendors.

Corey Wilkinson, Universal’s Program Development and Regional Sales Manager for Latin America, said: “There has been a recent resurgence in the market in Columbia and Mexico due to the ADS-B mandates. Other countries in South America are starting to formulate their own regulations for similar mandates as well.

“Brazil, Chile, and Argentina are all in various stages of writing these regulations. As a result of these regulations, the demand for upgrading our FMSs is ever-increasing.

“The slow increase in PBN and LPV is also increasing demand for our latest-generation FMS. In addition, a lot of aircraft in this region are very antiquated and flying old EFIS systems, so we are also seeing an increase in cockpit retrofit requests.

“For future demand, we see NextGen airspace mandates creating the most demand for our FMS, UniLink Communications Management Unit (CMU), Cockpit Voice and Flight Data Recorders (CVR/FDR), and display systems.

“Our new Enhanced Flight Vision System (EFVS) is also creating a great interest as more certified installations become available to offer.”
WHO CARES THAT WE HAVE MORE ADS-B SOLUTIONS FLYING TODAY THAN ANY OTHER MANUFACTURER?

IF YOU NEED ADS-B FOR YOUR AIRCRAFT, YOU DO.
TEAMWORK
Daher, Airbus and Safran partnered for the EcoPulse hybrid-electric propulsion system.

PARIS AIR SHOW REPORT

PARIS 2019:
SPECIAL MISSIONS ARE BUSINESS, TOO

The Paris Air Show is dominated by the commercial aviation industry and defense companies, with Business Aviation playing the part of a supporting actor. But special mission aircraft based on business aircraft show the performance capabilities and efficiency of modern aircraft, reports Volker K. Thomalla.

With 2,450 exhibitors, this year’s Paris Air Show was the biggest in the event’s over 110 year history. The event takes place every other year at Le Bourget, Paris’ busy Business Aviation airport, and draws well over 300,000 visitors from all over the world.

Most business aircraft manufacturers were exhibiting in Paris. For instance, Bombardier flew in its flagship Global 7500 to make its debut at the show. Gulfstream, who has a long history of providing powerful platforms for special mission applications, sent its complete range of business aircraft, from the G280 to the soon-to-be-certified G600.

With Paris being Dassault Aviation’s home turf, it should come as no surprise that the manufacturer had a remarkable presence at the show, showcasing both its military aircraft and range of Dassault Falcon Jets. The mock-up of the company’s newest aircraft, the Falcon 6X, which debuted in May at EBACE in Geneva, was on hand in Paris, attracting a constant lineup of delegations and potential customers. Dassault’s flagship, the three-engined long-range Falcon 8X, showed its performance capabilities, as well as its quietness, during the daily flying display. Dassault explicitly shows its aircraft and services during the public days to promote Business Aviation and the use of business aircraft.

With Embraer’s recently triple-certified (ANAC, FAA and EASA) midsize Praetor 600, there was another business jet in the sky over the airshow site. The Brazilian manufacturer will join forces with Boeing to form a joint-venture for its commercial aircraft business unit. Once finalized, it will be renamed Boeing Brasil Commercial (BBC) and loose the Embraer name. As Embraer’s Business Aviation unit Embraer Executive Aircraft will not be included in the joint-venture, it will have to relocate from São José dos Campos to Gavião Peixoto in Brazil to produce the Praetor 500/600 and the Legacy 450/500. These aircraft will then be flown from Brazil to Embraer’s own Melbourne, Florida, facility for completion, painting and customer handover.

Textron Aviation, along with its Textron sister company Bell, came in force to Paris. They had a Cessna Caravan with special mission equipment on display, as well as the best-selling Citation Latitude midsize jet, which is well-positioned for flight inspection work. Textron also showed a twin-turboprop Beechcraft King Air 250, which can be used in a wide variety of special mission roles. Meanwhile, Bell debuted the Bell 525 Relentless Mock-up, in addition to displaying a Bell 429 and Bell 505 Jet Ranger X.

Honda Aircraft had the HondaJet Elite on display. The aircraft has been very successful with French charter operator Wijet, which has ordered no less than 16 HondaJets. As early as July this year, Honda Aircraft will start to expand its global headquarters in Greensboro, North Carolina by investing an additional $15.5 million in a new 82,000-square-foot facility. The additional building will allow for more wings to be assembled concurrently, resulting in a major increase in production efficiency. The facility is expected to be completed in July 2020.

Start of the Hybrid-Electric Era?
Hybrid-electric aircraft are a hot topic in today’s aviation ecosystem. But will we soon see this disruptive type of aircraft engine in business aircraft?

Judging by the news coming out of Paris, the answer is yes. Three French aerospace companies, Daher, Airbus and Safran, have joined forces in a collaborate effort to develop a TBM with an EcoPulse hybrid-electric propulsion system. They plan to have the technology demonstrator flying as early as 2022. This project was kick-started by CORAC, the French Civil Aviation Research Council, with support from the French Civil Aviation Authority DGAC.
Each of the partner companies is committing different areas of technological knowledge to the project. Safran will provide the distributed hybrid propulsion, while Airbus will have responsibility for the aerodynamic optimization of the distributed propulsion system, the installation of high energy density batteries and the use of those batteries to power the aircraft. Component and systems installation, flight testing, overall analysis and regulatory construction will be undertaken by Daher using its TBM platform.

The partners do not expect to have a market-ready product available at the end of the project phase. Instead, their goal is to validate technologies designed to reduce CO2 emissions and noise pollution and create new uses for air transportation.

“Reducing the environmental impact of aircraft is a priority for the industry as a whole, so it is with enthusiasm and determination that we welcome the opportunity to be part of this ambitious challenge,” says Nicolas Orance, Senior Vice President Aerospace and Defense Business Unit at Daher. “We are determined to make it a distinctive feature of the French aviation industry and are certain that all stakeholders will unite around it.”

The EcoPulse distributed hybrid propulsion system consists of a so-called turbo generator, which is a combined turbine and power generator, an electric power management system and integrated electric thrusters, including electric motors and propellers. The electric thrusters will be integrated into the EcoPulse wing and will provide propulsion thrust. At the same time, they will deliver aerodynamic gains by reducing wing surface area and wingtip marginal vortices and, as a result, also reduce drag.

