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GE Takes Aim at PT6

General Electric has introduced the imminent delivery of the first large-turboprop aircraft. This aircraft was FAA-certified last week; now it is ready for takeoff in 2016. It has firm orders for 25 with NetJets executive Pat Gallagher (right) is pictured here representing NetJets Business Aircraft. The Signature Series is delivered at Henderson Executive Airport.

First Challenger 650 for NetJets

Bombardier and launch customer NetJets celebrated the imminent delivery of the first large-turboprop aircraft. This aircraft was FAA-certified last week; now it is ready for takeoff in 2016. It has firm orders for 25 with NetJets executive Pat Gallagher (right) is pictured here representing NetJets Business Aircraft. The Signature Series is delivered at Henderson Executive Airport.

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GE is to invest $400 million in a brand-new 1,300- to 2,000-shp family of turboprop engines that will signal the launch an all-out assault on Pratt & Whitney Canada’s half-century domination of the market with the PT6. The first of the new engines already has won its first application: It will power a single-engine turboprop aircraft that is under development at Textron Aviation. —PAGE 12

Bombardier and launch customer NetJets celebrated the imminent delivery of the first large-cabin Challenger 650 to the fractional operator. The aircraft was FAA-certified last week; now NetJets plans to take seven this year and seven or eight in 2016. It has firm orders for 25 with options for another 25. NetJets EVP of sales & marketing Pat Gallagher (right) is pictured here yesterday with David Coleal, president of Bombardier Business Aircraft. The Signature Series custom-finished Challenger 650 is on display at Henderson Executive Airport.

First Challenger 650 for NetJets

Textron Aviation unveiled two new large-cabin business jets here at NBAA yesterday: the Citation Longitude, and the larger Citation Hemisphere. The $23.9 million super-midsize Longitude, and the large-cabin $30-$33 million Citation Hemisphere are clean-sheet designs aimed at further penetrating Textron Aviation’s share of the business aircraft market. —PAGE 8

Two New Citations

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Steps up marketing, engineering of its supersonic jet. —PAGE 14

Engines Delay Falcon 5X
One year late, maybe more, as Snecma fixes Silvercrest. — PAGE 16

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Annual survey shows less activity over the next decade. — PAGE 18

Gulfstream G500 Debuts
Takes time from test flying to appear here at NBAA. — PAGE 22

Pilot Report: Falcon 8X
Our Fred George praises the new model for its handling. — PAGE 80

FBOs: More Consolidation
And they face other issues, too, from fuel prices to taxes. — PAGE 84

Opinion: Global 8000
Will it make it? wonders B&CA’s editor in chief Bill Garvey. — PAGE 96

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Legacy 450 Adds Range
Now it will fly nonstop between New York and Los Angeles. PAGE 3

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Embraer Adds Range to Legacy 450

Embraer’s newly certified Legacy 450’s fuel capacity is being increased by 1,100 lb, boosting max range with four passengers from 2,575 nm to 2,900 nm with four passengers, giving it the capability to fly between San Francisco and Honolulu or New York and Los Angeles. Certification of the wet-wing tank modification is slated for 3Q2016 with initial deliveries in 4Q2016. It will be offered as a no-cost aftermarket upgrade for existing Legacy 450 customers.

Maximum takeoff weight will also increase, increasing standard-day takeoff field length by 82 ft and time to climb by 1 min. Engine FADECs are being modified, but takeoff output remains unchanged at 6,540 lb. thrust.

“The additional range extends the aircraft operating envelope without compromising its already certified performance,” said Embraer Executive Jets president and CEO Marco Túlio Pellegrini.

No decision has been made with regard to a price increase for new aircraft with the tank mod. The current price of the Legacy 450 is in the $17 million range, depending on options.

“It’s going to be the best-in-class airplane,” said Pellegrini. “We’re delivering more to the customer and the Legacy 450 is the proof.”

The seven-passenger business jet was certified by the FAA in August this year and features full fly-by-wire with sidestick controls, standard autothrottles, four 15-in. LCD screens and synthetic vision. The cabin is highlighted by 6 ft. of headroom and a full-flat floor and Honeywell’s Ovation Select cabin management system. Options include Embraer’s Enhanced Vision System and compact HUD, auto-brakes, a wet galley similar to that on the Legacy 500 and two full-flat berthable seats.

In short, said Pellegrini, “the Legacy 450 is range plus everything.” —Kirby Harrison

And Then There Were Two

With the impeccable precision one comes to expect from a Swiss timepiece, Pilatus flew its second PC-24 twinjet prototype on the eve of the show – even taking advantage of the time difference with Europe to have a photograph ready to display at its pre-scheduled Monday press conference.

André Zimmermann, VP for PC-24, said the Nov. 16 maiden sortie of P02 would be followed by a short shakedown before the machine exchanges the Alps for the somewhat warmer climes of Arizona, where it will be employed on systems trials by Honeywell.

Meanwhile, P01 has amassed 87 flights and 143 hr. since May 11, and will shortly leave for the balmy air of Spain to continue its envelope expansion, performance, stall, takeoff/landing and icing trials.

Expected toward the end of next year, the third-and-last prototype P03 is allocated to function and reliability trials within the 2,300-hr. overall test program, which is due to culminate in European Aviation Safety Agency/FAA certification and deliveries in mid-2017. Get a preview of the PC-24 cabin at Booth C12416.

—Paul Jackson

The hills are alive with the sound of the second Pilatus PC-24’s twin Williams FJ44s.
Sully on US Airways 1549: CRM and Cockpit Discipline Were Keys to Outcome

At today’s Opening General Session, Capt. Chesley B. “Sully” Sullenberger III will talk about the critical roles played by leadership, teamwork, training, vigilance and preparedness in his successful emergency landing of US Airways Flight 1549, an Airbus A320, in the Hudson River on Jan. 15, 2009, resulting in all 155 people on board being saved. “We had only 208 seconds. Procedural compliance was essential but not sufficient. You can’t have checklists for everything. Flying is more unpredictable and more complicated than that. We relied on our SOPs, so we weren’t reinventing the wheel. We just had to put the last few spokes in place,” Sullenberger tells ShowNews.

Sullenberger will tell NBAA members that pilots and industry cannot afford to define safety solely as the absence of accidents. We must be proactive and look deeper. Preparedness is critical. “It’s a matter of how we think about safety. The FARs only set minimum standards. We have to be constantly learning and improving, striving for excellence. We must effectively use interventions” such as LOSA and FOQA to trap errors and mitigate risk.

Lax use of checklists and deviations from SOPs can have deadly consequences, as evidenced by the fatal crash of a GIV at Massachusetts’ Hanscom-Bedford Field in May 2014. The NTSB noted that the GIV “flight crew’s habitual noncompliance with checklists” contributed to the accident. In 98% of their previous 175 flights, the crew omitted to check flight-control freedom prior to takeoff. But Sullenberger will note that airline pilots also deviate from SOPs all too often, such as failing to go around if a landing approach is not stabilized. The Flight Safety Foundation notes that airline pilots fail to call for a go-around in 97% of all unstable approaches. Of key importance, unstable approaches are the leading cause of runway excursions.

“We have to remove obstacles for doing the right thing. It takes discipline, integrity and courage to make the right choice. A go-around should be treated as a success rather than a failure.”

—Fred George

Cessna Hemisphere

Although it was Beechcraft, another member of the Textron Aviation team, that built the Mystery Ship in the late 1920s, it seems that Cessna is coming to Vegas to tease us with another of the same kind – albeit a more modern incarnation. The front and back end might, or might not, have been revealed by the time the show opens today. Textron is at Booth N3032. —Page 8

Cessna Longitude

Is it a (iron) bird; is it a plane? What Cessna appears to have brought to Vegas is a new sort of exhibit for an airshow – a ground test article. Generally representative of the Model 800 systems and shape, this should conform closely, but perhaps not exactly, to what we might have hoped to have seen arriving by air for this year’s show. After the manufacturer’s pause to rethink the Longitude concept, this is the best possible indication of progress that can be displayed. If there have been any changes of timetable, the details should become clear this week. —Page 8

Dassault Falcon 8X

The slightly stretched Falcon 7X was celebrated in absentia at the convention hall a year ago, a few months after being announced, but has surged ahead to become a tangible exhibit this week. At least five are now flying, the first in February. Three are currently in the U.S. for demonstration or fitting out, the latest being the unpainted one on show at Henderson Executive Airport. As might be expected, the type’s public debut was at the Paris Air Show in June, when it made daily flights as encores to demonstrations by its Rafale fighter stablemate. Dassault is at Booth N6117. —Pilot Report, page 80

Gulfstream G500

The NBAA Aircraft Directory says it’s a mock-up, but a very real Gulfstream G500 made the type’s first cross-country flight on Friday, Nov. 13, to arrive in good time for static exhibition. The airplane flew from Savannah/Hilton Head International Airport into unlucky 75-kt. headwinds and arrived at Henderson Executive 4 hr., 36 min. later, accomplishing the 1,630-nm flight at an average speed of Mach 0.85 and altitude of 45,000 ft. Revealed as a taxiing prototype just before last year’s convention, the G500 first flew in May and will be closely shadowed by the longer fuselage, longer-range G600. Gulfstream is at Booth C9406 and the Static Display. —Page 22

Pilatus PC-12 NG Model 2016

It is not all here yet, but the plan is for Pilatus to show a PC-12 NG at Vegas with the new, five-blade Hartzell propeller that will go on the nose of the NG Model 2016 it announced this week. The full improvement package includes a total of 13 aerodynamic “tweaks” in areas such as door handles, flap actuator fairings, flap and aileron gaps, oil cooler exhaust and antenna locations – the whole adding 5 kt. to cruising speed. The original NG upgrade was announced at the NBAA convention in Orlando in October 2006, so the time is right for a further round of improvements. Pilatus is at Booth C12416. —Page 20
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Textron Unveils Two Large Citations

Textron Aviation is betting on the larger end of the business-jet market with two new aircraft: the Citation Longitude and the Citation Hemisphere.

The $23.9 million supermidsize Longitude, and the large-cabin $30-$33 million Citation Hemisphere are clean-sheet designs aimed at further penetrating Textron Aviation’s share of the business aircraft market.

Until now, its niche has been in the light- and midsize-jet segments. Customers wanting to move up to larger, longer-range business jets had to change manufacturers.

“Customers tend to leave after the Sovereign,” Textron Aviation CEO Scott Ernest says. Until now, the company had no larger jets to offer.

The Longitude and the Hemisphere follow the company’s addition of the $16.25 million nine-passenger Citation Latitude, which earned FAA certification in June, with first deliveries in August.

The three aircraft were designed after listening to pilots, flight departments, large fleet operators and owners. “We received a lot of feedback back there,” Ernest says. “For us, range has been a big focus.”

The economic downturn created a bifurcation of the business-aircraft market, with the light and midsize segments of the market – Cessna Aircraft’s niche – particularly hard hit. Demand for large-cabin jets, on the other hand, has held up, becoming a stable part of the business jet industry.

During the recession in 2009, Cessna Aircraft – now a division of Textron Aviation (Booth N3032) – halted development of a large-cabin business jet: the Citation Columbus. But the Citation Hemisphere – its largest, widest and longest-range Citation to date – is not merely a remanufactured Columbus. “This is completely different,” Ernest says.

The Hemisphere will have a range of 4,500 nm, a 102-in. stand-up, flat floor and a new wing. First flight is expected in 2019.

The aircraft will include a cabin with a minimum of two zones and multiple interior-configuration options for seating.

Cessna introduced the supermidsize Citation Longitude in May 2012. Since then, design and performance have been refined thanks to customer feedback, the company said.

First flight of the Longitude, a 3,400-nm range transcontinental business jet, is expected in 2016. Entry into service is expected for 2017.

“We’re excited about this,” Ernest says. “We feel this product is going to be a significant competitor in that space.”

Textron Aviation has begun taking orders for the Longitude. Although the size of the cabin is the same size as that of the Latitude, the Longitude is longer and a little “beefier.” The jet will hold up to 12 passengers and have an optional jump seat. It measures 67 ft. wingtip-to-wingtip and is more than 19 ft. tall and 73 ft. long.

The all-new wing has been designed for ease in manufacturing and will be built in-house, the company says.

With its new products, Textron may be targeting more corporate departments as it focuses on improving the passenger experience with a wider cabin and flat floor,” Kahyaoglu says.

Cowen and Co. analyst Cai von Rumohr said he expects little competitive response to the two new products since Gulfstream, Bombardier and Dassault are developing new $40 million business jets, and Embraer has its hands full with its E-Jet E2.

Textron Aviation is investing $200 million to $300 million a year in the business and has certified nine products in the past three years, Ernest says. In July, it disclosed it is working on a single-engine turboprop. “You can expect to see a continued investment stream going forward,” Ernest says. The company is able to manage multiple programs at the same time.

The Longitude is on static display at Nevada’s Henderson Executive Airport. A mock-up of the Citation Hemisphere cabin concept will be on display at the show as well.

The jets are a show of force and a bet on the future, Vincent says. “Nice to see that they have their Midwestern swagger back again.” —Molly McMillin
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GE Takes On PT6 With Advanced Turboprop

General Electric is launching a family of advanced turboprop (ATP) engines following its selection by Textron to power the company’s newly disclosed next-generation single-engine turboprop aircraft.

The $400 million GE development represents an all-out assault on Pratt & Whitney Canada’s half-century dominance of the business and general aviation turboprop market with the PT6, and builds on the bridgehead already established with the smaller H80 engine. GE, which won the new Textron application after beating out competition from P&W and other engine makers, will develop the 1,300- to 2,000-shp family at its newly announced European-based Turboprop Center of Excellence.

Few details have been revealed yet about Textron’s single-engine turboprop. However, the aircraft is expected to seat less than 12, have a range of 1,500 nm and cruise at speeds higher than 280 kt.

“The new engine will allow airframers to design a new class of turboprop airplanes,” says Brad Mottier, VP and general manager of GE Aviation Business and General Aviation and Integrated Systems. At its heart is a powerful compressor with nearly double the pressure ratio of comparable engines, linked to a full-authority integrated propulsion control system that will govern both engine and propeller pitch as an entire system. The engine will have 20% better fuel burn and produce 10% more power at altitude than comparable turboprops.

Configured for reverse flow to reduce overall engine size and weight, the turboprop will incorporate a CT7/T700-derived high-pressure (HP) compressor with four axial stages and a single centrifugal stage. Titanium is used throughout the compressor. “That’s unique,” says ATP general manager Gordon Follin. “It helps us get the weight down and allows us to put extra power and fuel efficiency in a package that’s about the same size as today,” he adds. GE is using the same iteration of three-dimensional aerodynamics design used in the GE9X for Boeing’s 777X airliner engine to design the shaping of airfoils and blades in the compressor, which results in “a pressure ratio of 16:1, compared to the 9 or 10:1 of what you have today,” adds Follin.

Air feeds from the compressor impeller into a reverse flow single-annular combustor, the design of which resembles that in the GE-Honda HF120 engine. The combustor liner will feature “advanced features and materials” says Mottier. “We are taking 2010s technology to a class of engines that is more used to 1960s and ’70s technology. We think it is extremely innovative for this class but without it being necessary to break boundaries.”

The power section includes a two-stage HP turbine and three-stage low-pressure (LP) turbine. The HP turbine will be made of single-crystal materials and, GE says, will be the first in this class of engines to be fully cooled. The LP turbine will also be counter-rotating, “...so we pick up some efficiency there,” adds Follin. “It will be a smaller-diameter-airflow engine but we are getting efficiency because we are getting extra power through the thermodynamics, not the airflow. We are using commercial engine technology, which will allow us to run at higher temperatures with much better maintenance intervals than the products in this class today.”

Configured around two opposing shafts driven by the power turbine, Mottier says, the design “breaks new ground” in having a digital electronic control system that governs both the core gas turbine engine and the propeller. “The system handles the optimum conditions as well as the different failure mechanisms. It controls how hard you drive the core, the back pressure on the LP turbine and how hard you drive the prop.” Compared to the electronic engine control used in the H80, the new turboprop will be controlled by a full-authority system with more control logic. The system will provide dynamic control rather than relying on pre-determined control schedules. “There are some smart in there,” says Mottier.

“Because the propeller and engines have never been really controlled as an integrated system, we developed very sophisticated computer models of the propeller as it interacts with the engine, engine inlet, the wing and fuselage,” Mottier says.

The engine, which will run for the first time in early 2018, is designed to produce a “step function change in performance, which is required for us to break into this segment, and to do it in a package that fits into the current PT6 envelope,” he says.

The ATP is the first product of the Center of Excellence that GE is establishing in Europe, where several government-sponsored export credit agencies (ECAs) can provide financing to support international sales. The move followed the expiration of the U.S. Export-Import (Ex-Im) Bank authorization earlier this summer, and despite subsequent congressional moves to reinstate Ex-Im, GE says the center was established amid continuing uncertainty and the need to support $11 billion in sales opportunities in the pipeline requiring credit financing.