“Safran has developed a technology roadmap for the installation of electric thrusters on aircraft, and EcoPulse offers us an excellent opportunity to evaluate and identify the specific features expected by this market, particularly in terms of new hybrid propulsion aircraft projects,” says Stéphane Cueille, Head of Research & Technology and Innovation at Safran. “Safran intends to position itself as the market leader in this type of propulsion system by 2025.”
As every year, aviation enthusiasts from all over the world will make their annual pilgrimage and gather at EAA AirVenture Oshkosh, an important venue also for manufacturers and support companies seeking to market to the corporate flying community. LeRoy Cook gives a glimpse of what to expect from the show

More than any other general aviation airshow, the Experimental Aircraft Association’s annual convention and exposition, held in Oshkosh, Wisconsin, USA, gathers a massive attendance from all over the globe. Some 600,000 people will pass through the gates, over 10,000 airplanes will squeeze into the parking spaces, and aircraft movements on the runways in use for the show will total upwards of 20,000.

While not devoted to Business Aviation per se, the EAA’s AirVenture show is nevertheless an important venue for manufacturers and support companies seeking to market to the corporate flying community. The sheer numbers of attendees mean that a good portion of them are seriously involved in aviation, including those operating business aircraft. Among the more than 800 companies showing at Oshkosh are Daher, Embraer Executive Jets, Honda Aircraft, Textron Aviation, Piper Aircraft, Pilatus Business Aircraft, Jeppesen, Pratt & Whitney Canada, Aspen Avionics, Collins Aerospace, Garmin, BendixKing/Honeywell, FlightSafety and SimCom. Their chalets and display stands will be busy converting casual interest into sales, if past performance is any indicator.

Enthusiasm for AirVenture runs high with its regular exhibitors, as shown in a pre-show press release from Piper Aircraft. “Year after year, aviation enthusiasts and serious general aviation buyers from around the world come together at EAA AirVenture,” said Simon Caldecott, Piper Aircraft’s president and CEO. “This unique aviation event on the shores of Lake Winnebago is a prime meeting place for the aviation community and an ideal venue to showcase Piper products and engage with our customers.”

Piper will be hosting a press conference on the first day of the Experimental Aircraft Association’s
AirVenture to update the aviation media on recent activities at Piper Aircraft, including an overview of Piper's second quarter performance. On display at the Piper static exhibit in the main aircraft display area will be the single-engine turbo prop M600, as well as the competitively priced M500 and the pressurized single-engine piston-powered M350, comprising the entire Piper M-Class.

Pilatus Business Aircraft will be on hand with its PC-12 turboprop and PC-24 Versatile Jet. Daher will be showing its TBM 940 flagship as well as the TBM 910, and, following the June 13 announcement that it’s acquiring Quest Aircraft, will no doubt be sharing booth space with the Kodiak 100 turboprop. Honda Aircraft will feature the latest iteration of the HondaJet light business jet, while Embraer will show the Phenom 300E. Other celebrations planned for AirVenture 2019 are fetes honoring the 50th anniversary of the first flight by earth-men on the Moon, and the 75th anniversary of the D-Day landings in Normandy, which began the Allied conquest of Europe to end conflict in that theatre of World War II.

Because AirVenture embraces all aspects of aviation, from drones to warbirds, there is always special emphasis placed on each year’s significant milestones. This year marks a half-century of EAA’s Oshkosh events, during which the show grew from its homebuilt-aircraft roots to its present all-encompassing umbrella. Other celebrations including the 70th anniversary of the first landing by earth-men on the Moon, and the 75th anniversary of the D-Day landings in Normandy, which began the Allied conquest of Europe to end conflict in that theatre of World War II.

The iconic Boeing 747 airliner will also be honored at this year’s AirVenture show, marking the 50th anniversary of its introduction. Through the years, Oshkosh appearances have been made by the Concorde supersonic airliner, the Airbus 380, and the Super Guppy, Beluga and Dreamlifter cargo haulers.

An Early Business Airplane

A minor, yet important, observance for Business Aviation will be the 70th anniversary of the first flight of the Beechcraft Twin Bonanza, which occurred on November 11, 1949. The Model 50 was designed to supplement the Model 18 Twin Beech’s then-dominance of business flying, and it went on to grow into the Queen Air and King Air models. Walter Beech’s untimely demise just over a year after the first Twin Bonanza flew did not diminish its success, as its descendants went on to serve Business Aviation, continuing to this day. A large contingent of Twin Bonanzas are expected to attend the show, to honor the type’s 70th birthday.

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FIGHTING THE SKILL SHORTAGE

NBAA’s smaller conferences and regional forums play an important part in sharing best practices and tackling challenges among Business Aviation stakeholders. The recent NBAA Maintenance Conference, held in Fort Worth, Texas, focused on developing and recruiting the industry’s future AMT workforce.

Volker K. Thomalla reports

The annual NBAA-BACE regularly overshadows the smaller conferences and forums that the NBAA organizes for its members. The NBAA Maintenance Conference is no exception from this rule.

This year’s edition took place jointly with the flight attendants/flight technicians conference in Fort Worth, Texas. About 1,500 attendees registered for the combined event, who joined around 190 exhibitors at the Fort Worth Convention Center. Both numbers were the highest in the conference’s 33-year history.

One of the top topics at the conference was “Who is the technician of the future?”. It’s a critical question, as Business Aviation is competing for skilled aviation maintenance technicians (AMT) not only in the future, but already today. In the opening session, ServiceElements’ Bob Hobbi asked the audience to consider what drives their passion for Business Aviation and to think about how they can convey that passion to young people. “The industry needs to raise awareness about AMT careers in Business Aviation with younger people, otherwise it will miss growth opportunities,” he said.

Another hot topic was the upcoming ADS-B mandate. Some maintenance providers reported having already run out of slots for ADS-B updates for 2019, while others are filling the remaining slots for the rest of the year quickly. It is a tough challenge for all maintenance providers to modify the non-compliant aircraft before the end of this year.

ADS-B Fast Approaching

MEASURE
8tree makes 3D surface inspection tools that solve specifically defined chronic problems (center).
On the Exhibition Floor

Like last year, the conference opened with a kind of speed dating event showcasing new products and services. 15 companies – which had been chosen by a working group – each had five minutes to present their newest offerings. The new product showcase was highly welcomed by the attendees and provided a valuable overview of what to expect on the exhibit floor.

Speaking of the exhibit floor, this year’s edition saw booths from OEM’s like Bombardier, Gulfstream, Dassault, and Textron Aviation. There were also engine manufacturers like Rolls-Royce, GE Aviation, Pratt & Whitney, and such suppliers as Collins Aerospace, Honeywell, Garmin and Lamar Technologies. Service Centers and modification companies like Blackhawk Aerospace, Duncan Aviation, Flying Colours, StandardAero, Jet Aviation and Raisbeck Engineering were also on hand, as were training providers FlightSafety International and CAE.

A first time exhibitor was 8tree, a start-up company that developed a 3D dent-mapping tool for aircraft maintenance. Their dentCheck device measures and analyzes dents and bumps in aircraft skins after lightning strikes or collisions with ramp vehicles. The technician just points the handheld device to the affected region and click to immediately receive visual feedback and accurate data about the dent’s depth or bump’s height.

This easy-to-use tool works on all surfaces, be it metallic, composite, curved or flat. Engineers can immediately create a detailed damage report or send a report to the manufacturer for a deeper analysis. dentCheck is approved by Airbus, Boeing and Bombardier. Delta Air Lines is already using it and reports a time savings in excess of 90% compared to traditional methods.

Flightdocs of Bonita Springs, Florida, highlighted its range of maintenance tracking services for business aircraft and inventory management software. It provides customers with cloud-based solutions to track and manage the maintenance and airworthiness of their aircraft. The company started in 2003 and has already attracted a large array of different operators – both fixed wing as well as rotorcraft – who have signed up for their services.

The Leather Institute of Red Bank, New York, used the show to announce its Ink Resist, a special coating that protects leather or synthetic leather from ink stains, an annoying and costly mark on seats in business aircraft cabins. Ink Resist inhibits most pens to leave marks or stains on seats. It lasts for up to six months in high wear areas and up to a year in low wear areas. The Leather Institute has done 300 burn tests with different materials coated with Ink Resist that proved the product meets and exceeds all aircraft cabin flammability requirements.

A Valuable Event

Workshops and additional presentations complemented the exhibits and helped the attendees in pursuing their professional development. The value of an event like NBAA’s Maintenance Conference can’t be overstated. Proper aircraft maintenance keeps aircraft flying, helps reduce operating cost and above all, saves lives.
One year ago, we reported that the risk that cybersecurity poses to businesses in general – including Business Aviation – had never been higher. Well, we lied. Nick Klenske updates us on the latest in cybersecurity.
Last year, BART International dove into the topic of cybersecurity in Business Aviation. We noted that one of the most common myths in the industry is that once your aircraft’s Wi-Fi signal is out of the range of those on the ramp, it’s safe from an attack.

Talking with the cybersecurity experts at Satcom Direct, we learned that in fact nothing could be farther from the truth. That the hard reality is that regardless of whether you are on the ground or in the air, if you can see the internet, then the internet—and the hackers—are most definitely able to see you. “Hackers want the info that’s profitable, and that’s your passenger info,” said Rob Hill, Business Development Director, Global Data Solutions at Satcom Direct.

Since last year, the situation seems to have gone from bad to worse. In the lead up to EBACE 2019, Satcom Direct noted a year-on-year increase in attempted cybersecurity attacks on Business Aviation aircraft subscribed to the multi-layered SD Threat Monitoring service. According to a company press release, 81% of the nearly 600 subscribed aircraft have experienced a cyber event that has been thwarted by the SD service.

The SD Threat Monitoring module, accessible via the SD Pro dashboard, offers 24/7 constant monitoring of all inbound and outbound threats. Abnormal network behavior is highlighted using a variety of threat analysis and prevention solutions, as well as human expertise. All potential threats, attacks and intrusions are blocked before they reach the digital devices or aircraft. If a compromised device is identified in flight, threats can be blocked before they propagate to other passengers or ‘call home’ to the malicious actor. Operating in real-time, the system alerts users, identifies causes and provides remedial steps.

What’s perhaps even more concerning than the increase in number of attempted hacks is the increase in the seriousness of these attempts. According to Satcom Direct, last year saw a 54% increase in critical and high-level threats. In particular, the company has identified a trend that shows an increase in attacks from advanced persistent threat groups like the well-known Fancy Bear, as well as sophisticated hackers, which are often commissioned by nation states or criminal organizations to specifically target VIPs.

“These perpetrators making particularly damaging threats invariably involve a group of black-hat hackers working in a closed network that continuously attack the aircraft,” explains SD Senior Director of Cybersecurity Josh Wheeler. “This determined, networked approach is harder to mitigate, but our sophisticated threat monitoring approach combines technology with human intervention to effectively detect, block and prevent threats.”
A critical threat represents activity that can affect default installations of widely deployed software, resulting in the compromise of servers and devices, as well as leaving the door open to other hackers. Trojans, viruses and operating system vulnerabilities all fall into this category. A high level attempt represents a threat from web browser exploitation or malware, which can be elevated to critical status. This type of threat can potentially cause serious long-term damage to corporate networks.

“As the digitization of aviation trend continues, aircraft are becoming operating systems in themselves, so mitigating data risk imperative,” adds Wheeler. “Altitude does not make you safe, and we encourage everyone to be prepared.”

**FAA Found Underprepared**

In terms of being prepared, unfortunately, operators and flight departments aren’t getting much help from the FAA. According to a recent report by the Department of Transportation’s Office of Inspector General (OIG), it seems the FAA is underprepared to identify and mitigate cybersecurity vulnerabilities. Specifically, the agency has failed to complete a comprehensive framework for identifying and mitigating risks.

With the aim of recommending rulemaking and policies for aircraft systems, the FAA had established a government-industry working group. But due to what the FAA cited as being other rulemaking priorities, it has not yet set target dates for implementing recommendations on engines, propellers, rotorcraft and general aviation.

The OIG report, which assessed the FAA’s progress in meeting the cybersecurity enhancements that Congress mandated as part of the 2016 FAA Extension, Safety and Security Act, was conducted on the request of the US House Transportation and Infrastructure Committee. According to the OIG, the FAA is falling short of the Act in two primary areas: determining R&D priorities in cybersecurity and creating and applying a cybersecurity risk assessment model.