—Guy Norris
When the demands of world travel become daily business, the Gulfstream G550™ is ideally suited to deliver. The aircraft can fly from Sydney to Las Vegas in 14 hours and 30 minutes and Beijing to San Francisco in 11 hours and 5 minutes. The distance will fly by as you relax in a handcrafted cabin of meticulous design. The G550—proving that life is as much about the journey as the destination.
Aerion Adds Partners, People and Resources

Aerion Corp. has added new sales strength and some of the partners its needs to make its AS2, and hence supersonic business aviation, a commercial reality. Here it announced an agreement with the Airbus Group to call on the manufacturer’s North American engineering expertise. The AS2 order book is open: The price is $120 million.

Adding weight to the sales team are Embraer and Nextant veterans Ernie Edwards and Sean McGeough. The partners include Design Q in the UK and Germany’s Lufthansa Technik and its Inairvation venture. Aerion has new sales agents, and engine selection is imminent.

Aerion confirmed here yesterday that Inairvation, formed last year as a joint venture between Lufthansa Technik and F/List, has been engaged to develop innovative cabin interiors for the AS2 and manage their certification and production. Design Q is a preferred partner, with Scott for lighting.

“Inairvation impressed us immensely for several reasons,” said Aerion CEO Doug Nichols: “the quality of their interior design thinking; their demonstrated commitment to innovation; their ability to integrate design, engineering, certification and manufacturing; and the exceptional history of each individual company under the Inairvation umbrella. “The Inairvation organization itself is an innovation,” Nichols said, “and represents an advance in the integration of cabin technologies from various suppliers.

“We are absolutely impressed with the passion and creativity Inairvation brings to the Aerion program,” Nichols said. “We are brimming with ideas for making the AS2 cabin the most exciting and desirable interior environment in business aviation,” said Philip von Schroeter, director of OEM business units at Lufthansa Technik and co-CEO of Inairvation.

The Inairvation team has already built a full-scale engineering mockup of the AS2 interior at Design Q’s studio in Redditch, UK, Aerion says. “The mockup provides an experience that is not possible looking at a 3-D model on a computer,” said Nichols. “Stepping inside was instant confirmation that we would be able to offer the customer not only an incredibly fast airplane, but the ultimate passenger experience.”

Aerion also said here yesterday that it intends to manufacture the AS2 in the U.S. “We’re looking for a state-of-the-art campus of more than 100 acres on a major airport with a minimum 9,000-ft. runway, and other special geophysical requirements,” Nichols said.

Aerion wants a site within 200 nm of a supersonic flight test area, most likely offshore.

Aerion co-chairman Brian Barents cites a market forecast for 600 aircraft over the next 20 years. “We know that speed sells,” he said. “We won’t have a problem selling the airplane at $120 million.”

The Reno, Nevada-based company, which announced a joint venture with Airbus Defence & Space at NBAA 2014 in Orlando, is promoting a composite-winged (and possibly fuselaged), supersonic laminar flow jet that will be 170 ft. long with a 1,350-sq.-ft., 61-ft.-span wing. The 121,000-lb. MTOW aircraft is to be capable of a maximum operating speed of Mach 1.5. A 30-ft. cabin would be 6 ft., 2 in. high.

The AS2 will take passengers at Mach 1.4 nonstop across the Atlantic in 3 hr. less than today’s subsonic jets, and it will save as much as 6 hr. on some Pacific routes. The aircraft will typically cruise at Mach 1.4, with total operating costs comparable to those of current ultra-long-range business jets. The maximum nonstop range is projected to be 4,750 nm, but Aerion is aiming to squeeze out another 550 nm.

Cabin windows will measure 12 in. wide and 18 in. high, as large as those in the new Boeing 787 Dreamliner. There is a 5-ft.-6-in.-long wet galley forward, and an optional crew lavatory. Typical seating configuration is for eight, but with a three-place, side-facing divan aft, the AS2 will carry nine passengers.

Thirteen-year-old Aerion is chaired and financed by financier Robert Bass.

Aerion named Ernie Edwards, the former president of Embraer Executive Jets, as SVP and chief commercial officer this past May. Sean McGeough, ex-CEO at Nextant Aerospace, was named regional VP for the Northeast U.S. in August.

Also this past year, Aerion named Shanghai-based luxury goods purveyor Sparkle Roll as its sales agent for Mainland China, Hong Kong, Macau and Taiwan. Aerion exhibited at the Dubai Air Show this month.

—Rich Piellisch
All of these names have one name in common.

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Safran says new issues with engine-case distortion on its Snecma Silvercrest engine will take at least 12 months to resolve, dashing hopes for a first flight this year of Dassault Aviation’s largest and most advanced Falcon business jet, the 5X.

“It’s 18 months really, at the max, but my target is 12 months,” Safran CEO Philippe Petitcolin said during the company’s Oct. 22 conference call with investors.

Eric Trappier, chairman and CEO of Dassault Aviation, says the engine delay has prompted his company to slow work on the Falcon 5X. “There is no sense in making planes ahead of schedule if the motor is not going to be ready,” he notes.

Dassault (Booth N6117) rolled out the new business jet during a June ceremony at its final assembly facility in Merignac, France, the company’s first clean-sheet design since the Falcon 7X in 2007.

Featuring a large cabin and a range of 5,200 nm (9,630 km) at Mach 0.8, the Falcon 5X will be powered by two 11,450-lb.-thrust Silvercrest engines, which are expected to make it the most fuel-efficient jet in its class. It lists for $45 million at 2013 values.

During the June rollout, Trappier said the company was targeting a first flight of the Falcon 5X over the summer, with plans to enter service in 2017. Delays to the engine up to that point involved difficulty in modifying a Gulfstream II flying test bed to accommodate the large powerplants, and reworking the Silvercrest’s oil-fuel heat exchanger.

Snecma says all ground and flight tests of the Silvercrest during the last six months confirm good operational performance, based on over 3,200 hr. of testing, including 310 hr. in flight and 1,600 cycles. Eleven engines have been ground-tested, while six have run trials on the Gulfstream II test bed.

However, Snecma says these tests signaled the need to extend the engine’s operational life and optimize fuel performance. Silvercrest development is now focused on achieving better control over engine-case distortion caused by high temperatures.

Trappier says the new engine work will not necessitate any structural modification to the Falcon 5X. However, it will delay first flight. “There is no use in proceeding with the first flight if, after that, you have to do modifications to the motor,” he said.

“These kinds of things happen,” Petitcolin noted. “It’s going to take a bit of time and a bit of money, but we know what to do.”

—Amy Svitak

Emirates Selects Embraer Phenom 100 for Training

ANOTHER AIRLINE FLIGHT training academy is adding Embraer’s Phenom 100E very light jet to its instructional fleet. The latest is Emirates Flight Training Academy, which placed an order for five aircraft and five options. A Phenom 100E painted in Emirates livery was on display at last week’s Dubai Airshow, even though deliveries won’t begin until 2017.

Earlier this year Etihad, the national airline of the United Arab Emirates, signed a $30 million deal for four Phenom 100E’s plus three options for its Etihad Flight College. Deliveries will begin early next year.

The Phenom 100E is also operated by flight training schools in the U.S., at Finnair, and in Australia by China Southern West Australian Flight College.

Ironically, the Phenom 100 was dubbed “a mini E-Jet airliner” when launched in 2005 because so much of Embraer’s regional airliner engineering philosophy went into its airframe, systems, avionics and cockpit procedures.

Now those are the very virtues that are appealing to airline training schools, says Ricardo de Paula Carvalhal, manager for sales engineering at Embraer Executive Jets.

“The systems on board are what you would find in an airliner rather than a light jet,” making it ideal to transition pilots into the air transport world, he says.

The flight training academy market has rather taken Embraer (Booth N3932) by surprise, and the company is still assessing its potential. “It is quite clear it is not developed yet,” Carvalhal notes, adding “there are lots of propeller planes the Phenom 100E could replace.”

—John Morris

Snecma says all ground and flight tests of the Silvercrest during the last six months confirm good operational performance, based on over 3,200 hr. of testing, including 310 hr. in flight and 1,600 cycles. Eleven engines have been ground-tested, while six have run trials on the Gulfstream II test bed.

However, Snecma says these tests signaled the need to extend the engine’s operational life and optimize fuel performance. Silvercrest development is now focused on achieving better control over engine-case distortion caused by high temperatures.

Trappier says the new engine work will not necessitate any structural modification to the Falcon 5X. However, it will delay first flight. “There is no use in proceeding with the first flight if, after that, you have to do modifications to the motor,” he said.

“These kinds of things happen,” Petitcolin noted. “It’s going to take a bit of time and a bit of money, but we know what to do.”

—Amy Svitak

Emirates Selects Embraer Phenom 100 for Training

ANOTHER AIRLINE FLIGHT training academy is adding Embraer’s Phenom 100E very light jet to its instructional fleet. The latest is Emirates Flight Training Academy, which placed an order for five aircraft and five options. A Phenom 100E painted in Emirates livery was on display at last week’s Dubai Airshow, even though deliveries won’t begin until 2017.

Earlier this year Etihad, the national airline of the United Arab Emirates, signed a $30 million deal for four Phenom 100E’s plus three options for its Etihad Flight College. Deliveries will begin early next year.

The Phenom 100E is also operated by flight training schools in the U.S., at Finnair, and in Australia by China Southern West Australian Flight College.

Ironically, the Phenom 100 was dubbed “a mini E-Jet airliner” when launched in 2005 because so much of Embraer’s regional airliner engineering philosophy went into its airframe, systems, avionics and cockpit procedures.

Now those are the very virtues that are appealing to airline training schools, says Ricardo de Paula Carvalhal, manager for sales engineering at Embraer Executive Jets.

“The systems on board are what you would find in an airliner rather than a light jet,” making it ideal to transition pilots into the air transport world, he says.

The flight training academy market has rather taken Embraer (Booth N3932) by surprise, and the company is still assessing its potential. “It is quite clear it is not developed yet,” Carvalhal notes, adding “there are lots of propeller planes the Phenom 100E could replace.”

—John Morris
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Honeywell Trims Its 10-Year Forecast

Over the next 10 years, Honeywell Aerospace is forecasting demand for up to 9,200 new business jet deliveries at a value of $270 billion, a decline of 3% to 5% in value over its 2014 forecast.

“We had another year of slow growth and some problems in some of our developing or high-growth BRIC [Brazil, Russia, India and China] economies,” said Charles Park, director of market analysis for Honeywell Aerospace.

That has led to weaker demand across those key growth markets, which may affect near-term order and delivery levels, Honeywell said.

“Overall buying plans are flattish compared to last year,” Park said.

Long term, significant growth is expected in 2018 and beyond, however, the forecast said.

At the same time, operators are investing in retrofits and upgrades of existing aircraft, especially around cockpit upgrades connectivity, which is boosting aftermarket opportunities, said Brian Sill, Honeywell president of business and general aviation.

“The market is still responding to those options very well,” Sill said. Operators want to keep their aircraft relevant.

Honeywell released its latest annual forecast during a media briefing in Las Vegas Nov. 15 ahead of the NBAA convention.

The forecast projects deliveries of 675 to 725 new business jets in 2015, a single-digit percentage growth over last year. The expected increase is largely due to new model introductions and an increase in the use of the deliveries by fractional ownership companies, it said.

Next year, deliveries are expected to decrease slightly, reflecting weaker emerging market demand partially offset by deliveries to fractional operators, it said.

In a survey, 22% of business jet operators said they plan to make new jet purchases over the next five years as they replace or add to their current fleets.

Of the total buying plans, 19% are expected to occur by the end of 2016, 17% in 2017 and 20% in 2018.

Longer range, the forecast through 2025 projects a 3% average annual growth rate as new models and improved economic performance help grow the industry.

Focus on Large Jets

Operators continue to focus on the larger-cabin aircraft classes, with 52% of all new purchase plans expected to be for large-cabin jets. At the same time, 23% of the demand is expected in the midsize-business-jet category with 25% of the demand for small-cabin jets.

In addition, manufacturers have a number of new programs in development, which is causing some operators to delay their purchase plans of large-cabin jets until the new aircraft are available. Unfortunately, some of those new-aircraft programs have been delayed, which is contributing to a small pullback over last year’s projections, Park said.

“We do see that situation reversing itself once the new programs come into the market,” he acknowledged.

The new aircraft are compelling in terms of performance, cabin environment, cabin comfort and productivity, Parks said.

“One thing that the operator base is telling us right now that they’re cautious, because there’s a lot of unsettled conditions in various places around the world,” Park said.

“On the other hand, we know that there’s a lot of new product coming that’s pretty exciting. When the operators tell us about the aircraft they’re most interested in buying, it’s the new aircraft they’re wanting.”

That bodes well in the long term.

In Europe, which has 14% of the world’s fleet, operators are still dealing with sluggish growth and increased political tensions, a refugee and migrant surge, and depreciated currencies.

Europe has had no annual fleet growth over the last five years, with a low single-digit growth forecast through 2020.

Europe is expected to comprise 14% of global demand over the next five years, it said.

Demand from Latin America is expected to make up 18% of global demand over the next five years.

Latin American operators plan to replace 29% of their fleets over the next five years, with 48% of their purchases expected before 2017.

The Asia-Pacific regions are expected to comprise 3% of the global demand. Operators there report new-jet acquisition plans for 14% of their fleet, up 2% from 2014.

Nearly 40% of operators responding to Honeywell’s survey said they are scheduling their new purchases within the next two years.

MORE FORECASTS: PAGES 66 AND 68
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CAT for a Coast-to-Coast King Air

Commuter Air Technology is taking orders – and offering show discounts – for its new CAT 350ME, a maximum-endurance King Air that can travel coast-to-coast or across the Atlantic nonstop with enhanced payload capabilities to boot.

Range of 2,760 nm and a 16,500-lb. MTOW are made possible via the addition of twin 140-gal. aluminum wet cell fuel tanks with composite fairings. The CAT 350ME performance numbers are “unprecedented in this class of aircraft,” CAT president Darryl Wilkerson said here Monday. The requisite STC was issued in July for the gross weight increase and another is expected in the coming first quarter for the 280-gal. fuel capacity boost. CAT is offering the weight increase at a retail price of $450,000 and the tanks for $550,000 – or combined for $950,000. There are dealer discounts and discounts for pre-orders taken here at NBAA, Wilkerson said. “We see it as a balanced market appeal,” he said. CAT is based in Oklahoma City, and with the 350ME, “there isn’t a place in the United States that we couldn’t get to, unfueled, nonstop.”

CAT is eyeing special-mission and military markets, too. Wilkerson cited loiter times as long as 12 hr.: “It’s an extremely valuable commodity in that space,” he said. The CAT 350ME upfit is available on all King Air 350s, the company says. Avionics include Pro Line 2 and Pro Line 21 with other packages, including the Garmin 1000, under evaluation for next year.

Gimme Five – Propeller Blades, That Is – Says Pilatus

A new Hartzell Propeller five-blade, carbon-fiber, swept-tip prop will maximize performance of the 1,300-strong Pilatus PC-12 fleet and provide the foundation for a more far-reaching upgrade announced on the eve of this year’s show. The prop is on display at Hartzell’s booth, C7629; the current PC-12 is with Pilatus at Booth C12416.

Type certificate amendments just approved by the FAA (Nov. 10) and European Aviation Safety Agency (Nov. 12) clear the PC12 NG Model 2016 (from MSN 1576 upward) to feature the new, 105-in. diameter, composite propeller. Retrospective modification is also possible to aircraft currently in service. The unit, comprising an HC-E5A-3A hub with NC10245B blades, comes with unlimited life and a 3,600-hr./three-year Top Prop warranty.

For its part, Pilatus has smoothed 13 of the PC-12’s rough corners to reduce drag. For example, door handles are now flush; flap actuator fairings re-profiled; flap and aileron gaps sealed; the oil cooler exhaust modified; and antennas aligned more closely with local airflow patterns.

Advantages of the combined 2016 package include reduced noise; 7 lb. less weight; 5 kt. faster cruising; a 10% reduction in time to FL 280; and 50 ft. off takeoff distance. “The Pilatus PC-12 with Hartzell’s newest aerodynamic five-blade prop will give owners and operators even better performance and the reliability to meet personal and business travel requirements,” said Hartzell Propeller president Joe Brown.

Minimum, reverse and feathered pitch settings for old and new propellers are almost identical. The main change is in fine setting, which reduces from 19 deg. with four blades to 14.7 deg. on the new propeller.

For 2016, Pilatus is offering half a dozen new exterior color schemes and the same number of interior designs. Less obvious until the avionics are fired up are a broad range of extra capabilities now offered as standard.

Deliveries begin in the next few weeks at a price of $4.55 million. But if you have one already, exchange price for the carbon prop is $83,640, less a $15,000 trade-in for the Hartzell four-blade, aluminum unit.