Specifically, in the report, the OIG states that “the FAA’s lack of target dates…inhibits the agency’s ability to fully implement regulations and policy to mitigate cybersecurity issues for the diverse range of aircraft operating in the National Airspace System (NAS) as required by the FAA Extension, Safety and Security Act.” But the news isn’t all bad. The report did commend the FAA for having taken some steps towards enhancing security, including completing a strategic plan on cybersecurity, working with other agencies to identify vulnerabilities, and researching and developing a threat model. It has also developed a cybersecurity risk model.

Based on this assessment, the OIG has recommended that the FAA develop:

- Target dates for all outstanding recommendations
- Plan for full implementation of cybersecurity risk model
- R&D priorities

“We need to adopt sensible, meaningful cybersecurity protections,” said Senators Edward Markey and Richard Blumenthal in a joint statement.

**EASA Proposes New Amendments**

Meanwhile, in Europe, EASA recently issued a proposal to amend its certification standards to include cybersecurity-specific provisions – a move the agency says will help mitigate the increasing threat these attacks have on aircraft safety.

According to the proposed amendments, manufacturers and operators seeking certification of new aircraft systems (or modifications of existing systems) will have to address threats that can lead to unauthorized access and disruption of electronic information or electronic aircraft system interfaces.

The new amendments come at a time when the industry is seeing an increasing level of technology, both within traditional aircraft design and via the launch of new autonomous air-
craft (see side article). “Aircraft systems are increasingly connected, and those interconnections are susceptible to new threats, which may potentially have catastrophic effects on the safety of air transport,” says the agency in its NPA. “All recently-designed large aircraft are known to be potentially sensitive to those airworthiness-related security threats due to the interconnectivity features of some of their avionic systems.”

The amendments are based on recommendations by an Aviation Rulemaking Advisory Committee (ARAC). The FAA has tasked the ARAC with standardizing the way aircraft systems are protected from cyberattacks, with the aim of introducing more harmonization between EASA and FAA regulations.

Not If, When

The unfortunate reality is that it’s not a matter of if a breach will occur, but when. And, as we’ve seen, the problem isn’t going to go away anytime soon. “These days, the cabin of a business jet is a hub of information and data flowing to and from the aircraft,” says a spokesperson for ARINCDirect. “Making financial transactions, video conferencing, chatting, texting, watching movies, using social media, really using the internet however you want, it’s all a normal part of the modern passenger experience – which makes securing that data pretty critical to your passenger.”

Although regulatory bodies on both sides of the Pond are working to update policies and procedures to deal with this evolving threat, there’s also a number of actions you can take yourself. According to a whitepaper on cybersecurity published by Satcom Direct, these include:

- Messages that ask for sensitive information or that need information urgently should always raise a red flag.

Before clicking, hover your cursor over a link to see what the URL is. If the website is unfamiliar, don’t click, just delete.

Always confirm that an email is legitimate before opening an attachment. This could be as simple as calling or emailing the sender to let them know you received an unexpected document and want to confirm it was from them before opening.

Always use a secure, password-protected connection.

By creating procedures that limit access, eliminate out-of-date email addresses and establish a protocol for transmitting sensitive information, many of the doors used by hackers can be wholly or at least partially closed.

Educate both crew and passengers about the threats and advise them that a company’s exposure to hacking or corporate espionage could be elevated when traveling.

Use geolocation-based services that send an automatic alert to pilots when entering questionable airspace. This raises awareness of the risk of internet traffic transfer, and pilots and passengers can then decide whether to terminate their internet connection.

Implement maintenance protocols that prohibit the use of unauthorized USB drives.

A Bit of Good News Too

Despite the increase in cyberattacks and the complexity of trying to prevent them, Satcom Direct assures us that there is some good news out there too. “Whether you are a Chief Pilot, DOA or DOM, when it comes to cybersecurity, there are several quick fixes you can easily implement today to potentially save you and your company significantly tomorrow,” says the SD white paper.

The place to start is with what SD calls a full cybersecurity assessment. A cybersecurity assessment is best thought of as an insurance policy. Satcom Direct uses the analogy of car insurance: Even if you have the world’s best driving record, you still get auto insurance to protect you from everyone else on the road. The same goes for your cybersecurity.

A Note on Blockchain

You’ve probably heard of blockchain, most likely within the context of cryptocurrencies (i.e., Bitcoin). For those still unsure what exactly it is, blockchain technology is a common data file or ledger for transaction history that cannot be changed or altered.

Most interesting for our readers is the increasing role the technology is playing in aviation. In fact, according to the NBAA, blockchain technology has the potential to change the way Business Aviation companies manage their most important data, with potential applications ranging from payment systems to secure data storage of maintenance or pilot records. Blockchain could even be used to streamline parts tracking and creating audit trails for maintenance records.

The main benefit of using this technology is that it is significantly more secure than traditional encryption methods. “Blockchain identification methods are similar to individual fingerprints, which makes it an enticing option for payment and transaction processes,” says AeroChain founder and CEO Anthony Shook, who spoke about the topic at NBAA-BACE 2019 in Orlando.
One of the fastest growing aviation sectors is Unmanned Aircraft Systems (UAS), better known as drones. Although recent headlines tend to focus on how drones pose a challenge to our already crowded airspace, they are also getting the attention of our industry. This was made clear at NBAA-BACE last year, which had a dedicated session on the topic.

“We all understand that drones are part of the aviation industry, but we need to understand how this is going to transform the industry,” said Brad Hayden, President and CEO of Robotic Skies and a panelist at the NBAA-BACE session. “This is going to impact our careers, our businesses and, of course, our airspace.”

According to the NBAA, the implementation of FAR Part 107 opened the door to a variety of mainstream commercial unmanned aircraft system operations. “As flight departments seek authorization for increasingly complex missions, questions on the regulatory endgame for this paradigm-shifting technology arise,” says an NBAA report on the session.

Drones themselves will likely be used for applications that fall just outside of the Business Aviation sphere, such as infrastructure inspection, package delivery, emergency services, mapping, etc. However, the infrastructure these devices will use (called UAS Traffic Management, or UTM) lays the groundwork for the development of urban mobility – which does fall within the bizav realm.

**Introducing the eVTOL**

Chief among these urban mobility solutions is the development of autonomous electric vertical takeoff and landing vehicles (eVTOLs). Ideal for efficiently transporting people over urban environments – including taking a busy executive from the business airport to the city center – eVTOLs could have a significant, even disruptive, impact on Business Aviation and, in particular, the helicopter sector.

Need proof? Look no further than Bell’s development of its Nexus eVTOL. The Bell Nexus is powered by a hybrid-electric propulsion system and features Bell’s signature powered lift concept incorporating six tilting ducted fans that are designed to safely and efficiently redefine air travel.

“As space at the ground level becomes limited, we must solve transportation challenges in the vertical dimension – and that’s where Bell’s on-demand mobility vision takes hold,” says Bell President and CEO Mitch Snyder. “We believe the design, taken with our strategic approach to build this infrastructure, will lead to the successful deployment of the Bell Nexus to the world.”

Bell, Safran, EPS, Thales, Moog and Garmin are all collaborating on the Nexus. Bell is leading the design, development and production of the VTOL systems. Safran is providing the hybrid propulsion and drive systems, EPS the engine storage system, Thales the Flight Control Computer (FCC) hardware and software, and Moog the flight control actuation systems. Garmin will integrate the avionics and the vehicle management computer (VMC).

**Taking it to the Next Level**

“The things we talked about five years ago are actually coming to pass,” said Paul McDuffee, Business Development Executive at Boeing Horizon X and a panelist at the NBAA-BACE event. “We are no longer a science-project industry anymore, we’re serious business partners that need your help now – it’s time to move to the next level.”
Safety and compliance training & auditing

IS-BAO preparation and audit

SMS implementation support

Management

Process Development

MELs and technical publishing

Your Swiss Partner for Aviation Safety and Compliance...

Now celebrating 100 years of combined aviation experience
The international aviation industry is a highly competitive, highly regulated and international industry which is also inherently susceptible to allegations and instances of corruption. Over-regulation, protectionism, and government ownership of industry can lead to slow economic growth, high unemployment, and widespread poverty – such bureaucratic control lies at the core of endemic corruption and can also create opportunities for businesses to gain significant business advantage.

High profile cases include investigations against Airbus, Embraer and Bombardier which have resulted in investigations worldwide by the United States Securities and Exchange Commission (“SEC”), the US Government, UK Government, Canada and Brazil. Whether buying, selling, financing or maintaining an aircraft, corruption risks associated with the aviation industry are well documented.

The legal and business consequences of corruption in the aviation industry include criminal investigations, prosecutions, convictions, fines, penalties, shareholder losses (resulting in civil law suits) and ultimately jail terms for individuals found guilty.

Countries and states worldwide have been taking new and tougher approaches to corruption both on a domestic basis and internationally. Aoife O’Sullivan takes a close look at these measures.
Anti-Corruption Measures in the UK

In December 2017, the UK Government produced an anti-corruption strategy which establishes a longer-term framework to guide UK government efforts to tackle corruption at home and abroad in the period to 2022.

This strategy sets out 6 clear priorities for the UK Parliament. These are:
1. Reduce the insider threat in high-risk domestic sectors such as borders and ports
2. Strengthen the integrity of the UK as an international financial center
3. Promote integrity across the public and private sectors
4. Reducing corruption in public procurement and grants
5. Improving the business environment globally
6. Working with other countries to combat corruption

Some anticipated changes include:

 Public beneficial ownership registers for overseas legal entities - The government plans to establish a public register of beneficial ownership of overseas legal entities. A key objective of this register is to "identify, in a public and easily accessible way, the owners and controllers of overseas legal entities that own property in the UK, increasing transparency and trust in the UK property market and supporting law enforcement in their investigations."

 Changes to government architecture on economic crime - The government will establish a National Economic Crime Centre, based in the National Crime Agency. The government will "continue to support the Office of Financial Sanctions Implementation (OFSI) in imposing monetary penalties" and will "continue to assess the effectiveness of financial sanction".

 Improving the Suspicious Activity Reporting (SAR) regime - The government will: "reform the SAR regime, upgrading capabilities (including IT) and making the necessary legislative, operational and technical changes."

 Implementation of the remainder of the Criminal Finances Act 2017: April 2018 - The provisions of the Criminal Finances Act 2017, a significant overhaul and update to the UK anti-money laundering regime will be implemented over time on a staged basis. The government "will implement all key elements of the Criminal Finances Act, including Unexplained Wealth Orders, by the end of April 2018 (subject to parliamentary time)."

 Corporate offence of failure to prevent economic crime - The strict liability corporate "failure to prevent" offences are currently limited to the sphere of bribery and the facilitation of tax evasion. More detail on the Bribery Act is provided below.

The Bribery Act 2010

The Bribery Act 2010 was introduced to update and enhance UK law on bribery including foreign bribery to address better the requirements of the 1997 OECD anti-bribery Convention. The Act is not concerned with fraud, theft, books and record offences, Companies Act offences, money laundering offences or competition law all of which are regulated elsewhere.

Does your company (or anyone associated with your company) offer commissions, bribes, hospitality and goodwill gestures in return for services?

Has your business ever facilitated or been aware of a broker or agent commission in the sale of an aircraft which was not made know to seller or buyer? Have you ever bought and sold an aircraft as a "back to back" deal? Do you pay facilitation payments to ensure the timely landing and handling of your aircraft?

The Act creates a strict liability offence of failing to prevent bribery. There is no need to prove negligence or the involvement and guilt of the company. An organization will only have a defense to this if it can show that it had implemented "adequate" anti-corruption compliance procedures. The scope of the Act is extensive and has significant reach beyond the UK.

Bribery Offences

The four offences can be summarized as follows:

1. Bribing Another Person
   It will be an offence to offer or give a financial or other advantage to a person
   a. With the intention of inducing them to behave improperly;  
   b. As a reward for that person to behave improperly; and  
   c. Knowing or believing that the recipient’s acceptance of the “advantage” would constitute improper behaviors.

2. Being Bribed
   It will be an offence to receive a bribe if the person receiving it agrees to or receives an “advantage” to act in an improper manner. The offence occurs where the bribe is either paid directly or through a third party. In many cases it does not even matter if the recipient knows that his or her acceptance would constitute a bribe.