—Rich Piellisch

—Paul Jackson
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G500 On Schedule for 2019 EIS

The $43.5 million G500, Gulfstream’s long-awaited replacement for the $41 million G450, is making its NBAA debut only six months after its first flight. The newest member of the Gulfstream family is designed to fly 5,000 nm at Mach 0.85 and 3,800 nm at Mach 0.90, while offering a larger cabin, much-improved fuel efficiency, lower interior noise levels and better operating economics than the G450.

“We’re continuing to deliver on the promises we make,” says Mark Kohler, head of Gulfstream’s G500/G600 development programs. “The aircraft is a testament to the strength of Gulfstream’s ability to deliver on performance and on schedule. It has unmatched high-speed range. Flying it to NBAA provides us with a great opportunity to show the progress we’ve made in a very short time period.”

Kohler said Gulfstream is leveraging the technologies it developed for the G650, including its three-axis fly-by-wire flight controls and a scaled-down version of the $65 million flagship’s wing, plus its larger wide oval windows and roomier space between seats. Notably, the G500 is the first Gulfstream that won’t be powered by Rolls-Royce engines. Instead, the G500 is fitted with twin 15,144-lb.-thrust Pratt & Whitney Canada PW814GA engines, featuring 50-in. single-piece, wide-chord-blade fans and higher bypass ratios. The engines now are FAA certified.

The cockpit is equipped with Gulfstream’s new Symmetry flight deck based upon Honeywell Primus Epic avionics and featuring civil aviation’s first active sidesticks, 10 touch screens, EVS III, a standard HUD and new widescreen, high-resolution integrated standby instrument systems in the glareshield.

The first test article now has flown 44 flights and 160+ hr., during which it has flown as high as 50,000 ft. and as fast as Mach 0.995. However, it only cruised at FL 450 and at Mach 0.85 during its 4-hr., 36-min. flight against an average 75-kt. headwind from Savannah, Georgia, to Henderson, Nevada. Allowable cruise speeds will be increased pending weight and c.g. flight envelope expansion during the flight-test program.

Kohler says the first flight-test aircraft has been “remarkably reliable,” often returning from flights with no squawks. He attributes the reliability to 41,000+ hr. of ground testing of aircraft avionics and systems, including its Conceptual Advanced Simulation Environment (CASE) for development of control laws and evaluation of human factors, System Integration Bench (SIB) for data and avionics integration, integrated test facility (ITF) for debugging FADECs and actual systems and Iron Bird mockup for evaluation of flight control actuators, hydraulics and other systems. Gulfstream also is building a full-scale fuselage for cabin management and interior integration, including a capability to exert simulated pressurization loads on the structure to check the fit of cabin furnishings and their mounts from sea level to 51,000 ft.

Gulfstream’s G500/G600 customer advisory board provided more than 200 inputs on cabin layout, galley design and storage areas, along with seat comfort and cabin systems utility.

FlightSafety’s G500 simulator also is up and running, enabling FAA certification pilots to “fly” the aircraft prior to strapping into the actual aircraft. Scott Evans and Scott Martin, lead test pilots for the G500 and G600, flew their initial test profiles in the FSI simulator prior to making the first flight in the actual aircraft.

T1, T2 and T3 now have been inducted into the flight-test program. The second flight-test aircraft is complete and it’s on the verge of making its first flight. The third flight-test aircraft is in final assembly, nearing its first flight. T4 is being manufactured, as are Production aircraft 1 and 2. Initial static testing of a ground-test article with 100% simulated loads is complete. Fatigue testing and 150% ultimate overload testing are under way.

Concurrently, development of the $54.5 million G600, the larger-wing, longer-fuselage, 6,200-nm-range derivative of the G500, is well under way. Critical design review is complete, the 15,680-lb.-thrust PW815GA turbofans have been certified, ITF and “iron bird” ground-test systems are up and running, and manufacturing of the first flight-test aircraft is progressing. The G600 is on track for 2017 first flight, 2018 certification and 2019 entry into service.

—Fred George
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Trusted to deliver excellence.
Universal Launches iPad-Compatible uvGO

Universal Weather and Aviation has unveiled uvGO as "a new way for business aircraft operators to easily plan, build and manage successful missions worldwide - from beginning to end." uvGo is fully functional offline as both a native iPad app, and online. It "was designed from the perspective of fitting the logical workflow of the operator and serves as a do-it-yourself solution that integrates everything Universal offers in one simple interface, both online and mobile," said senior global product strategy VP Denio Alvarado. “Through uvGO, our clients can manage trips on their own, or send them for coordination through Universal via a single, simple intuitive system that streamlines the process of how missions are managed.” Booths C10429 and C10435.

Harley Giveaway Celebrates 15th Year

Parts support provider CRS Jet Spares is holding its annual Harley-Davidson giveaway at NBAA 2015. It’s the 15th year CRS has hosted the event. Three individuals attending will be picked for a chance to win the iconic motorcycle. Each will be given an envelope and when they open them, one will be revealed as the winner. “Over the years, the drawing has generated a lot of interest, and some good stories, and some lucky NBAA attendees,” said Jack Caloras, VP of sales and business development. To see if you are eligible for the drawing, stop by the exhibit at Booth C8529.

Aviall’s Enhanced AOG Service

Aviall (Booth N2321) says it has enhanced its rapid-response aircraft-on-ground (AOG) program, having provided an on-time shipping average of 100% for commercial airline, business and general aviation, defense and Boeing Integrated Materials Management customers. More than 100 professionals, along with 15 multilingual AOG experts, have teamed up to support AOG needs around the globe, handling more than 500 AOG events each month. In-stock, non-hazmat items are averaging an out-the-door time of 1-2 hr. Coming soon is additional AOG connectivity and access for customers via mobile application enhancements, as well as digital notifications throughout the AOG process.

FSI to Offer BR725 Training Courses

FlightSafety International (Booth C8524) has been named by Rolls-Royce as a Civil Small and Medium Engines (CSME) authorized training provider for BR725 engine and troubleshooting courses. The training will be offered at FSI’s Maintenance Training Center in Savannah, Georgia, to technicians who service and support Gulfstream G650s. Maintenance technicians will receive a comprehensive description of the BR725 and training on borescope inspections and the removal and reinstallations of line-replaceable units.

Celebrate The Weekly of Business Aviation

Aviation Week will host a reception today to celebrate the 50th anniversary of The Weekly of Business Aviation. A market intelligence report, the publication has evolved over its 50 years and continues to be the leading source for business aviation news and information. The reception, which will feature cocktails and cake, will be held from 4 to 6 p.m. at Booth N5521. Please come and meet representatives from Aviation Week, The Weekly of Business Aviation, Business & Commercial Aviation, Aircraft Bluebook, Ac-U-Kwik and Air Charter Guide at the event.
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Speed thrills. That’s why, in early 2017, the Gogo Biz network will offer 4G performance. It’s the power you need to get things done in flight. It’s on the proven, reliable Gogo Biz network. It’s from the connectivity powerhouse you count on.

And it’s just the beginning.

Get ready. Go faster. Gogo Biz 4G.
ViaSat: Flood the Globe with Bandwidth

ViaSat Inc. is inaugurating a next-generation satellite system comprising vastly more powerful spacecraft, a constellation covering not just North America and the North Atlantic, but a global system of super-high-throughput satellites that will position the company to appeal to airlines.

Based in Carlsbad, California, ViaSat is still a year away from the launch of its Ka-band ViaSat-2 satellite. But with growing demand in U.S. government and aeronautical markets, the company has already started work on a successor, ViaSat-3, a satellite that will deliver a staggering 1 terabit per second of throughput.

“Inflight Wi-Fi is a good growth opportunity, because there’s passenger preference and demand for good connectivity, and the root source of competitive value is large supplies of affordable bandwidth, in the right places at the right time,” says ViaSat founder and CEO Mark Dankberg.

With ViaSat-2 slated to launch in late 2016, Dankberg says the company expects to bring a substantial “wow” factor to its satellite broadband play. Offering 350 Gbps of capacity, the spacecraft will deliver more than double the 140 Gbps available on the company’s first Ka-band satellite, ViaSat-1, the highest-throughput broadband spacecraft in orbit.

As the first spacecraft in a three-satellite constellation, ViaSat-3 is being designed to take that bandwidth even further. “ViaSat-3 will complete our evolution from domestic to regional to global service provider,” Dankberg said in a recent conference call with investors, adding that the spacecraft could launch as soon as 2019 and will offer service over the Americas.

Already with ViaSat-1, the company has 419 aircraft connected - 35 more than the previous quarter and double year-over-year. Since late 2013, the satellite has been delivering high-speed Wi-Fi to airline passengers flying over North America. JetBlue Airways has equipped all its Airbus aircraft with ViaSat’s Exede in-the-air service, and installation on its Embraer E190 regional jets is underway.

By mid-2016, JetBlue will offer free Wi-Fi on all flights, and it is also teaming with Amazon in a partnership that will start this year. Dankberg says that both JetBlue and Virgin America are now committed to using ViaSat for streaming inflight video, a high-demand market application that underscores the confidence airlines have in ViaSat’s potential to deliver a stupifying amount of bandwidth to passengers. He said Virgin America’s recent move to stream Netflix in flight was “a watershed event” that has increased ViaSat’s exposure and credibility with carriers and passengers.

“We see most of the airlines sending some of their executives to fly on JetBlue themselves to test it out,” Dankberg said. “They see there’s a big difference compared to what they have now and are paying a lot more attention to understanding what the technical and business factors are that make the service good.”

He acknowledges that rival service provider Gogo is expanding its offering in the U.S., including plans to add the Ku-band 2Ku to its existing ground-based services this year. However, he says while Gogo was first to move in the market, its position is tenuous, given existing contracts up for renewal and fleets expanding with new aircraft.

“No inflight-connectivity provider is going to keep its customers merely by having gotten there first. We believe affordable, high-quality, high-speed, high-volume service is a key component of customer satisfaction, and airlines are realizing that.”

ViaSat is at Booth C7022. —Amy Svitak
New for BeechJet

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Available as Standalone Install or Bundled With Other Avionic/Aircraft Upgrades. Contact Your Preferred Maintenance Provider for Details.
First Flight for Gogo’s 2Ku Satellite-Based System

Gogo (Booth N1716 and Static Display) unveiled its new satellite-based 2Ku Internet to the media for the first time last week, and on two Boeing 737 test flights some passengers recorded download speeds faster than 22 megabits per second, though at times speeds were considerably slower, likely because many journalists tested streaming media at once.

The 2Ku system, which relies on more than 180 satellites in the Ku-band, is Gogo’s answer to ViaSat’s Ka-band platform used by JetBlue, United and, on 10 new deliveries, Virgin America. ViaSat’s system now only works in and near the Continental U.S. – Virgin America is not offering Wi-Fi on ViaSat-equipped Hawaii flights – so Gogo will have an advantage until ViaSat launches a new satellite in mid-2016.

While Gogo’s 2Ku platform is most efficient at the equator, it works nearly everywhere – with one exception. Passengers will notice speeds “degrade” as they reach the Arctic Circle, and the system will not work over the North Pole, CEO Michael Small said. “About 2% of the world’s flights are polar,” Small said Thursday. “On a few flights, we might have a disadvantage, but this is absolutely the dominant technology.”

Each test flight Thursday had about 25 passengers and flew a north-south route from Gary/Chicago International Airport. In the test, Gogo’s 2Ku system not only permitted passengers to stream from popular sites like YouTube, Netflix and Amazon, but it also allowed them to watch live, high-definition television through the company’s portal. “It’s actually pretty crisp,” Small said of the live television. “I have never seen it buffer.”

It is not clear whether airlines will permit streaming, as data costs are expensive and some party – the user, the airline or a sponsor – would need to pay for it. But Gogo says 2Ku can support more than 40 streaming devices at a time.

Many airlines, however, are not rushing to add the system, which should be commercially available within weeks. While eight carriers have said they will add 2Ku, putting it on roughly 550 aircraft, about half of those aircraft belong to Delta Air Lines. Other 2Ku customers include Aeromexico, Virgin Atlantic and, for a test, United Airlines.

Delta is expected to convert more than 250 aircraft to 2Ku, and an airline spokesman said installations will begin in the middle of next year. Aeromexico is the launch customer, and it should offer 2Ku to passengers on some Boeing 737-800s before year-end. On Friday, Gogo said it had received supplemental type certification (STC) from the FAA.

Gogo is now focused on attracting more customers, especially from outside the U.S. Small called the new technology a “quantum leap,” adding, “This is what will make broadband take off on a global basis.”

—Brian Sumers

Gogo Launches 4G Air-to-Ground Capability for Bizav

Gogo Business Aviation says operators of business jets who equip with its new Biz 4G air-to-ground (ATG) connectivity service, announced Oct. 14 and available in early 2017, will get the “speed they need to power their digital lifestyles without skipping a beat.”

The qualitative statement signals a leap in connectivity speeds that will boost today’s 3G rates, usually close to 3 Mbps, up to sustained rates of 6-10 Mbps, which is typical for 4G service.

Biz 4G will achieve those rates using a new radio and four antennas – two on the belly and two on the side. Gogo Business Aviation’s current family of four 3G ATG products, which are installed on more than 3,000 business jets and will remain in the product family, require an onboard radio and optional router (for Wi-Fi) and two belly antennas to connect with Gogo’s ground network in the continental U.S. and portions of Canada and Alaska.

“We’re reusing the same spectrum but doing various things with that spectrum to make it more effective and capable,” says John Wade, Gogo Business Aviation EVP, of the 4G service. Wade says the new system, which will include dual-band 802.11ac Wi-Fi service on board the aircraft, will support more devices in the cabin and offer a higher quality of service. Installation is expected to take less than a week with the complexity of the work about the same as for a Gogo 3G ATG system.

Wade says the purchase price for Biz 4G will be “slightly more” than for the current ATG systems, including a “nominal premium” for the next generation capability. Prices for the 3G systems range from $35,000 to $100,000 for the equipment, and service plans for data range from “pay-as-you-go” to unlimited.

Gogo Business Aviation also offers options for satellite links through SwiftBroadband for connectivity and Iridium for voice.

—John Croft
Cost Effective NextGen Solutions

The IS&S Integrated Standby Navigation Unit provides RNP operations without costly FMS and MMR upgrades and serves as a thrust computer with an optional IS&S auto throttle actuator.

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The IS&S Air Data and Heading Reference System (ADAHRS) replaces independent DG/VG’s, AHRS and air data computers in a single compact, low weight unit. Outputs in Digital and Analog format aircraft attitude, heading, altitude and air speed to interface with existing autopilot and display systems.

By integrating these functions into one unit, operators enjoy logistics and maintenance benefits. Designed with the latest MEMS Gyro technology, coupled with the unparalleled history of IS&S air data and RVSM product experience, the result is a highly reliable and accurate ADAHRS for retrofit and OEM applications.

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Upset Training Takes a Step Forward

A new rule from the FAA calls for incorporating upgraded full-flight simulators in upset prevention and recovery training (UPRT), and a FlightSafety International (Booth C8524) simulator recently became the first approved by the agency to do so.

Ironically, the new FAA rule, which becomes effective in March 2019, applies to the training of FAR Part 121 airline pilots only, and the FlightSafety simulator replicates a Gulfstream G550, a jet flown primarily by Part 91 business and Part 135 charter pilots, who are unaffected by the rule. Regardless, FlightSafety is embracing it as a higher standard that should be broadly applied across pilot ranks.

Historically, flight simulators have mirrored the performance and behavior of their respective aircraft models at points within their operating envelope, ranging from stick-shaker/stick-pusher activation stall warning to the maximum certificated airspeed (Vmo/MMo). The authority authorized no simulator training beyond those extremes.

It was believed that the absence of data points beyond those figures would hamstring simulator makers, forcing them to retest the subject aircraft in extreme conditions. However, it turns out Gulfstream Aerospace does conduct full stalls and flies beyond MMO during certification flight testing, and captures all the related data. This is shared with FlightSafety.

During the subsequent six months, FlightSafety programmers at the company’s simulation center in Broken Arrow, Oklahoma, analyzed the data along with the environmental conditions at the time they were captured to determine the aircraft’s response under a variety of circumstances since those could, for example, cause a stalling aircraft to break right or left or result in a “falling leaf” stall.

Dann Runik, executive director of advanced training programs, says that despite this “nonlinearity of data,” analysts found the common factors that cause an aircraft to behave seemingly inconsistently and unpredictably in extreme flight conditions. “There is a common element, and we found it.” Consequently the simulator performs in the same manner, surprising and confounding pilots who expect predictability. “They ask, ‘How do you do that?’” Runik laughs. “We’re not saying. It’s FlightSafety’s secret sauce recipe” and thus proprietary, he says.

The company has already launched a one-day UPRT course for the G550 comprising 3.5 hr. of classroom work and 4 hr. in the simulator at its Savannah, Georgia, training center. The pilots involved in the aircraft’s certification flight tests have all flown the simulator and attest to its behavioral accuracy.