3. Bribery of Foreign Public Officials
   It will be an offence to offer or give any advantage to a foreign public official with the intention of influencing them in their capacity as a public official and to obtain or retain business or business advantage from them. There is no requirement under this heading for the advantage to be “improper” and there is a guarded exemption where the law permits payments to officials.

4. Failure of Commercial Organizations to Prevent Bribery
   A company or a partnership will be automatically liable for any bribe offered or given in connection with its business unless it can show that it has in place adequate procedures designed to prevent bribery.

Who Does the Act Apply to?

The Act is far-reaching and extends to cover bribery committed worldwide by individuals who are UK nationals or are ordinarily resident in the UK, as well as organizations who conduct some portion of their business in the UK. The Serious Fraud Office (SFO) can take a more wide-ranging approach to investigating and
prosecuting corporations and individuals involved in corruptive practices in the UK and abroad. It is also likely that an SFO investigation may increase the risk of parallel investigations in other jurisdictions with countries that have a close working relationship to the UK (e.g. the US). In fact, US companies with a presence in the UK will now not only have to comply with their local Foreign Corrupt Practices Act (FCPA) but will also need to comply with the Bribery Act which is more extensive.

For businesses, the new corporate offence will make companies liable if anyone acting under its authority commits a bribery offence, including employees, agents, subsidiaries, partners and consultants.

Furthermore, the offence does not need to take place in the UK. So, companies that have a UK office or operate in the UK or even simply hire a UK resident will be liable under this Act. All that is needed is a UK presence.

What are the Sanctions under the Act?

Convictions under the Act include jail and/or unlimited fines for individuals and the potential for the confiscation of property under the Proceeds of Crime Act 2002. Companies can receive unlimited fines which are likely to be substantial. “Senior officers” (which is broadly defined and will include directors and key management; possibly even shadow or non-executive directors) can also be convicted of an offence where they are deemed to have given their consent or connivance to giving or receiving a bribe or bribing a foreign public official. Importantly, it is possible that omitting to act might be regarded as consent or connivance and lead to prosecutions, fines and/or imprisonment. A director convicted of a bribery offence is also likely to be disqualified from holding a director position for up to 15 years.

A company commits an offence if a person associated with it bribes another person for that company’s benefit. “Association” is loosely defined to include people who perform services for or on behalf of the company, regardless of the capacity in which they do so. It does not stop at employees and will include agents, consultants and suppliers. The only way to avoid criminal liability under the Act is for companies to establish a system of “adequate procedures” designed to prevent bribery.

The essence of the guidelines are six basic principles which are all designed to give commercial organizations a basis for planning and implementing their regime to combat corruption:

**Principle 1: Risk Assessment**

Conduct a risk assessment on your global business and identify areas of high risk. Do you operate in countries where corruption is perceived to be high (e.g. Africa, Russia, and India)? The World Bank provides up to date data on corruption risks in its Worldwide Governance Indicators website. Do you interact with public officials and do you provide corporate hospitality as a way of encouraging business with your company? Do you make use of agents in high risk jurisdictions and do they ever tender for business? What processes have you in place to ensure these people are not engaging in corruptive practices? Do you have commission agreements, and do they include warranties and undertakings from the various parties as to anti-corruptive compliance?

**Principle 2: Top Level Commitment**

Issue now a clear statement of anti-corruption culture at the highest levels of management. Stick to it and ensure the message is not only given but also shown to be followed – lead by example. The anti-corruption statement should be clearly published and accessible, both internally and externally.

**Principle 3: Due Diligence**

Put in place processes for auditing the anti-corruption program at all levels. Carry out an audit regularly – spot check arrangements with suppliers and brokers. Are your sales team aware of their duties? Are they reporting back and is your response team effective in dealing with the reports? Review your contracts and assess the structure you have in place for appointing agents, the purpose of their appointment and the way they are remunerated. Appoint a compliance officer.

**Principle 4: Clear, Practical and Accessible Policies and Procedures**

Ensure all persons associated with your business are aware of your stance and have a system of reporting in place. Train staff and update them regularly on anti-corruptive practices. Make clear statements about your company’s stance on gifts and hospitality, payments to advisers and agents, political contributions. Check your stance on paying officials simply to secure the performance of their normal duties (e.g. granting a license). These acts are commonplace around the world but may now constitute an offence under the Act.

**Principle 5: Effective Implementation**

Your system should include a process for investigating reports and set out your strategy on disciplinary action. Incorporate this strategy in your commercial contracts at all levels - employee contracts, pilot and crew arrangements, service and supply arrangements, sales and management agreements etc.
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30 years ago, there were always two pilots, an engineer and a navigator in the cockpit.

Safety: The Question

Student: Dr. Einstein, aren’t these the same questions as last year’s physics final exam?

Dr. Einstein: Yes; but this year the answers are different.

The same applies to the question of safety.

How is safety achieved? This is the question. The answers change with maturity.

Traditionally, safety is regarded as the absence of accidents. In the meantime though, new answers are sought after by many safety practitioners and researchers.

One aircraft accident in particular has triggered well known answers to the safety question.

When at about 18:15 Pacific Standard Time on December 28, 1978, United Airlines Flight 173 crashed into a wooded, populated area of suburban Portland, Oregon, during an approach into Portland International Airport, it triggered an in-depth investigation.

Below, four approaches to finding a safety answer to this accident are presented.

Safety I Answer

Erik Hollnagel has introduced the term “Safety I” to indicate the traditional approach to safety and safety management as laid out by the ICAO SMS framework. Accidents are the end of a chain of events. Along the chain of events, each event is the cause for the one following.

Therefore, in the logic of Safety I, the standard answer states that safety is achieved by creating reliable components of a process or system. Since our standard model on safety instructs us to see safety as the result of the interaction of these components functioning without failures. As long as components and people are reliable, no accidents should occur.

In line with this logic, the investigators of the Flight 173 accident concluded that a “contributing factor to the accident was the failure of the copilot and flight engineer either to fully comprehend the criticality of the fuel state or to successfully communicate their concern to the captain.”

The investigators dissected the accident into its components, such as weather, technical components, crew and so on. Then they analyzed each component to discover which one had actually failed and by failing caused the accident.

The Portland United Flight 173 accident sequence started with a green gear down indication light not illuminating after gear was selected down. The flight crew became concerned, forgot about the actual flying and spent such a long time analyzing the problem that eventually they ran out of fuel and crashed.

The cause of the accident was, ultimately, identified as a lack of communication between the flight crew members and their leader, the captain. The unreliable component was identified as the communication patterns of the flight crew.

Therefore, to prevent such an accident from happening again, communication between flight crew members had to be fixed. United Airlines pioneered the introduction of Cockpit Resource Management, later called Crew Resource Management, and such an accident should have never occurred again. However, similar accidents happened again.

Safety II Answer

Safety II, in contrast to Safety I, does not focus on linear causality and “Safety I: Avoiding That Things Go
Wrong”. Safety II focuses on “Enforcing What Goes Right”. While linear causality-based analytical models might work when studying mechanical systems, they do not when studying people. People do not either function or fail, but adapt to the situation. They do not function as a machine. Such adaptations are variable, often not repeated and often unique. Observable outcomes, such as the accident of United Flight 173, might be due to transient phenomena or conditions that existed at a particular point in time and space.

On the other hand, how many times was a gear light unserviceable and it did not result in an accident? Reaction patterns of humans are not always the same. One time the crew saves the day, the other time they fail to do so. As James Reason once put it: “The pilot is the hazard and the pilot is the hero.”

It is therefore not so obvious to see the 1978 investigators stating “the accident was the failure of the copilot and flight engineer (…) to (…) communicate their concern to the captain.”

**STAMP Answer**

The aviation community has moved forward and it now understands that reliable components alone are not sufficient to achieve safety. Nancy Leveson, an MIT professor with considerable experience in aircraft and aerospace accident investigation, denies that reliability of components necessarily leads to safe outcomes. High reliability is neither necessary nor sufficient for safety. In fact, accidents are complex processes involving the entire sociotechnical system. Traditional event-chain models cannot describe this process adequately.

Leveson reasons that the most basic concept in STAMP is not an accident, but a constraint. In systems theory, emergent properties, such as safety, arise from the interactions among the system components. The emergent properties are controlled by imposing constraints on the behavior of and interactions among the components. Safety then becomes a control problem where the goal of the control is to enforce the safety constraints.

On these insights and further reasoning, mainly increased complexity and coupling, Leveson developed a new approach, complementary to Safety I reasoning, to understanding accidents and designing safe systems. She called it System-Theoretic Accident Model and Processes (STAMP). Leveson points out that ways to analyze and prevent accidents must reflect the reality of today’s complex socio-technical systems and not oversimplify the causes of accidents.

Leveson observes that we do not seem to be making much progress lately in reducing accidents in most industries. Major accidents that seem preventable and that have similar systemic causes keep occurring. Too often, we fail to learn from the past and/or make inadequate changes in response to accidents. More generally Leveson asks, why don’t the approaches we use to learn from events, most of which go back decades and have been incrementally improved over time, work well in today’s world?

Safety I and Safety II approaches may work well in certain well defined cases. However, when the problem is not any longer the failure of a mechanical component or the emergence due to adaptive behavior of individuals, new descriptions of the problem must be found. Leveson subverts the assumption “Most accidents are caused by operator error and rewarding ‘correct’ behavior and punishing “incorrect” behavior will eliminate or reduce accidents significantly.”

Traditionally, human or pilot error is often cited as the cause of an accident. The investigators of the 1978 United Flight 173 accident concluded also that the human, or rather the humans in this case, have erred by not communicating assertively enough their concern about the fuel situation to the captain. But, as a US Air Force study of aviation accidents states, the designation of human error, or pilot error, is a convenient classification for mishaps whose real cause is uncertain, complex or embarrassing to the organization.

Nancy Leveson concludes that traditional event-based accident and risk models are particularly poor at dealing with human error and decision-making. Human error is usually defined as any deviation from the performance of a specified or prescribed sequence of actions. However, instructions and written procedures are almost never followed exactly, as operators strive to become more efficient and productive and to deal with time and other pressures.

In studies of operators, even in such highly constrained and high-risk environments as nuclear power plants, modification of instructions is repeatedly observed and the violation of rules appears to be quite rational, given the actual workload and timing constraints under which the operators must do their job.

Work-as-done is most likely not identical to work-as-imagined.

**‘Safety Differently’ Answer**

“‘Safety Differently’ has become an approach to safety which looks at it, as the name suggests, differently. The key principles of Safety Differently are: Safety is defined as the presence of positives, such as the capacity to be successful in varying conditions (as opposed to the absence of negatives); People are the solution (as opposed to the problem to control); and Safety is an ethical responsibility to those who do the organization’s risky work (as opposed to safety being a bureaucratic accountability to those up the hierarchy). While Safety Differently is not renegading Safety I, Safety II or STAMP, it puts the focus on assuming that even if we eliminate all negatives, such as accidents or component failures, success is not guaranteed. This is not necessarily true because of how people adapt to deal with complexity, which leads to both success and failure, as Ron Gantt stated. Eliminating the causes of failure will also eliminate the causes of success. Safety thus becomes an enabler, not a pull on the organization.

If safety is an ethical responsibility, safety should be oriented towards supporting workers, not towards meeting bureaucratic and regulatory requirements. Nobody works to create an accident. Workers want to be successful and safe. The organization should ask workers what they need instead of asking them why they are not following the rules.

In the context of the analysis of the United Flight 173 accident, the introduction of CRM might still have been a valid Safety Differently answer.

CRM did indeed give flight crews a space in which variability and team-oriented decision-making became possible. But when CRM itself degenerates to a bureaucratic exercise, a tick in the box of the training list, its benefits are diminished.

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Pilots must constantly strive for the perfection they may never achieve just to keep their skills sharp, writes LeRoy Cook.
The government inspector giving me my flight check wanted to set the tone for what was to come. As we taxied out from the parking ramp, he said: “See that taxiway centerline? Why are you staying five feet to one side? It’s put there for a reason.” I dutifully toe-tapped the old Commander twin back into alignment. In reality, he was doing me a favor; he could see I was new to the game and that I was a bit cocky, and I needed a little prodding.