The courses are available only to pilots type-rated in the aircraft. The classroom session covers aerodynamics, indications and procedures, plus admonitions on the importance of forceful, immediate and seemingly unnatural corrective actions when encountering a stall in a swept-wing transport aircraft: Push, level wings, raise the nose, advance throttles.

After the academic portion, pilots enter the simulator where they are confronted by flight upset scenarios that have all ended in fatal crashes. At the FAA’s request, the company will not reveal which crashes are involved, to prevent the pilots from preparing responses in advance.

Despite the considerable experience of many pilots in flying the G550, Runik says almost all of them crash during one or more of the scenarios – often during a stall at low level – which comes as a shock to those at the controls. Factors include images through the windscreens unlike any they’ve encountered in normal flying, including “ground rush,” which prompts a pull-back reaction.

Moreover, Gulfstream pilots prize what Runik calls “corporate smooth” control inputs for passenger comfort. Yet upsets demand the pilots “put violence on the airplanes” to recover – a reaction totally foreign to most.

Other training providers that favor using aerobatic aircraft for UPRT sessions say it is the best tool for imparting to the student the high g-loads and disorienting conditions of an upset. But one pilot who had just completed the G550 simulator training notes that the computerized g-meter monitoring his recoveries never exceeded 2.2 g and that the visuals were startling.

Other factors favoring the simulator training are the machine’s exact replication of an aircraft’s cockpit, instrumentation and behavior. And, notably, its ability to simulate low-level maneuvers that would be too dangerous to conduct in an actual aircraft.

Runik says the course – $9,900 for full-service customers – “sells itself.”

—William Garvey
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Rockwell Collins Looks Fore and Aft

In a flat market for new aircraft, the best place to focus your resources is on the aftermarket, believes Craig Olson, Rockwell Collins’ vice president and general manager for business and regional aviation.

While Rockwell Collins (Booths C8807 and C9232) does not have any major OEM announcements at NBAA, the company is comfortable with the position of its Pro Line Fusion integrated avionics on 17 forward-fit platforms, demand for its Venue cabin systems and growth in its connectivity services.

With Pro Line Fusion also available for retrofit on Beechcraft King Airs, Rockwell Collins will announce “another major platform in the aftermarket” at NBAA, Olson says. “We have supplemental type certification (STC) for aftermarket King Airs with Pro Line 21 and are getting an STC for Pro Line 2 King Airs.”

Textron Aviation is to install Pro Line Fusion in new King Airs. “It’s the first full-touch-screen forward-looking display certified for single-pilot on the primary flight display and multifunction display,” he says. The first King Air 250 flew with Pro Line Fusion in early November, the first 350i is to fly this month and the first C90GTx by around year-end.

Other avionics announcements are forward-fit FANS 1/A navigation capability on Bombardier’s Challenger 350 and 650 with Pro Line 21 Advanced and a flight management system technology insertion, Olson says. A FANS 1/A upgrade for the Challenger 604 is bundled with the company’s Arinc Direct communications services.

In another milestone, Rockwell Collins’ compact head-up display will be certified in Embraer’s Legacy 450 and 500 by year-end, with a multispectral enhanced vision system, he says.

But if Pro Line Fusion has been successful, with more than 300 aircraft delivered with the system so far, then Rockwell Collins’ Venue cabin management system has been even more so, with more than 750 aircraft equipped.

“We have worked hard to make sure it is open – 4k high-definition television was not envisioned when the system was designed, but we can now integrate it,” Olson says. “The architecture is ready to quickly adopt the consumer technologies customers expect.”

At NBAA, the company is introducing the Stage content based on passenger preferences. Stage is to be available from mid-2016.

A major focus for Rockwell Collins, says Olson, is enablement on the aircraft through connectivity, thanks to its acquisition of Arinc in 2013 and satellite-communications specialist ICG in August. “We are not as acquisitive as our peers, but when we do there is a direct route to synergy,” he says.

Avionics are becoming information-rich systems, and Olson talks of “information movement,” how to collect information on the aircraft, get it off the aircraft via real-time data link, and what to do with that once it is off the aircraft and in the back office. “It’s a marriage of information management and enablement on the aircraft,” he says.

Aftermarket

With an eye on the aftermarket, meanwhile, Rockwell Collins is expanding its Corporate Aircraft Service Program (CASP), which provides maintenance and service for aircraft that are out of their warranty. Under CASP, a customer commits to 200-250 flight hours per year for one to three years and the company will ship replacement parts within 24 hr. within the U.S.

“Two different factions are asking for something different,” Olson says. The upper end of the market, operating heavy jets, wants more, while the lower end wants a more affordable service, so the company is introducing CASP Elite and CASP Essential.

The upper end of the market has a higher expectation of service, says Olson. “They don’t want to have to troubleshoot the problem themselves; they want the service internationally, and they want to write one check and get all the FMS databases.”

CASP Elite includes troubleshooting time, has no limits on exchanges, rentals and repairs, and parts ship within 4 hr., domestically and internationally. CASP Essential is tailored to operators who do not fly as much but want a level of assurance, he says. For a minimum 100-hr. purchase, the service provides a fault identification and replacement capability within the U.S.

—Graham Warwick
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Pelton Sets Priorities for EAA

Jack Pelton has a new job. And this one, unlike his volunteer position as Experimental Aircraft Association chairman, comes with a salary. The EAA’s board of directors tapped him to become CEO at its Nov. 6 meeting, a position he will assume in addition to the duties he has had as chairman since October 2012.

“The search committee didn’t want another change in leadership” after the turmoil EAA experienced in October 2012 when the board axed Rod Hightower.

CEO Pelton has wasted no time in setting clear goals. First, AirVenture Oshkosh will continue to be the “economic engine” for the association. He “absolutely” views AirVenture as the de facto U.S. national airshow. “It’s also an entry point for so many young people into aviation.”

Expanding EAA’s membership base to include more young people is a close second priority. “We have to use more social media to communicate with kids,” says Pelton. “They don’t respond to the old ways.”

At one point, EAA membership ebbed to 130,000 because of the aging of the general aviation pilot population. Now it stands at 190,000, including 30,000 students who are members. But Pelton notes that maintaining, let alone boosting, membership is a challenge as the association loses 2-3% of its membership each year through attrition.

“We definitely want to grow the membership.” In support of that effort, EAA is building a 45-ft.-long mobile display trailer with interactive exhibits that will be used at various sites around the U.S. to introduce young people to aviation.

EAA’s Young Eagles introduction-to-flight program for children continues to grow. Pelton notes that almost two million kids have flown with the program. But, he’s concerned that most of them are eight to 10 years old. “What’s next?” he asks. EAA has to create a follow-on program to keep Young Eagles engaged in aviation until they turn 16 and start formal flying lessons leading to a private pilot certificate.

The association also is studying opportunities to sponsor more science, technology, engineering and math (STEM) education for young people. Pelton favors a go-slow approach, one that allows the association to examine what 240 STEM-focused high schools are doing before forming its own program.

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Jet Aviation St. Louis Wins Three Lineage Contracts

In a first for MRO and cabin completion and refurbishment specialist Jet Aviation St. Louis, the center has won contracts to perform maintenance simultaneously on three Embraer Lineage 1000s. The aircraft are based in North America but have different owners. Work has already begun at Jet Aviation’s St. Louis Downtown Airport facility, which is the first and only approved independent service center in North America for the Brazilian aircraft, says sales director Aaron Kerissler. It is also an authorized service center for Bombardier and Gulfstream. Booths N5131 and C11216.

Attitudes in Washington are changing. Lots of experienced FAA people are retiring. I’m concerned that the attacks on kit aircraft manufacturers also could portend changes to the FAR Part 23 normal-category aircraft-certification process.”

Pelton has a full plate. But he’s encouraged by the election of former astronaut Charlie Precourt as EAA vice chairman. The move provides Pelton with much welcome support for his leadership initiatives, much needed in light of the association’s markedly diverse and sometimes competing factions.

—Fred George
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The refurbishment will increase the useful life of the aircraft, the company said. The program targets current operators of the twin-engine corporate jet. Customers can select a variety of options.

The program includes installation of Garmin G5000 avionics with LED master warning panel, Gogo Wi-Fi with Gogo Vision for on-demand movies, a new exterior paint design and a redesigned interior, the company said.

The focus is on weight savings, which will be significant, to increase the aircraft’s useful load, a company spokesman said. The refurbishment includes replacing all of the old wiring, heavy avionics boxes and heavy interior panels.

A completed 400E, owned by Elliott Aviation, is on display here at the indoor static display.

The pricing ranges from a low of $400,000 to $700,000, depending on the options selected. Elliott has orders for seven 400Es and certification is expected in 2016. The interior will have USB charging ports, redesigned cabinetry and variable LED upwash and downwash cabin lighting, which is controlled through a mobile app.

It also features a redesigned arm ledge with LED accent lighting in the drink holders, window reveals, lower sidewalls and electric window shades.

The aircraft on display at NBAA was scheduled to be flown in under experimental status, a spokesman said.

The program was the result of listening to Beechcraft 400A and Hawker 400XP operators, Elliott Aviation officials said.

“Elliott Aviation’s vision of the 400E was to take modern technologies in avionics, interior, cabin entertainment and paint design to provide additional capabilities into a proven airframe while maintaining the cost-effectiveness of this aircraft,” said Greg Sahr, president of Elliott Aviation.

“With a sound airframe that has no life limit, available overhaul or replacement of the Pratt & Whitney [Canada] JT15D engines, and now a fully updated cockpit and interior, we have a great program to extend the useful life and useful load capacity of the 400 model aircraft.”

—Molly McMillin
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Time to Stop Marking Time

Business Aircraft About to Enter the Marketplace

There’s one in every workplace; striding purposefully around, clipboard or small package in hand, the epitome of industriousness – except that nobody can, actually, remember them ever doing any real work. And now, they’ve infiltrated the business aircraft business.

This annual survey limits its contents to active airplane programs, but it would be pertinent to consider with care whether a program is “active” when the only discernable activity is confined to the promotions department. Press releases and news conferences generate the impression of progress, yet there are some described below that might benefit from a similar level of activity in the drawing office, assembly hall or flight-test hangar.

Readers with a good memory – or, alternatively, back issues of ShowNews – will be able to identify the projects whose historic relationship to first flight or initial customer delivery is not dissimilar to that between the dangling carrot and the donkey’s teeth. The facts are the same; only the dates are changed to protect the innocent journalist.

Gradually, and generally, as the 2008 financial crisis recedes, aircraft companies are having to work less hard at appearing to be doing something. Pre-show hangar-door rumor has it that Beechcraft and Cessna both have plans to flaunt their optimism this week, while one of the personal jets weeded from immediately previous reviews has attracted fresh investment and returns to these pages. Some small comfort for a market sector that once seemed to hold great promise.

—Paul Jackson

Props and Turboprops

Diamond’s DA62 gained its EASA certification on April 16 this year, as did the EVO version of the Piaggio Avanti last December. Both have, therefore, written themselves out of this narrative – as has the “Socata Twin” because of an absence of progress reports. Ural’s LMS-9 nine-seat twin likewise drops out, having been “postponed” in the light of Russia’s economic woes. Gone, too, is the Kestrel K350, which will not be opening its order book until funding is available for a production site and construction of a prototype.

A single, genuinely new aircraft is the only gap-filler on offer and, even then, its chances of success must be regarded as slight.

ASI (Reims Cessna) F406 Caravan II

Changes are under way for this venerable, 12-passenger twin-turboprop following the acquisition, in March 2014, of bankrupt Reims Aviation Industries by Chinese-owned Continental Motors Inc. Subsidiary ASI Aviation, still in the old Reims plant, is finishing two incomplete airframes before the program is transferred to “another country.” Unofficially, the new site is expected to be in Mobile, Alabama, where the F406 will gain upgraded avionics, electrical and hydraulic systems, a new autopilot and a choice between Pratt & Whitney Canada PT6A-135 turbines and pistons. The latter might be the Continental GTSIO-520 and/or a new Continental Diesel CD-310, which is under development. Production over 30 years has been a shade short of 100 units, many more recent examples being engaged in surveillance work of different kinds.

CAIGA Leadair AG300

When the old Epic company folded in the U.S., China snapped up the rights to its family of large kit-built aircraft. Two of those jet designs remain in limbo, but the five-seat Escape turboprop lives on as the factory-built AG300, which made its “official” first flight in July 2014, powered by an 850-shp General Electric H85 turboprop. Chinese type certification is due this year. Range is 1,350 nm and cruise is 324 kt.

Diamond DA50-JP7

First flown back in 2007, this five-seat version of the popular DA40 has spent the intervening time searching for the right engine. The current “Jet Prop 7” version
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12pm – Stevens Aviation
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1pm – Garmin Avionics
G5000 Beechjet Demo, G1000 King Air, Affordable ADS-B Options

2pm – Raisbeck Engineering
Safety and Performance Modifications for King Air and Learjet

3pm – Dallas Airmotive
Do Not Roll The Dice…Value Added Engine Overhauls

4pm – Rockwell Collins
Prolina Fusion for King Air Demo

5pm – Bendix King
Affordable In-flight Internet and King Air AeroVue Cockpit Upgrades

November 18th, 2015
9:30am – Flight Safety International
King Air G1000 Simulator Training

10am – 365 Jet
Checklist for Buying and Selling an Aircraft

11am – Raisbeck Engineering
Safety and Performance Modifications for King Air and Learjet

12pm – LoPresti Aviation
LoPresti Boom Beam HID Lighting for Improved Safety

12:30pm – Aircraft Lighting International
Aircraft Cabin Lighting - Energy Efficient and Customizable

Stevens Aviation Happy Hour! 1pm-5pm
1pm – Blackhawk
Blackhawk PT6A Engine Upgrade FAQ

2pm – Garmin Avionics
G5000 Beechjet Demo, G1000 King Air, and Affordable ADS-B Options

2:30pm – National Air Transportation Association
Tom Hendricks, President & CEO – NATA and the State of the Aviation Industry

3pm – Gogo Business Aviation
Airborne Connectivity 101

4pm – Rockwell Collins
Prolina Fusion for King Air Demo

November 19th, 2015
10am – Bendix King
Affordable In-flight Internet and King Air AeroVue Cockpit Upgrades

11am – CMD Flight Solutions
ADS-B Options for Part 23 and Part 25 Aircraft

12pm – L3 Avionics
ADS-B for Part 23 and 25 aircraft: Lynx & NXT600

1pm – Alto Aviation
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first took to the air in Austria on Jan. 19, sporting a 465-hp AI-450S turbine built by Ukrainian company Motor Sich JSC in collaboration with Ivchenko Progress. Certification of the -JP7 is planned in mid/late-2016 and, in a nod to the Russian market, the standard “Speed” version will be partnered by a large-wheeled “Tundra” model with slotted flaps and enlarged door. The proposed piston-diesel version continues to wait upon perfection of its proposed eight-cylinder, 440-hp AE440 engine – a “clean sheet” design being developed under the European Union’s Clean Sky initiative.

Nextant G90XT

All the certification work has long been completed, so expect an announcement this week about availability of the reinvigorated version Beechcraft King Air 90. STCs already obtained by Garmin (G1000 avionics), General Electric (H75 turboprop) and other OEMs have expedited certification, and all came together on Jan. 13, when the definitive prototype made its first test flight. The $2.3 million G90XT features a handcrafted interior with improved soundproofing; electronic engine control with complete exceedance protection and single-lever power control technology for simplified operations and reduced pilot workload; digital pressurization and all-new, dual-zone air conditioning for enhanced on-ground cooling; and aerodynamic refinements.

Piper M600

Piper’s PA-46 M-class was given a shake-up in April, the Mirage spawning the M350 variant, while the Meridian now answers to M500. Matrix is still Matrix, but the considerably revised M600 was simultaneously introduced and should be certified in the first quarter of the coming year – very slightly late, but with standardized FIKI provision as compensation. Based on the M500, and with the same P&W PT6A-42A engine, the M600 upgrades the performance, range, efficiency, comfort and safety – for a base price of $2.83 million.

There’s a redesigned wing and new fuel management jointly boosting range with 544-kg (1,200-lb) payload to 1,300 nm; and the first Garmin 3000 suite fitted in a single-turboprop. Passengers get a redesigned interior; pilots get electronic stability protection, underspeed protection, coupled go-around, hypoxia recognition with automatic descent, automatic leveling and numerous avionics tweaks. Piper plans to certify an alternative five-blade propeller for both the M500 and M600 in December.