One of the great truths of flying is the admonition “He who stops getting better stops being good.” We must constantly strive for the perfection we may never achieve, just to keep our skills sharp. Becoming satisfied with being almost good enough means that we’re no longer trying to stay on centerline, on altitude or on track.

Why bother? Because the skills we need at a critical juncture won’t be there when called upon, if we don’t practice at every opportunity. I recall reading a story from 50 years ago about a transatlantic cargo flight that had passed its “point of no return” when the weather in all of Europe went down in zero-zero fog, at least the parts that were within reach of the flight’s landfall. The flight deck crew knew the situation was dire, but the aircraft commander took charge, slipping into the left seat.

He marshaled all his resources for the inevitable ILS approach to a below-minimums destination. The copilot was assigned the tasks of watching for any sign of lights or runway and calling out altitudes. The flight engineer was to take care of the engine controls, and all hands on board were briefed on their duties at crash stations. Gear down with half flaps, the old man flew the ILS on rails, tweaking wheel and pedals minutely to hold the crossed needles immobile, past the middle marker and across the invisible approach lights. As the radar altitude reading passed through 25 feet, he slowed the rate of descent imperceptibly, the callouts coming in 10 foot increments as he continued along the localizer beam. There was a sound of tires brushing pavement; he called for power off, tapped the brakes to maintain an unseen centerline, and brought the indicated airspeed to zero, setting the parking brake. Nothing but fog could be seen from the 30-foot cockpit height. The control tower was alerted to their arrival.

Eventually, a slight bump was felt from below; the loadmaster exited the aircraft to see what it might have been. It turned out to be a follow-me truck that had driven under the nose and bounced off the nosewheel tires. The driver was creeping along the centerline of the runway, attempting to locate the immobile airplane, and couldn’t see the huge shape in the fog. The dual nose tires were sitting precisely astraddle of the runway centerline.

Do you suppose that captain learned how to make a precision approach to a blind landing on that fateful morning? No. He trained for it constantly, seeking perfection in the simulator and actual flight, just in case such skill would be needed someday. He may have been out of options, but he wasn’t out of luck. He made his own luck.

Use It or Lose It
Creating such skills starts with dedication to the task and knowing how to use the tools to achieve as much perfection as possible. My habit is to hand-fly the aircraft when below 10,000 feet, unless workload dictates...
otherwise. I need the practice and staying in actual touch with the airplane allows a bonding that wouldn’t occur otherwise. That’s not to say I will not use the autopilot in appropriate situations; it is a tool, but only a tool, not a replacement for the human element. Certainly the automation should be employed when one has to divert attention to look up information or enter data on the pedestal. If the METAR is sitting at minimums, it makes sense to use every bit of capability, including a coupled approach.

Even when flying on autopilot, we can improve our precision flying ability by paying close attention to the autopilot’s actions. Take note of how it anticipates a course interception by small, early increments of control, avoiding an overshoot; so should we, when it’s our turn to fly. An altitude capture is not a matter of driving up or down to a number and grabbing hold of it. Instead, the autopilot is aware of the closure rate, modifies pitch attitude accordingly and stops gently in level flight on target. There’s a lesson there for us, if we want to become a precision pilot.

Manual flying doesn’t have to be a discarded art, but it does have to be revisited more than occasionally in order to maintain predictable performance. Chasing the instrument indications is a sign of rusty skills, capability that has atrophied from disuse. When observing a flight check, I often see jerky movements rather than fluid control use. I advise the struggling pilot to use half as much input, starting earlier and to apply a scan pattern of the sources of information on the panel, rather fixating too long on one indication.

Flying manually in flight director mode is a valuable tool, although it can be detrimental to scanning the rest of the displayed indications. As with all automation, the pilot has to remain in charge of setting up the guidance, so the course director and attitude cues lead him or her right where the aircraft should go. As with fully automated flight, small, incremental, anticipatory control input is the key to precise results. The pilot’s muscles are simply replacing the servos of the autopilot.

No Such Thing As Non-Precision

I’ve never cared for the term “non-precision approach.” Any approach to a landing, even a visual arrival, should be conducted with precision. Without enhanced vertical and lateral guidance, we simply execute the descent in a stabilized manner, setting up the aircraft to reach certain targets at key positions, ones that ensure a stress-free landing. Do not allow the relief of breaking out of the clouds and acquiring the airport to deteriorate your quest for precision. Stay on the altitude and airspeed targets that assure a properly aligned final approach.

Getting the aircraft to the runway without a programmed arrival path seems to be a lost piece of creative flying. Any good pilot must be capable of keeping the airplane under smooth, precise control simply by watching the landscape and applying knowledge of the environment around the airport. It is at this time that basic pitch and power criteria have to be drawn upon from prior practice; in approach configuration, a certain amount of thrust and a certain attitude will produce the level flight or constant descent that is needed. One cannot seek out these parameters on the fly, so to speak. They need to be developed and stored in advance of need, when you’re twisting and turning on a visual arrival.

At the foundation of precision flying are these basic pitch-and-power settings, applied to configurations like initial climb, cruise-climb, low speed and high speed level flight, descent and approach. Knowing what thrust is needed to hold level flight or achieve a crossing altitude gives a familiar starting point, from which one can modify technique slightly for icing, turbulence penetration, or wind shear conditions. But if you don’t know the basic settings, you can’t be creative with precision flight path control.

Nowhere does this understanding of fundamental flying technique show up more than when flying a heavily-loaded aircraft with little remaining power available. Trying to stay on a target altitude simply by adding more pitch attitude is a recipe for disaster; more thrust, applied in a timely manner, is the answer. When faced with a sagging altitude reading, my first reaction is to apply a small bit of back pressure on the yoke, perhaps with a touch of pitch trim, as soon as I notice 25 feet of altitude loss. That reduces IAS a knot or two, perhaps enough to ease back to the target. If there’s no immediate rise in the altitude readout, I’ll nudge the power up without delay, not letting the discrepancy increase. The secret is to never allow 100 feet of altitude loss to occur; correct it when it’s small, when it’s more easily fixed.

Is precision flying exhausting, requiring too much work for practical use? Perhaps, but that’s why autopilots were invented. In reality, the ability to hold a precise flight path while flying manually is an acquired skill that becomes a natural reaction, and thus it becomes easier to achieve with practice. It will be tiring at first, but it’ll be worth the effort when it’s needed.
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