Tecnam P2012 Traveller

Due for imminent rollout, the Traveller prototype will fly in first quarter 2016 and enter production at a purpose-built plant at Capua, Italy. Tecnam says this replacement for aging Cessna 400-series and Piper PA-31 twins is “the first new Part 23 aircraft for a quarter of a century.” It is a rugged, 11-passenger transport with high, cantilever wing and fixed landing gear, powered by a pair of 350-hp Lycoming TEO-540-A1A flat-sixes intended to run on avgas or mogas. The aircraft will cruise at 170 kt. for 286 nm plus 45-min. reserves, after taking off from a 1,600-ft. runway. Pure-freight and six-person executive versions are among the options.
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ONTHEWAY

XTI TriFan 600

Put your hands together to welcome this innovative design or, better still, put them in your pocket to contribute to the “crowdfunding” initiative being conducted online to get it started in development. At Englewood, Colorado, privately owned XTI announced the TriFan in August and, at last count, had received $12 million in pledges. That’s enough to buy one of the VTOL six-seaters, plus a few spares, but it is hoped that this popular endorsement will convince the big-money people to invest, too.

The TriFan is an airplane fitted with three ducted fans: two in the wing leading edges, swiveling through 90 deg.; and one, fixed vertically in the rear fuselage and employed only during takeoff and landing. Control is fly-by-wire, while carbon fiber and epoxy feature prominently in the structure. Two 1,300-shp turboshafts in the center fuselage drive the three five-blade propfans. At this stage, performance data is sparse, with XTI only quoting a 695-nm range. More information from the Media & Investment Relations Officer: Amelia Earhart.

Personal Jets

Cirrus is moving toward certification, but the other two offerings are from companies previously untested in the world of aircraft design. We await news from China on which of the ex-Epic jets will follow the turboprop AG300 into production at Zhuhai.

Cirrus Vision SF50

Hiring staff and heavily engaged in the final states of FAA testing, Cirrus is expecting certification of its fork-tailed SF50 mono-jet before the end of the year, with deliveries to the first of “more than 500” patient customers due soon thereafter. In May, Knoxville, Tennessee, was proclaimed the Vision Center for all Cirrus Aircraft pilot, owner and customer activities – including the 6,000 SR-series props the company has also built.

A rush of three conforming prototypes took to the skies in 2014, thanks to Chinese investment that placed the Vision back on track after the company was unable to follow up in timely fashion on the prototype’s 2008 first flight. And, like the SR, the jet carries a recovery parachute as standard for its maximum five-plus-two occupants. It sells at a price equivalent to $1.96 million 2011 dollars. Cruising is at 300 kt. on the 1,800-lb. thrust of its spine-mounted Williams FJ33, and it will cover 440 nm (NBAA-IFR) at the max payload weight of 1,200 lb. or 1,150 nm in ferry configuration.

Flaris LAR1

Described as being near to first flight when unveiled at the 2013 Paris Air Show with a spine-mounted 1,460-lb.-thrust P&WC PW615F, this Polish five-seat light jet returned in 2015 – still firmly rooted to the static display ramp. In the meantime, a second prototype had been built and concern over inadequate engine power resolved by adoption of the 1,910-lb.-thrust Williams FJ33-5A. Maiden flight is back to being “soon.”

The new engine ups the range to 1,730 nm or, more practically, to 1,200 nm with the full five aboard. Cruise is 380 kt. and certified ceiling will be FL 280. Optimized for the private pilot, the $1.5 million LAR1 features ease of handling; operation from grass airfields of moderate length; automobile-like cabin; wings detachable for economical storage; and a parachute rescue system. First aircraft, in the Experimental category, are due off the line in late 2016/early 2017; planned European CS23 certification will follow in 2018, with the FAA equivalent gained soon after.

Stratos 714

Although it has made no public announcements, Stratos has received sufficient recent funding to end its development hiatus and begin parts fabrication for the prototype of its Williams FJ44-powered, largely carbon-fiber personal jet. Designation, 714, indicates Mach 0.7 (415 kt.), one engine and four people, the last-mentioned and their baggage carried over a 1,500-nm NBAA range at up to 41,000 ft. Cabin space per passenger exceeds that of most aircraft of this size. Landing speeds and distance requirements for the 714 are considerably below twin-jets, making many more airports accessible to Stratos owner/pilots, while side-stick control, EFIS cockpit, docile handling and fully integrated autopilot lighten the workload.

Very Light and Light Jets

To general surprise, Honda is still trudging down the road to certification; and Pilatus is just setting out. SyberJet seems in no hurry.

CONTINUED ON PAGE 46
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One of the problems with innovative aircraft is that they contain things the FAA is unfamiliar with. It seems that since the HondaJet’s provisional certification was announced on March 27, several one-off issues have been identified by the regulators and passed to the manufacturer for resolution. By August, the target certification date had slipped to “late summer” – which sector of the calendar has, unarguably, passed. Honda has offered no guesses of its own, and if an announcement is still unforthcoming this week, then there are problems.

The first production example flew in June 2014 and nine more are on the N-register, awaiting delivery. Honda’s customer service facility at Greensboro, North Carolina, has already obtained Part 145 approval and its HF120 engine has long been certified. A recent world tour has witnessed debuts and fresh orders in Japan, Europe and South America. At $4.5 million for a typically equipped example (including three-screen Garmin G3000 avionics), the HondaJet offers accommodation for up to seven, including one or two pilots. Cruise speed is 420 kt. and IFR range with four occupants is 1,180 nm plus 45 min. reserve.

Pilatus PC-24

On May 11, the first of three PC-24 prototypes flew the initial hour of 2,300 planned over the next two years, more than half of them to be outside the home country of Switzerland. Cast in the spirit of the PC-12 turboprop, the Williams FJ44-powered twin has the ability to lift up to 12 (including a single pilot) from unpaved runways of 2,690 ft. There’s a large-volume cabin with freight door and rapidly removable seats, permitting easy reconfiguration for transport, medical evacuation and other roles.

Cruising at 425 kt. the $8.9 million PC-24 will cover 1,190 nm with a 2,500-lb. payload, or 1,950 nm with four passengers. Pilatus ACE avionics, developed with Honeywell, include a synthetic vision system, autothrottle, graphical flight planning, TCAS II and localizer performance with vertical (LPV) guidance capability. The company sold 84 aircraft in the first two days of offer and will begin deliveries of these in 2017.

SyberJet SJ30

Ed Swearingen’s SJ30 passed into the hands of SyberJet in April 2011 after two previous owners of the company had managed to manufacture four production examples between them. Work on a new facility at Cedar City, Utah, began in May 2014, but this is not scheduled to deliver its first SJ30i until the end of 2016. The date is dependent on certification of the new Honeywell SyberVision avionics suite comprising four 12-in. LCDs. Additionally, the standard 30i will have a new interior, which is being shown to convention-goers this week. Also in the pipeline is the SJ30x, which benefits from more powerful Williams FJ44-3AP-25 engines, replacing the regular -2A version. Despite its age, the $8/8.5 million SJ30i/x delivers high performance, including Mach 0.83 maximum cruising, FL 490 operating ceiling and a three-passenger NBAA IFR range (SJ30i) of 2,130 nm.
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Out go the Cessna Latitude (FAA certified on June 5), Bombardier Challenger 650 (by Transport Canada on November 9), Embraer Legacy 450 (FAA, August 26) and, for a less happy reason, the Learjet 85 (cancelled October 28).

AAC CBJ800

Aircraft models can be made cheaply and artists’ impressions even more so. China’s AVIC Aviation Technologies continues to demonstrate an interest in the business jet market but may be deterred by its current, local downturn. At least two designs have been investigated, the smaller designated CBJ800.

Cessna Longitude

Cessna has had enough latitude to complete its alleged re-think of the Longitude and should be in a position to announce its future. Except for two 11,000-lb.-thrust Safran-Snecma Silvercrest turbofans, the all-new, 12-passenger Model 800 is typical Citation — with metal monocoque structure, 30-deg. wing sweepback, T-tail, twin podded engines and manual controls — apart from fly-by-wire rudder and roll spoilers. There’s also an Intrinzic flight deck with Garmin G5000 three-screen EFIS, complete with synthetic vision.

Announced in 2012, the $26 million Longitude was intended to have a range of 4,000 nm (not including diversion reserve) and cruise at speeds up to Mach 0.86. According to some sources, range and fuselage length are both to be stretched to better please the market, but whatever is the case, Cessna has recently reaffirmed its original plan for first flight in 2016 and deliveries at the end of 2017.

Cessna Hemisphere

To what degree can Cessna minute the details of its second cartographical entry in the midsize market? An aircraft of this name is reported to be due for unveiling at Las Vegas, but there the details vanish over the horizon. It is to be hoped that we are not being sent in a great circle, only to find that the story is all spheres.

Dassault Falcon 5X

The “largest and most advanced Falcon Jet” was due to have flown in the second quarter of this year, but by the time of its rollout at Bordeaux on June 2, that had slipped to “late summer.” Yet even as the first frosts of the fall chill the lengthening nights, the 5X remains resolutely unwilling to join in flight with the migrating birds. Problems with the two, new 11,450-lb.-thrust Safran-Snecma Silvercrest turbofans are behind a delay of at least a year, which is likely to nudge promised 2016 certification into late 2017.

Eventually, the economic Silvercrests will convey the 5X’s 16 passengers and three crew in their 8 ft., 6 in. wide cabin at speeds up to Mach 0.85. Estimated range with eight passengers is 4,750 nm, lengthening to 5,200 nm at a more economical Mach 0.80. As might be expected, there’s a Honeywell EASy cockpit, including HUD; and also inflight engine health monitoring, a new wing and other advanced technologies. Price is $45 million at 2013 values.

Gulfstream G500 and G600

Flown on May 18, the first of four prototypes of the shorter-fuselage, “three-cabin” G500 completed its 45th sortie and 100th hour on Oct. 13, just a year after being revealed — although it had been longer suspected. Using its designation for a second time, the G500, with its Gulfstream Symmetry flight deck, is scheduled for certification in 2017 and deliveries the following year. It is being shadowed at a distance of 12 months or so by the 5-ft.-longer, “four-cabin” G600. Prices are $43.5 million and $54.5 million, respectively (2014), but both are designed for 18 passengers, not including up to four crew. Pratt & Whitney turbofans provide
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the power for eight-passenger, Mach 0.85 flights spanning 5,000 nm (G500 with PW814s) or 6,200 nm (G600 with PW815s). Mach 0.90 is possible, with some loss of range, while the maximum operating speed is Mach 0.925 – the same as Gulfstream’s G650 and G650ER.

Nextant ‘next’

Rumormongers are earning their overtime pay at this year’s Convention, their “take” on Nextant being that the company is ready to follow its Beechjet and King Air 90 reinventions with a super-midsize project. Others suggest the more modest target of the Hawker 800 (alias BAe 125). We may, or may not, go home wiser.

Ultra-Long-Range Jets

Gulfstream has placed its extended-range G650ER into service and the Falcon 8X is set-fair to gain certification before the troubled Bombardier twins get a look-in.

Bombardier Global 7000 and 8000

Bombardier has cancelled the Learjet 85 program and slowed manufacturing rates of the Global 5000 and 6000 to match declining demand. It has also been in secret, failed talks on undisclosed matters with rival airliner manufacturer, Airbus, and has solicited the Quebec government for a cash injection. Even now, as the prototype Global 7000 is taking shape, the company has been conducting a program review that few expect will bring good news regarding the originally announced in-service dates of 2016 and 2017, respectively.

Re-winged derivatives of the Global 6000 long-range twinjet, the pair has different fuselage stretches: 11 ft., 3 in. for the 17-seat 7000, and just 2 ft., 3 in. for the 13-seat 8000. A pair of 16,500-lb.-thrust GE Passport 20 turbofans is common to both. The 8000 spans 7,900 nm under NBAA conditions with four crew and eight passengers, while the 7000 will reach 7,300 nm with four crew and 10 passengers. Long-range cruise for both is at Mach 0.85, but 0.90 is attainable over shorter distances. Cost was in the region of $75 million (7000) to $71 million (8000).

Dassault Falcon 8X

Announced at EBACE in May 2014, the latest Dassault tri-jet leapfrogged its 5X stable-mate to make its first flight on Feb. 6. Two more prototypes followed on April 2 and May 11, and the last-mentioned and No. 04 are, even now, at Little Rock, Arkansas, for outfitting. A further nine are taking shape on the Bordeaux assembly line ahead of planned mid-2016 FAA and EASA certification.

Essentially, this is a Falcon 7X with a 1.10-meter (3 ft., 7 in.) fuselage stretch divided between fore-and-aft increments; a Falcon 5X cockpit, including third-generation EASy avionics; 5% extra power; and a more efficient and lighter wing. Max load is 19 passengers and three crew but, more realistically, eight-plus-three can travel 6,450 nm, NBAA IFR, at Mach 0.80, in a cabin atmosphere of 4,000 ft. at FL 410. Price is unofficially understood to be around $57 million.

Large Jets

Re-engined twinjets from the two major manufacturers feature prominently, now that the VIP Sukhoi Superjet has been certified (December 2014) and the Bombardier CSeries business derivative deferred until the airliner is satisfactorily in service.

Airbus A320neo

Sales of the A320 family to “government, executive or private” operators stand at 122. Airbus hopes to increase this number now that the revamped A320neo is available to business operators but, at present, only four neo A320s are counted in the above total. Following maiden flight in September 2014, airline neos will soon be in service. Price is $98 million for an A319 and $106 million for the longer A320.

Airbus ACJ350

The A350 XWB airliner entered airline service last December. C-Jet of Hong Kong ordered the first Airbus Corporate Jet ACJ350 in November 2007, and eight for various customers were on the books three years ago. Today, a solitary mid-length -900 remains under contract for an undisclosed, not-airline operator. Range is 10,050 nm with 25 passengers, and it is powered by a pair of 84,000-lb.-thrust Rolls-Royce Trent XWB-84 turbofans. Airline A350-900s cost around $305 million.

Boeing BBJ MAX

On April 2, 2014, Boeing announced a first order for the next-generation BBJ in the form of a MAX 8, equivalent in fuselage length terms to a BBJ2. Its delivery to a cabin outfitter is due in 2018. An ini-
“The roomy cabin, air conditioning and large windows are perfect for our passengers. The trip becomes part of the experience and not merely a mode of travel.”

Mike Böttger
Managing Director
Scenic Air
CONTINUED FROM PAGE 54

Boeing BBJ Max family

300 (mostly domestic) orders and intents for it, COMAC has come to the conclusion that now might be an auspicious time to apply for a production certificate, so it can deliver some. A business jet version of the 90-seat ARJ21-700 airliner obtained one order and two MoUs last year from two Chinese companies and, this June, Fokker Services was appointed to design a suitable interior for installation by Shanghai Aircraft Manufacturing. No further description is available.

CCAC StarLiner 100

At EBACE in May, newly formed Chongqing Commercial Aircraft Corp. announced plans to place in Chinese production the former Alliance StarLiner, a U.S. 50-seat airliner that was first projected a decade and a half ago. Emboldened by orders and commitments from lesser-known Chinese airlines, CCAC is also offering a business jet version for $22.9 million, to be available in 2020. Powerplant, avionics, and much else, have yet to be announced.

COMAC ARJ21 Xiangfeng

Having certified China’s first regional jet airliner in December and gained nearly 300 (mostly domestic) orders and intents for it, COMAC has come to the conclusion that now might be an auspicious time to apply for a production certificate, so it can deliver some. A business jet version of the 90-seat ARJ21-700 airliner obtained one order and two MoUs last year from two Chinese companies and, this June, Fokker Services was appointed to design a suitable interior for installation by Shanghai Aircraft Manufacturing. No further description is available.

Supersonics

Aerion continues to announce progress, but a challenger emerges.

Aerion AS2

The order book was opened in May and the cost will be $120 million for the revised, AS2 version of Aerion formulated in 2014 and containing inputs from Airbus engineers. Aerion has realized it needs to manage the program itself and not just hand over the blueprints to a group of OEMs, so it has spent the last year bringing in aerospace industry big-names to manage the new business plan. It is also getting commercial advice from Airbus. Range estimates are 4,750 nm at Mach 1.4, increasing to 5,300 nm at Mach 0.95. The basis of the figures is unclear, as no powerplant for the current design has been chosen. Even so, Aerion plans to have the AS2 flying in 2019 and certified in 2021. On the touchy question of noise, it says that its technology allows “boomless” cruise up to Mach 1.2 using atmospheric diffraction.

Spike S-512

In June, Boston-based Spike Aerospace replaced its earlier supersonic business jet studies with a more believable, but still self-funded design relying on a pair of unspecified 20,000-lb-thrust engines. Costs are minimized by eschewing boom-defeating measures, the theory being that the aircraft will be used mostly for transatlantic missions, where noise restrictions do not apply. Spike regards regulatory compliance as its greatest challenge, followed by fund-
A Bombardier Challenger 350 owned by VistaJet recently set a world speed record in its class, flying 2,774 mi. from California to the Cayman Islands in 5 hr. and 5 min. The U.S.-registered aircraft, managed and operated by Priester Aviation, departed Napa County Airport at 8:22 a.m. PDT on Oct. 28 with three crew and two passengers on board. Its maximum cruising speed was Mach 0.83, flying at 41,000 ft. It touched down at Owen Robert International Airport in Grand Cayman at 1:27 p.m. PDT with more than sufficient fuel reserves.

“The Challenger 350 handled beautifully throughout the flight,” said Priester Aviation’s Capt. Andy Wegman. “Thanks to its unmatched climb characteristics, we took it straight to [cruising altitude] in under 20 minutes, where we cruised comfortably at ground speeds up to 545 knots.”

“We’ve taken delivery of 13 Challenger 350s over the past year, and to date our experience with this aircraft has been very positive,” said VistaJet International COO Nick Van Der Meer. “We provide our customers with the best aircraft options for their intercontinental and transcontinental travel needs, and the capability showcased on this new world speed record serves to reinforce this commitment.” VistaJet is at Booth C9343.

GAMA Welcomes Record Number of New Member Companies

The General Aviation Manufacturers Association (GAMA) has approved seven new member companies: Celestica, Elliott Aviation, Gogo, Luxaviation Group, Mid-Continent Instruments and Avionics, TRU Simulation + Training and Yingling Aviation. They represent the largest number of companies to join the association at one time in its 45-year history and bring total membership to 91. GAMA president and CEO Pete Bunce commented: “Their collective contributions to our global trade association will strengthen our effectiveness and influence to facilitate policies, regulation and legislation that promote the growth of general aviation around the globe.”

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Embraer Delivers 300th Phenom 300

Embraer Executive Jets delivered its 300th Phenom 300 on Oct. 15. The milestone aircraft was handed over to an unnamed U.S. customer at the manufacturer’s Melbourne, Florida, facility. The Phenom 300 is operating in 28 countries, accumulating more than 250,000 flight hours. In six years of operation, the worldwide fleet has reached a 57% market share in the light-jet category. “The 300th delivery confirms the outstanding worldwide reception the Phenom 300 has received and is an eloquent testament to the aircraft, which has redefined the light-jet segment,” boasts the Brazilian manufacturer. Booth N3932.

Continental Offers NiC3 Coating

Continental Motors Group’s (Booth N2526) cylinders for Continental, Titan and Lycoming engines are now available with optional nickel silicon carbide (NiC3) coating. Coated cylinders resist internal corrosion and benefit from increased hardness and internal wear resistance. The coating creates a barrier inside the cylinder that protects it from corrosion while hardening the cylinder wall. Emmanuel Davidson, Continental’s head of global marketing, said, “We believe this new option will benefit those who do not get to use their aircraft as often as they would like or those who live or fly near the ocean.”

Crane Wins G500/G600 TRU Contract

Crane Aerospace & Electronics (Booth C7818) has been selected by Gulfstream Aerospace to supply its ELDEC Transformer Rectifier Unit (TRU) on the G500 and G600. Each will have five 250-amp TRUs providing DC bus power throughout the aircraft. Gulfstream previously selected the same TRU for the G650. Crane senior director Rodney Mack commented, “We have a long-standing relationship with Gulfstream and are pleased to be working with them on the G500 and G600. We are excited to provide our lightweight and reliable TRUs on these new, advanced business jets.”

F SI Offers Citation Latitude Sim Training

FlightSafety International (Booth C8524) began training on its first Level D simulator for the Cessna Citation Latitude at the end of September at its Cessna Pilot Learning Center in Wichita. A second Latitude simulator will be installed at its Learning Center in Columbus, Ohio, in 2016. “We are pleased to offer the most complete range of Cessna aircraft training programs,” said FlightSafety EVP David Davenport. “Building two Citation Latitude full-flight simulators demonstrates our long-term commitment to provide our customers with the training programs they require and to deliver industry-leading service and support.”

Safe Flight AoA System Gets FAA Nod

Safe Flight Instrument Corp.’s SCc Angle of Attack-based system for GA aircraft has received FAA certification. In addition to low airspeed awareness, it provides pilots with AoA-based guidance for a variety of high-lift operational conditions such as normal and short-field takeoff, climb and wind-adjusted AoA cruise speed for maximum range and endurance. The SCc Lift Transducer precisely measures the wing’s leading edge stagnation point and flow field irrespective of aircraft weight, wing loading or center of gravity. An indexer computer uses an LED display and features a reference marker for setting AoA targets for flight. Booth N3124.
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Saab Preps for Remote Tower Safety Case

The U.S. may be behind Europe in deploying remote tower technologies, but momentum is building based on incubator projects at general aviation airports.

Saab is analyzing data from a three-month shadow mode remote tower demonstration in the U.S. in preparation for a mid-January “Safety Case” meeting with the FAA in Washington.

It’s there that the remote tower provider and its partners will seek permission to run a live test in spring 2016 at the Leesburg Executive Airport in Virginia, a single-runway, uncontrolled, tower-less reliever airport for the Washington, D.C. metroplex area and home to approximately 300 operations per day, mostly light general aviation, but with some heavier business jets. Beyond the live test, Saab and partners hope to certify the system as a non-federal tower, a facility that uses civilian air traffic controllers.

The action represents a small step forward for virtual towers in the U.S., which has been lagging Europe, and Sweden in particular, in introducing the concept. In April, Saab and Swedish air navigation services provider LFV put the world’s first remote tower into full-time operation at the Ornskoldsvik Airport. Controllers handle Ornskoldsvik’s light traffic - a handful per day - via a virtual tower at the airport and a Saab-built remote tower center (RTC) in Sundsvall, nearly 100 mi. distant.

Airports and authorities globally are beginning to recognize the value proposition of the technology, which is being considered for use as backup control towers (to keep operations at a high tempo when the primary tower is out), as lower-cost replacements for new or existing brick-and-mortar towers, and as an economy of scale tool to have multiple virtual towers controlled by the same remote tower center.

Sweden will soon control three airports from Sundsvall, while Ireland has a contract with Saab to control traffic at Cork and Shannon airports from an RTC in Dublin in 2017. Germany has a contract with Frequentis to deploy remote towers at Saarbrucken, Erfut and Dresden and an RTC in Leipzig in 2017. Norway plans to operate as many as 15 airports from an RTC in Bodo under a new contract with Kongsberg Defense System. Hungary hired Indra Navia and Searidge Technologies to build a virtual tower and remote tower center for the Budapest Airport by 2018, a system that will be both primary and backup operations at the medium-sized airport.

Officials at the Leesburg airport, a partner with Saab and the Virginia VSATSLab in the project, see the technology as a way to bring in more business aviation operations to the state’s airports by introducing control towers at fields that formerly were uncontrolled.

Without a tower on the airport, officials say instrument departures and arrivals can be time consuming and uncertain, leading to the schedule reliability issues that result in operators seeking out other airports. Costs for a brick-and-mortar tower for a small airport can be prohibitive - $5.3 million for a similar tower at a nearby airport - particularly if one remote tower center could operate several airports, which could then share the costs.

The FAA has not yet completed a cost-benefit analysis for remote towers and Saab did not provide a price for the Leesburg equipment suite. However Avinor, the air navigation services provider for Norway, says it expects a 30-40% decrease in ATC services costs.

In the U.S., the FAA experimented with remote tower technology in simulations and in the middle tower at Dallas-Fort Worth Airport from 2009-2011 under the Staffed NextGen Tower (SNT) research project. The agency, however, discovered that “operations at larger airports would require high levels of ‘critical’ function certification that were deemed cost prohibitive at the time,” says Paul Fontaine, the FAA’s director of NextGen research and technical development.

Fontaine says the FAA does not have a formal program for remote towers but is focused on technology demonstration projects at small airports, particularly in locations such as Leesburg where a larger group shares the financial burden through a public-private partnership (PPP). Another location where PPP could lead to remote tower developments is Fort Collins, Colorado, where the state and the FAA are investigating potential “blended airspace” locations such as Leesburg where a larger group shares the financial burden through a public-private partnership (PPP).
operations building. In the remote tower center, located in the adjacent building, 15 NEC monitors (one is available as a backup) are arranged in a semi-circle, offering a compressed 360-deg. view around the airport, with the center set near the middle of the airport’s single 5,500-ft. runway. Each of the monitors is fed by one of the crew’s nest cameras. The video stream travels from the cameras to a separate room with an electronics rack holding 15 encoders (14 plus one spare) that compress the raw video, three monitors handling the video from the PTZ camera and the two microphones. The data is then routed to the RTC, which in some Saab projects has been as far away as 700 nm. The stereo audio data is fed into two speakers, one on each side of the display. Saab says the system emulates the remote tower and the two microphones. The data is then handled by the PTZ controller, says Saab consultant, says controllers were asked to record whether they could see aircraft (and if not, why not?) at certain locations on the ramp, taxiways, runways and out as far as 2.5 mi. from the airport. One technical issue that emerged was the process for using the PTZ camera, which takes the place of binoculars in a tower. For the Swedish system, controllers use a pen or stylus on a touch-screen display to control the PTZ while U.S. controllers felt the system would operate more easily with a computer mouse or trackball.

Easy operation of the PTZ will be critical as there is a compression effect in the high-definition displays that can make it difficult to visually identify an aircraft without closer inspection. Paul Rinaldi, NATCA president, says controllers have been “very positive” about the technology and Saab has been “receptive” to critiques, but there remain some issues, including the process of tracking and seeing aircraft at different points in the traffic pattern. He says the system today is “not ready for prime time,” but “it’s close.”

For the safety case in January, Fontaine says Saab and its partners will lay out for an FAA “cross-functional team” the risks, hazards and mitigations for Phase 2 of the program – a three-month test using the remote tower to control live traffic in parallel with a portable tower at the airport. Fontaine envisions another round of controller testing before that takes place, however, preferably with the same 30 controllers.

Matt Massiano, director of FAA business development for Saab, says the company is targeting spring of 2016 for the Phase 2 test but expects that an intermediate step could be necessary, perhaps with controllers issuing advisories rather than instructions.

—John Croft

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Swept Props for King Airs

The grand opening of this year’s NBAA will also mark the grand unveiling of scores of add-on systems and modifications that their vendors promise will make aircraft and their operators more efficient, reliable, precise, comfortable, cost-effective, better performing and better looking. And of those purveyors, arguably none is better at delivering on such promises than Raisbeck Engineering.

Since its founding in 1982, this small Seattle firm has gained a strong following for an array of modifications, or systems, that it has designed, certified and delivered for a variety of production aircraft, and most particularly for the Beechcraft King Air line.

Indeed, NBAA 2015 will be the first public showing of Raisbeck’s latest products, four-blade aluminum and five-blade composite swept-design propellers for the King Air 350. Flight testing of the new props, developed in partnership with Hartzell Propeller, is expected to be completed this month. The company says the new units will increase performance, lower noise and provide “stunning ramp presence.”

In addition to swept props, Raisbeck’s King Air offerings include aft body strakes, enhanced leading edges, high flotation landing gear doors, and a ram air recovery system, all of which improve performance, along with baggage lockers aft of the engines to help free up cabin space. And more are in development.

That disparate assortment has proven to be popular among operators. According to company founder and CEO James Raisbeck, some 4,100 King Airs – more than half of the operating fleet – carry one or more of the mods. Today, Beechcraft incorporates certain Raisbeck designs in all three current production King Air models.

While Beech turboprops represent its largest fleet penetration, over the years Raisbeck has targeted a broad span of aircraft with aftermarket products including overhead bins on the Airbus A320, quiet props for the Twin Otter, and performance enhancements and aft fuselage lockers for several Learjet models.

But easily the company’s most lucrative modification involved little hardware change at all. When the imposition of Stage 3 noise deadlines threatened to ground much of the Boeing 727 fleet, Raisbeck, who began his career as a Boeing aerodynamicist, “re-optimized” and then certified the aircraft’s flaps, slats and power settings for takeoff and landing so that the decibels emanating from its three Pratt & Whitney JT8Ds stayed within the new limits.

In reviewing his successful programs, Raisbeck says, “It isn’t how hard you hit, it’s knowing where.”

But not every time at bat has produced runs. After eight years with Boeing, Raisbeck accepted the presidency of Robertson Aircraft, a Renton, Washington, firm that made STOL kits for light aircraft. That move began a retrofit career in which he teamed, early on, with Dee Howard, the legendary aircraft modifier in San Antonio. Together they produced the popular Mark II modification for 20-series Lear Jets. That caught the attention of North American Rockwell, then launching a project to re-engine and re-wing its Sabreliner 60, and under the agreement that followed Rockwell developed what became the Sabre 65, for which Raisbeck produced the supercritical wings and retrofitted existing models.

Eventually, Raisbeck went on to employ hundreds of people building wing shipsets for Rockwell – and losing money on each, he says – and modifying legacy Sabres. Ultimately, though, his project went bankrupt, lenders foreclosed on his home, and he, an optimist of the highest order, despaired – “I joined the gin brigade.” But not for long.

Urged to start over, “to get yourself useful again,” by an unpaid vendor, he took focus on the King Air line, formed his engineering company, and never looked back.

However, the Sabre debacle taught Raisbeck several lessons, including avoiding debt and partnering with large corporations, staying small – there are just 24 people on his payroll – and letting others make the installations.

He also developed criteria for selecting which models of aircraft to modify: 1. There must be a lot of them; 2. They should be in production; 3. They must be owned by people who can afford to upgrade; and 4. The modification must deliver a significant benefit.

While OEMs historically distanced themselves from Raisbeck’s alterations to their aircraft, that changed several years ago when Beechcraft incorporated some on production models and in its service centers. And with Beech and Cessna centers as one under Textron Aviation, Raisbeck sees further opportunity for his company.

Now 79, Raisbeck says, “I would think my successor, whomever that is, will want to look very seriously at the Cessna Citation line for improvements.”

Raisbeck Engineering is at Booth N4900.

—William Garvey
MU-2 Product Support Strengthens Safety Culture

Mitsubishi Heavy Industries America’s (MHIA) MU-2 Product Support Division is launching two new safety-focused programs in the first quarter of 2016 – the next version of the MU-2 icing video and certification of a new angle-of-attack system for the turboprop twin.

The AoA system, developed by Alpha Systems, is a multiple-display configuration that factors flap inputs into its standard pressurized-aircraft AoA configuration. Since the original design was functional only in a single-flap setting, MHIA and Alpha determined that all MU-2 flap settings had to be taken into consideration to protect the entire flight envelope of the aircraft.

The new icing video will available in the spring. The first version was created by MHIA in 1997 and mandated by an FAA Airworthiness Directive that required all MU-2 pilots to watch it at least once every two years. Since the implementation of that video there has not been an MU-2 accident caused by icing, MHIA says.

“This is another outstanding effort by MHIA to strengthen the aircraft operator’s safety culture,” says Pat Cannon, president of Turbine Aircraft Services Inc. (Booth C9837), which runs the product support program for the company. “This has resulted in the MU-2 being statistically the safest aircraft in its class since 2008, as measured by NTSB statistics.”
Satcom Direct is at NBAA with plenty of news, part of it a brand relaunch.

To represent “a growing and evolving company and offerings” there is both a new logo and a new brand identity, which simply will be SD (Booth C1013). To illustrate its expansion beyond satcom-based services, it will begin using the label “SD Global Connectivity.”

“Updating our visual identity and adding a new descriptor ‘Global Connectivity’ more clearly reflects our mission and what we do as a company,” explained director of marketing Jana Rucker.

The company also has a new service called SD FlightLogs, a paperless and automatic platform that captures all information for all legs of the flight and synchronizes it with the flight department.

SD FlightLogs is powered by Satcom Direct’s data-link service, FlightDeck Freedom, which provides real-time flight data. It automatically captures and records aircraft movement events, calculating accurate cycle times for every member of the flight operation, from pilot to maintenance, to scheduling.

Satcom Direct also has announced it is “the first Inmarsat SwiftBroadband distribution partner to provision and enable the new SwiftBroadband high data rate [HDR] service with Honeywell avionics.”

According to the company, making HDR service available to SwiftBroadband customers provides them with a faster and more-efficient broadband connection. The service can provide 650 Kbps per streaming channel, and customers with an SD router can use the exclusive SkyBond service to combine up to two channels, thereby providing speeds of up to 1.3 Mbps. That, claims Satcom Direct, “is approximately two times faster per channel than the traditional SwiftBroadband inflight connections.” — Kirby Harrison

Satcom Direct’s SD FlightLogs is a paperless platform that captures flight information and synchronizes it with the flight department.
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The business-aviation market will continue to track upward over the next five years, although billings may decrease or remain flat, according to market analysts.

The shift is due to a change in the mix for aircraft expected to be delivered to customers, Brian Foley Associates analyst Brian Foley told attendees at the recent SpeedNews 21st annual Business and General Aviation Industry Suppliers Conference in Los Angeles.

Demand for the biggest, most expensive business jets is expected to soften, as demand for less costly small and medium jets recovers and increases, he said.

Dollars, rather than number of units, have always been the more relevant metric of the health of the business jet market, Foley told attendees.

During the first half of 2015, deliveries of large-cabin jets fell 12.7% when compared to the first half of 2014. At the same time, shipments of small- and medium-cabin jets rose 3.6%, Foley told attendees.

The change is due to an economic decline in emerging markets that geographically have a need for long-range jets, a strengthening U.S. dollar that makes the jets cost more overseas, and declining commodity prices, Foley said.

Oil-related companies and regions like big-cabin jets, but demand from that sector has been hurt by the decline in oil prices, he said.

During the 2009 financial crisis, the market for large, intercontinental business jets was barely fazed, while demand for smaller jets fell by two-thirds, which forced manufacturers in that segment to slash staffing, Foley said. Cessna Aircraft, for example, cut employment by half as customers canceled and postponed orders.

“Big-cabin jets helped save our bacon,” Foley told conference attendees.

Now, demand for large jets is slowing, and future deliveries will contain a great proportion of small and medium jets, he said.

The net effect is that over the next couple of years, more aircraft will go out the door, but without moving the needle on overall industry values.

“This anomaly won’t rectify itself until 2018, when a slew of new, large, pricey jet models from Dassault, Bombardier and Gulfstream hit the market,” Foley said.

Over the next decade spanning 2015-24, Foley predicts deliveries to total 8,594 jets worth $238 billion.

Foley expects deliveries to continue to trend upward each year until 2020, when shipments begin to decrease.

Rolland Vincent, a consultant with Rolland Vincent Associates, agrees. He also predicts business jet deliveries to grow until 2020, with a slight decline to follow.

Another Cycle

“We do think there’s another cycle coming,” Vincent told attendees at the SpeedNews conference.

The industry has faced a downturn every 10 years for the past four decades, Vincent predicts deliveries of 9,328 business jets from 2015 to 2024 valued at $258 billion. He expects 19% of the orders to be for large ultra-long-range jets, 16.3% for light jets, 16% for super-midsize jets, 11% for very light jets, 9% for large jets, 8.3% for midsize jets, 8% for large long-range jets and 7.4% for personal jets.

The U.S. is the driver of business jet sales. U.S. consumer confidence is the highest in eight years, Foley said. And the number of used business jets for sale is the lowest since 2008, interest rates are low, utilization is up and oil prices are down, which means lower operating costs.

At the same time, manufacturers will have 13 new products enter service from 2015-19, which will stimulate demand.

This year will be an industry-upturn pivot point, Foley told SpeedNews attendees, “evidenced by meaningfully growing backlogs, increasing book-to-bill ratios and double-digit percentage delivery growth,” Foley said. —Molly McMillin
“With our headquarters located in rural Minnesota, we find business aviation to be particularly valuable — the time savings and efficiency gains are significant.”
Aviation Week Lowers 10-Year Bizjet Expectations

A new business aviation forecast by Aviation Week projects demand for nearly 13,000 new business aircraft over the 10-year period from 2016 to 2025. It also projects aircraft retirements to total more than 5,500. The projections include business jets and turboprops as well as regional and narrow-body jets used as corporate aircraft.

The world’s in-service fleet is expected to grow from 31,000 aircraft in 2016 to nearly 38,000 in 2025. That’s according to Aviation Week Network’s second annual 2016 Market Summary Report. Global deliveries are projected to rise from 1,100 in 2016 to a peak of 1,400 in 2021, before slowing to 1,200 in 2025, it said.

Compared to last year’s forecast, the 2016 forecast projects a decrease of 1,100 new aircraft to be delivered over a 10-year period and an increase of 275 more aircraft to be retired.

The past few years have seen stronger demand for larger-cabin jets, while demand for smaller business jets has been softer. Going forward, however, the market for super-midsize jets is expected to strengthen, though strong demand will remain for large-cabin jets and turboprops.

The 2016 forecast expects growth in deliveries to taper off around 2019 and retirements to spike in the immediate future because of the cost of compliance with noise limitations on older jet engines and other regulations.

Demand for turboprops is expected to lead, with 2,693 deliveries over the next 10 years, followed by light jets at 2,467 and ultra-long-range jets at 2,062 aircraft, the forecast said.

Total demand for business jets is expected to total 10,004 over the 10-year period. Other findings include a 2.3% annual growth rate in the world’s business aircraft fleet.

Although China has a small fleet, it is expected to grow the fastest at 9%, despite economic and political pressures. North America is projected to grow at 2.3% while Western Europe, the second-largest market, grows at a rate of 4.1%.

North America’s fleet share remains constant during the forecast period at 63.5%, while Western Europe’s share of the world’s fleet increases to 12.5%. Latin America and Africa lose some fleet share, while Eastern Europe and China gain fleet share.

Manufacturers are investing in new products and upgrades to stimulate new sales. The past year has seen additions to product lineups in several business aircraft segments.

Connectivity, upgraded avionics and compliance with the ADS-B mandate, Future Air Navigation Systems and traffic collision and avoidance software are also important considerations.

Still, the soft used market has been a hindrance to new aircraft sales. And sales of very old equipment sometimes result in the aircraft being transferred to poorer regions where regulations are less stringent or the aircraft are taken out of service. For example, hush kits for early models can cost more than $1 million per engine, making the older business aircraft expensive compared to their retail value.

The forecast predicts a rash of aircraft retirements in 2016, in large part because of the cost of Stage II noise compliance issues. Leading the way are turboprops, at about 49% of the expected retirements, followed by older light jets and large-cabin jets.

The biggest retirements are the King Air 90 with 781 retirements over the forecast period, followed by the King Air 200/250, the Turbo Commander, Citation II and Learjet 35/36.

Comparisons

The forecast is the result of Aviation Week’s in-house research, aircraft database and fleet projections, said Brian Kough, director of forecasts and analytics for Aviation Week. It is roughly in line with other projections.

Rolland Vincent, president of Rolland Vincent Associates, forecasts demand for 9,328 business jets over the 10-year period from 2015 to 2024. Brian Foley, of Brian Foley Associates, projects demand for 8,594 business jets during the same period, while Jetcraft projects 8,755 business jet deliveries over the next 10 years.

Regional Growth

North America will continue to lead the business aviation market, the forecast said. It projects the business aircraft fleet to grow from 19,700 aircraft to 24,100 aircraft in 2025, maintaining its 63% market share.

Taken separately, Eastern and Western Europe’s projected fleet size growth during the forecast period will trail only China, which is projected to grow 9% a year through 2025. Western Europe’s fleet of 3,329 business aircraft is expected to grow at a rate of 4.1% a year, while Eastern Europe’s fleet is expected to grow 3.6% a year, from about 540 aircraft to 740 by 2025.

—Molly McMillin
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VIP Completions Busy, but for How Long?

The VIP large aircraft industry is busy. But exactly how busy, and for how long depends on who is being queried.

Part of the answer is grounded in new-aircraft sales, which the two major manufacturers, Airbus and Boeing, say remain strong. But their new-technology aircraft will not be delivered to the completion centers for at least another two years, and there remains a question of whether there is enough business to fill that gap.

According to Airbus Corporate Jets (Booth N4533), the new ACJ319neo and ACJ320neo are gaining market traction. The first delivery of a green ACJ320neo to a completion center is planned for fourth quarter 2018, and the first green ACJ319neo is due to arrive at a completion center in second quarter 2019. The backlog currently totals six aircraft, plus an order for one A350 XWB.

At competitor Boeing Business Jets (Booth N5500), the launch order for the BBJ MAX was received April 2 for an -8 model from an existing BBJ owner. With the new-technology CFM International Leap-1B engine and scimitar winglets, the aircraft is expected to burn 14% less fuel, and the range will be bumped up to 6,325 nm, 400 nm more than that of a BBJ2. The first green delivery of the BBJ MAX 8 to a completion center is expected in 2018. With the launch of the BBJ MAX 9 program, the first firm order marked the fifth order overall from the BBJ MAX line.

Boeing Business Jets this year has also announced orders from two unidentified customers – one for a BBJ and another for a BBJ787-8.

The Boeing backlog as of Sept. 30 includes one 737, five BBJs, five from the BBJ MAX line, two BBJ777s and one BBJ747-8 – a total of 14 aircraft.

A BBJ787 recently inducted at Greenpoint Technologies’ Moses Lake, Washington, facility (Booth N1730) will require roughly 18 months to complete. There is another BBJ787 in its shop, and a BBJ777-200LR will arrive in early 2016.

If expansion is an expression of confidence going forward, more than a few completion centers are looking forward to continuing growth.

According to AMAC Aerospace in Basel, the fast-growing center has reached saturation in terms of new-build construction at EuroAirport Basel-Mulhouse-Freiburg. “If any growth is to be made, we would look to acquire new premises,” said Waleed Muhiddin, VP of strategic operations and business development. “For example, we have entertained the concepts for opening new hangars in Africa, China and possibly India.”

Jet Aviation reached an agreement with EuroAirport in September to expand its production operation within its completion center where the company produces VIP aircraft interior components and integrated systems. The expansion will include an additional 12,000-sq.-ft. facility, with completion expected in the first quarter of next year. The expansion, said SVP Neil Boyle, is “in line with our long-term growth objectives and opportunities.”

Aeria Luxury Interiors (Booth N2326) in San Antonio, Texas, is seeking out new opportunities outside the business aviation arena. According to VP and general manager Ron Soret, the design department is getting a jump on the future by creating concepts for VIP variants of the new Boeing 777X airliner, even though first deliveries of the 777 upgrade are not expected before 2020.

Aeria also has the advantage of being able to leverage the global network of parent company ST Aerospace of Singapore for maintenance, repair and overhaul.

Associated Air Center’s Patrick Altuna (Booth N4500) claims the center at Dallas’ Love Field is currently at capacity, including a green completion ACJ320, a BBJ787-8 and BBJ747-8 to be delivered this month, and two BBJs in for major upgrades.

One of the forces driving acquisition of new aircraft, such as the BBJ MAX, is demand for more fuel-efficient technology with advanced technology. That demand is also bringing more older aircraft in for upgrades.

In May, Airbus Corporate Jets offered an optimistic view of the Latin American market in particular. The OEM predicted that by 2017 the number of billionaires in Latin America would rise to 580. Of those, 240 are expected to be Brazilian.

Perhaps the most optimistic outlook came from GDC Technics of San Antonio (Booth N5900). General manager Muhammed Alzeer said that GDC has a backlog with contracts valued at more than a half-bilion dollars. “The current backlog stands at $650 million, and our target in 2015 is to increase to $900 million.”

—Kirby Harrison
Lufthansa Technik Wins Royal Jet BBJs

Lufthansa Technik has been selected by Royal Jet to complete two Boeing 737-700 BBJ VIP aircraft as the Abu Dhabi-based private charter company expands its fleet.

Royal Jet, which is considered the world’s largest BBJ operator with a fleet of six of the Boeing VIP aircraft, will take delivery of the two new additions in the third and fourth quarters of next year.

Lufthansa Technik will outfit the aircraft at its VIP & Executive Jet Solutions site in Hamburg.

“We are very proud that we have been selected by Royal Jet and also given the chance to materialize the spectacular design of Edése Doret,” says Lufthansa Technik’s SVP of VIP & Executive Jet Solutions, Walter Heerdt. New York-based Doret is known for its elegant yet innovative designs.

The VIP interior comprises a private master bedroom together with a fully equipped master bathroom as well as a large lounge area and business and economy class areas. Both aircraft will be equipped with the latest telecommunications and entertainment technology, and can accommodate up to 34 passengers.

The victory is particularly sweet for Lufthansa Technik, which, like other completion centers, has seen a downturn in “green” VVIP aircraft available for outfitting, as buyers are signing up for new Airbus A320neo and Boeing 737 MAX aircraft that will not come out of the factories until 2018. Filling that gap is a challenge for many in the completions industry.

“The market generally is down in the Middle East, China, the Ukraine and Europe,” says Heerdt. “Orders are very, very small. Everyone was expecting a gold rush” but it has evaporated.

“Our prediction for the coming year is the same, and there are completion slots available [in the industry],” For Lufthansa Technik, though, the winning of Royal Jet’s two BBJs will help fill its Hamburg capacity through next year.

Lufthansa Technik (Booth C10416) recently delivered the first of three Boeing 747-8 VVIP aircraft and will deliver the second in the next few weeks. The company was unique in having three underway at the same time, with the first two being outfitted in parallel.

“It was a very challenging task,” says Heerdt, “as the first two had a very high complexity and elegance that involved a steep learning curve.” Lessons have been applied to the third “which is totally on track” for redelivery, he notes.

—John Morris

Mercedes-Benz for the VVIP Jet

There has been a lot of interest in the elegant and luxurious VIP cabin concept unveiled in May by Lufthansa Technik and Mercedes-Benz, the completions company says. “We don’t have a project yet, but we’re confident there will be projects later on,” says Lufthansa Technik’s SVP for VIP & Executive Jet Solutions, Walter Heerdt.
Inairvation Wins First Customer, Launches Global Express Retrofits

Activity has picked up at Inairvation, a 50:50 collaboration between Lufthansa Technik and List Components & Furniture, as it wins supersonic business jet designer Aerion as its first customer for integrated cabins, and names three partners to offer complete integrated cabin retrofits for Bombardier Global Express/5000/6000 aircraft.

Launched in May 2014, Inairvation was created to design, develop and manufacture integrated interior business jet cabin solutions. Now, with its new external partners, it can offer complete installation packages to the business jet retrofit market. Flying Colours Corp., LBAS, and RUAG Aviation will first offer the retrofit packages on all Bombardier Global aircraft types and then transition to other platforms depending on market demand.

Meanwhile, the company, headquartered in Edlitz-Thomasberg, Austria, will exercise its expertise in cabin outfitting, furnishing, fittings, galleys, environmental controls and inflight entertainment systems to design a supersonically impressive cabin for the Aerion.

Inairvation is planning the first two Global installations in the second half of next year, and eight in 2017. “We already have target customers,” says Philip von Schroeter, director of EOM business units at Lufthansa Technik and co-CEO of Inairvation.

The concept involves modularizing and re-engineering the most up-to-date cabin technologies to upgrade a Global cabin while the airframe undergoes an eight-week-long 8C-check. All too often, says von Schroeter, retrofits of older aircraft involve engineering challenges, and this program is aimed at easing the marriage of pre-engineered features into unique aircraft “rather than have every retrofit program as a surprise.”

The baseline retrofit package offers the NICE HD CMS/IFE system that includes an advanced user interface (UI), audio and video on demand, a wireless interface for personal device integration (iOS and Android), and a Hollywood studio content service with leading blockbuster movies and TV shows, all functionally integrated into new ergonomic side-ledges and modification kits, pre-engineered by F/LIST. Many optional packages are available that – when taken together – will create a complete new interior.

Innovation

Inairvation can call on all cabin innovation at Lufthansa Technik. Among the latest developments featured here at Lufthansa Technik’s Booth C10416 are:

• The Chair. This composite-structured seat, adaptable to many styles and designs while freeing up cabin space and saving weight, recently received the green light from the authorities with successful testing to 9g and 16g certification requirements. “Now we will re-up our marketing campaign to designers and customers,” says von Schroeter. “We will see in the next months how the market will react.” Lufthansa Technik envisages airline and first-class as well as VIP seats.

• NICE cabin management system is now in its fourth generation and flying in more than 300 Challenger 300s as well as in Challenger 350s and the 600 series. Planned upgrades for the 300 include moving from one to three high-definition sources (Blu-ray, USB and HDMI) and HD digital video streaming on the NICE network.

• A new TIOS (two-in-one solution) tail-mounted twin antenna radome, popular among BBJ operators, that can house Ka/Ku and live-TV antennas from various vendors. Available as a first-time installation or as a retrofit, the Ku-capable version will be available in the second quarter of next year.

• The Patient Transport Unit Next Generation (PTU NG) features an intensive-care bed and medical storage racks. Developed with Aerolite Max Bucher AG, PTU NGs have been delivered to launch customers for integration into Airbus A380 and Boeing 747-8 aircraft. Together with its partner Aeromedical Services, Lufthansa Technik is offering turnkey solutions for VIP, medevac and special-mission operations.

“They love the Inairvation concept,” says Inairvation co-CEO Philip von Schroeter. “We have been awarded development of the Aerion cabin and construction of a cabin mockup for NBAA 2017. “We’re working on ergonomic concepts; it’s really all about packaging at the moment. Aerion is demanding the most advanced cabin for 2023, so the concepts cannot be just today’s.”

Inairvation is working closely with British design house Design Q, which is already a preferred partner that is also involved in the Global retrofit program.

Seen above: the starting point. This is Aerion’s current concept for the interior of its supersonic business jet, but it is sure to evolve as Inairvation gets to grips with it.

—John Morris
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Lektro Launches Hybrid Electric Tug

Lektro, which is now celebrating its 70th year in business, is introducing a hybrid electric tug capable of running on electricity only or with a fuel-versatile diesel engine for use where there is limited or no charging infrastructure.

Lektro’s new AP8850SDA-H can be deployed to support disaster relief, too.

The hybrid tug’s engine can run on standard diesel fuel or Jet-A/JP-8 or JP-5. It’s the company’s first product with a fuel engine augmenting its electric driveline.

The Lektro AP8850SDA-H has three power modes: electric only, automatic (where the generator charges the battery after a certain amount of use/battery level), and manual generation (where the generator continues to run). Normal operation is expected to be under the automatic function, with the electric-only mode being “perfect for in-hangar work to eliminate emission issues, and for generator charging to be for outdoor operations,” the company says.

The new model is in field trials “in various locations and in various climates to ensure it functions well in all conditions.”

In addition to being on show here this week, the AP8850SDA-H helped to set up the static line at Henderson.

The AP8850SDA-H is Lektro’s second hybrid prototype but the first to be taken commercial. The company also has four hydrogen-fuel-cell prototypes in development.

Lektro (Booth C9024) traces its roots to 1945, when Wilt and Violet Paulson founded the Willamette Aircraft and Engine Co. in Beaverton, Oregon, to repurpose military aircraft for crop-dusting and other civilian uses. The Paulsons moved their operation to Warrenton, Oregon, in 1948, and the business quickly morphed into the electric vehicle company now known as Lektro.

Lektro has developed products for the logging, farming, golf, material handling, newspaper, theme park and aviation industries. Some were the first of their kind, including the first portable wind machine for logging slash burns, the first battery-powered vehicle to feed mink, one of the first golf carts and the Airpoter towbarless aircraft tug.

—Rich Piellisch

LHT Installing Ka-Broadband Internet on VIP Aircraft

Starting in early 2016, Lufthansa Technik (Booth C10416) will install Ka-band satellite communication technology aboard several VIP aircraft. The installation will allow passengers to use the full spectrum of aircraft cabin applications such as email, Internet, access to VPN networks, voice capabilities, videoconferencing, cloud computing and e-commerce.

“Lufthansa Technik has always been a pioneer of integrating state-of-the-art technology on board. Permanent and quick Internet connection has become one of the ‘must-have’ topics on board commercial and especially VIP aircraft,” said Christian Reck, head of customer service and government programs at the company’s VIP & Executive Jet Solutions Division. “Having equipped all planes of the Lufthansa intercontinental fleet with the successful FlyNet system and many VIP aircraft with similar communication technologies, we are now further developing our portfolio by installing the fastest Internet connection that is currently available on the market.”

Future customers will also profit from Lufthansa Technik’s existing STCs, as engineering lead-times and engineering costs will be reduced because antenna type and installation position on the aircraft will be the same. Lufthansa Technik will integrate all systems and components into the VIP aircraft.

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Wheels Up Predicts 50% Growth in 2016

Kenny Dichter, cofounder and CEO of Wheels Up (Booth N137), a membership-based private aviation club, predicts a 50% boost in revenue next year and an 80% increase in revenue flight hours. The company has been in operation only for 837 days, “really proving that anything can happen in America.”

Dichter attributes Wheels Up’s unprecedented growth to lowering the cost of admission to private aviation. Corporate aviation members initially pay $29,500 to join the program for the first year and $14,500 to renew for 12 months. Individual members join for $17,500 and renew for $8,500.

“There are a small percentage of people at the top of the pyramid who can afford a Boeing Business Jet or a Gulfstream. Business aviation currently has only about 50,000 to 60,000 users. We’re opening up the pyramid to a lot more people. We believe we can grow it to 500,000 to a million users.” Dichter’s high-profile clients include New England Patriots head coach Bill Belichick, Serena Williams and Caitlyn Jenner.

“Winners fly Wheels Up. This is a service for the working wealthy, more of a utility than a luxury.”

Dichter notes that 80% of all business aviation missions are 2 hr. or less. “It makes no sense to fly a Citation X from Morristown [New Jersey] to Nantucket,” he says. Typical Wheels Up missions are 700 to 1,000 nm. On average, members fly 10 hr. per month and spend about $100,000 per year.

The company uses just two types of business aircraft. Most members use the eight-passenger Beechcraft King Air 350i, an aircraft Dichter describes as a flying SUV, a Cadillac Escalade, BMC Yukon or Ford Explorer. Each occupied flight hour costs $3,950.

For longer missions, Wheels Up uses the Cessna Citation XLS+. Gama Aviation, a seasoned air charter firm, operates both types of aircraft on behalf of Wheels Up. All aircraft are being retrofitted with Gogo Biz Text & Talk Wi-Fi/VoIP connectivity systems. “If you don’t have Wi-Fi, you’re going to lose the business,” says Dichter. All Wheels Up aircraft will have the system by the end of 2015.

Wheels Up also announced a partnership with AirMedCare Network that will provide “unbelievable wraparound coverage” for Wheels Up members within the operating footprint of the company’s aircraft.

The company’s rapid expansion required a sizable capital infusion in 2015. In September, Wheels Up announced a $115 million capital raise from T. Rowe Price Associates, Fidelity Management & Research Co. and NEA (New Enterprise Associates) that will enable it to acquire up 100 more aircraft.

The firm now is exploring expansion into Europe, with officials noting that the King Air 350i can connect 55 of 57 of the most heavily traveled city pairs. London City to Le Bourget, for instance, is the top city pair for business aviation travelers. That’s a 45-min. flight in the King Air 350i, Dichter notes. Gama Aviation has extensive operating experience in Europe, helping to clear the path for expansion into Europe.

Dichter favors a conservative approach to adding new aircraft to the Wheels Up fleet, learning from the painful experience of fractional private aviation providers’ acquiring too many models. He believes Wheels Up must add one type of super-midsized aircraft and one long-range aircraft, for a total of four models. By 2020, Dichter projects Wheels Up will be a $1 billion to $1.5 billion company, ripe for an IPO.

—Fred George
Gulfstream Executes While Keeping an Eye on New Aircraft Models

Is there a new Gulfstream in the works, even as the company works full speed ahead to bring the 500 and 600 to fruition? Yes, says Jetcraft, a leading consultancy in international business aircraft sales, marketing and ownership strategies. It describes a void in a market segment where Gulfstream previously offered the G350 (a scaled-down Gulfstream 450) that likely points to an incoming new model.

“If Gulfstream can develop a sub-$35 million aircraft with best-in-class cabin specs and performance, it will breathe new life into a segment that has been owned by Bombardier and Dassault for the last 15 years.”

The new model would likely enter service in 2021, with deliveries of 18 aircraft that year, then production of 20 to 24 through 2024, Jetcraft says with surprising farsightedness.

What does Gulfstream have to say about that?

“Our parent company has invested in our past, and in our future,” says Gulfstream Aerospace president Mark Burns.

“We want to come out with new aircraft, and we are working on a number of things. I expect we’ll develop a lot more aircraft going forward, but it’s too early to talk.”

Burns would not be drawn further, but pointed instead to the more immediate tasks of certifying the G500 and G600, and strengthening customer support for the rapidly growing fleet of Gulfstream aircraft around the world.

“We’re working very closely with [sister company] Jet Aviation to expand our capabilities,” he says. And Gulfstream plans to deploy more mobile support teams, whose capabilities extend even to performing avionics upgrades on customers’ aircraft in their own hangar. “The mobile teams have been highly successful for us,” he notes. Seattle, Chicago and Washington, D.C., are likely sites for expansion.

“It helps us to be closer to wherever our aircraft gravitate,” Burns says.

—John Morris

StandardAero Installs Gogo Router on Hawker

StandardAero’s (Booth N4500) Houston-based MRO facility recently installed its first Gogo Business Aviation UCS-5000 smart router and media server and ATG-5000 system on a Hawker 800XP. Together, these systems enable passengers to watch the latest TV shows and movies while also using the Internet. “We are pleased to provide expanded cabin and IFE capabilities for our customers,” said VP and general manager Melissa Maddox. “In particular, and for this customer, the UCS-5000 adds extra functionality to allow passengers to stream video content from the router to mobile devices.”

Lacy Wins FANS-1/A+ STC for Challenger 601

Los Angeles-based Clay Lacy Aviation has received FAA STC approval for FANS-1/A+ installations on Bombardier Challenger 601-3A/Rs to meet worldwide mandates for preferential routing on the North Atlantic Track region and other oceanic airspace. It follows a FANS program for the Gulfstream GIV, GIV-SP and GV. The company completed its first Challenger 601-3A installation using TrueNorth’s Data Link Unit. The software improves communication between pilots and ATC by automatically transmitting position reports in text rather than voice format. FANS-1/A+ is required for all aircraft using North Atlantic Track crossings. Booth C11229 and Static Display.

Yingling Expands Prop Shop Operations

Wichita-based Yingling Aviation has expanded its propeller maintenance, repair and overhaul operations at Dwight D. Eisenhower National Airport with a 10,000-sq.-ft. facility that more than triples space previously available. Yingling offers factory-authorized service for McCauley, MT and Sensenich and is working with Hartzell to become approved on its propellers. “This expansion allows us to move our existing prop shop to the new location and expand it to accommodate additional equipment we’ve acquired to service a growing number of new composite propeller designs as well as traditional aluminum propellers,” said Bob Gallop, Yingling’s VP, repair station operations.

First BBJ Split Scimitar Winglets in Europe

Lufthansa Technik’s VIP & Executive Jet Maintenance division has become the first MRO provider in Europe to install split scimitar winglets on a Boeing Business Jet – only the third BBJ worldwide to be equipped with these new, aerodynamically optimized winglets from Aviation Partners Boeing. The modification took place over a period of 10 days and involved reinforcing various areas on the inside of the aircraft’s structure, particularly in the wing fuel tanks. The winglets provide fuel savings of 2.2%.

Duncan Aviation Launches New Website

Duncan Aviation (Booth N4910) has launched a new website that is easier to navigate and mobile friendly. Visitors to www.DuncanAviation.Aero will find issues of its most popular publications, apps and videos, such as Duncan Debrief magazine and “Duncan Intelligence” newsletter. “Duncan has always been a leader in telling it like it is while providing industry intelligence in an easy-to-understand format,” says marketing communications manager Lori Johnson. “We make a point to willingly share the most up-to-date information on some of the most pressing subjects, such as NextGen.”
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Falcon 8X Adds Range to 7X’s Capabilities

Dassault has expanded its lineup of business jets by adding a derivative of the Falcon 7X with larger cabin and longer range. ShowNews finds out how the new ultra-long-range Falcon 8X flies.

Dassault’s Falcon 8X marks the first time the manufacturer has stretched one of its business jets to create a derivative model rather than a clean-sheet design. It is a tactic used successfully by rivals Bombardier and Gulfstream and enables Dassault (Booth N6117) to expand its lineup by adding the largest and longest-range Falcon yet.

Two 21-in. barrel plugs, ahead and aft of the wing root, have been added to the 7X’s fuselage, providing about 3.5 ft. of additional cabin length, two more windows on each side, and a 143-cu.-ft. increase in volume. A longer belly fairing with a more conformal tank increases fuel capacity by about 2,500 lb. Internal modifications to the wing tanks add another 460 lb. The extra fuel boosts the 8X’s range by at least 500 nm, enabling it to fly between new city pairs such as Boston and Beijing.

The increased range assumes the 8X will have a 500-lb. lower basic operating weight than the 7X because of structural changes to the wing and lighter acoustic insulation and also results from several small improvements. The junction of the leading-edge slats with the upper surface of the wing has been refined. New winglets reduce induced and shock-wave drag. Engine specific fuel consumption is improved by 1.5%, while relaxed static stability reduces trim drag.

Engineers shaved nearly 600 lb. from the 7X’s wing structure. As its area remains unchanged, and the 8X has a 3,000-lb. higher MTOW, it should result in an even smoother ride in turbulence. Dassault is conducting a full range of dive tests to assure the 8X retains the 7X’s 370 KIAS and Mach 0.90 redline speeds.

We Prepare to Go Flying

At Istres-Le Tubé air base in southern France, the main facility used by Dassault for flight test, I belted into the left seat of Falcon 8X No. 1. Eric Gerard, chief test pilot for the program, was in the right seat and Frederic Lascourreges, Dassault’s chief test pilot, was on the jump seat as safety pilot.

As the 8X was only halfway through its flight test program, this would be a qualitative, rather than quantitative, evaluation of general flying qualities, fly-by-wire envelope protections and aerodynamic handling characteristics with the aircraft stripped of almost all of its sophisticated digital flight control capabilities.

Loaded with air-data nose boom, test equipment, data recorders and ballast tanks containing 2,200 lb. of water, basic operating weight was 39,000 lb., or about 2,900 lb. more than projected for a production 8X. Ramp weight was 49,000 lb., about two-thirds that of a fully loaded production aircraft.

The flight deck is a growth version of the 7X’s EASy II system, built on Honeywell Primus Epic avionics. Four 14-in. portrait-configuration flat-panel displays in a T-shape dominate the panel. Outboard of the main displays are left- and right-side touch-screen electronic flight books that host documents, manuals, charts and references.

HUD and EVS are separate options. Elbit’s fourth-generation HUD offers a 40-deg.-wide by 30-deg.-high field of view, 1,280 x 1,024-pixel resolution and a more-compact computer, projector and combiner that provides more cockpit headroom.

The Elbit equipment includes a standalone synthetic vision system (SVS) digital terrain elevation database so pilots are able to select EVS, SVS or a combined vision system that blends imagery from the two sources. The left-side HUD/EVS will be available at the Falcon 8X’s service entry in the second half of 2016. Dual HUDs will be offered in 2017.

We ran through the prestart checks, started the APU, waited 2 min. for warm-up then tapped off bleed air to the air-conditioning pack to cool the cabin. Girard programmed takeoff, climb and cruise phases into the FMS using a sequence of windows and point-and-click entries. The FMS automatically computed V1 at 101 kt. KIAS, Vr at 107 KIAS, V2 at 114 KIAS and best one-engine-inoperative climb speed at 169 KIAS. Computed takeoff distance on the nearly sea-level runway at 20C was about 3,250 ft.

Starting the engines is easy, usually in a 2-3-1 sequence. I moved the center-engine fuel switch to run and twisted the start knob. Fuel, ignition, starter motor and bleed systems automatically responded. Full-authority digital engine control handled all aspects of start, including guarding against malfunctions.

The 8X’s Pratt & Whitney Canada PW307D engines are growth versions of the 7X’s PW307As, uprated to 6,722 lb. takeoff thrust and flat-rated up to ISA+17C. The engines produce the same climb and cruise thrust above 15,000 ft. as the 7X’s 307As.

When all three engines were running we shut down the APU and initiated a first-flight-of-the-day FBW system functional check. This takes a full minute to complete and the aircraft must remain parked while the test is underway.
Cleared for Takeoff

We armed the nosewheel steering, set slat and flap configuration and taxied to Runway 33 for departure. At the aircraft’s comparatively light weight it took little more than idle thrust to start rolling. Nosewheel steering is controlled by the rudder pedals - the 7X and 8X are the first Falcons that do not have steering tillers. Initially, my taxi technique caused some directional twitching and brake jerking, but after a few moments I adjusted to the feel of the steering and brake systems and smoothness and precision improved substantially.

Cleared for takeoff, I armed the autothrottles and pushed up the power levers to their forward stops. The autothrottle system does not engage until the aircraft is 400 ft. above the runway. That way, pilots retain full control over thrust when the aircraft is close to the surface.

At Vr the rotation symbol on the PFD moved upward from its 14-deg. nose-down parking position. I pulled back on the sidestick to pitch up until the rotation symbol was on the horizon, resulting in about 14-deg. nose-up attitude. The rotation symbol disappears 3 sec. after liftoff.

About that time the flight director cue appeared on the FFD. Instead of nose attitude guidance, it provides flight path guidance. I adjusted nose attitude to match the flight-path symbol with the flight director command. With a positive rate of climb, I retracted the landing gear. By 400 ft. the aircraft had accelerated to V2 + 30 kt., triggering a “clean the wing” call for slats and flaps retraction, plus calls for flight guidance system climb mode and the after-takeoff checklist. We leveled at 2,500 ft. and proceeded northbound to stay well below airliner traffic arriving at Marseilles-Provence Airport, then climbed to FL 150 for a series of handling checks.

At a weight of about 48,000 lb. we attained minimum airspeeds in the clean, SF2 and SF3 (slats/flaps 40 deg.) configurations, respectively, of 120 KIAS, 98 KIAS and 92 KIAS. The aircraft epitomizes the Dassault design principle of providing fat, soft edges to the flight envelope. It never lost its composure while being abused to the limit. No other business aircraft offers more docile low-speed handling characteristics, in my opinion.

As soon as I reduced nose attitude and increased thrust, recovery from each of the VMN maneuvers was nearly instantaneous. As the aircraft’s AOA was reduced and speed increased, the slats returned to their normal positions for each selected configuration.

I retracted gear and flaps and stabilized wings level at 250 KIAS. Then we switched off the primary flight control computers to evaluate direct-law mode, in which the 8X proved as easy to fly as the 7X. It has sufficient natural stability to make it easy to handle. Stabilizer trim is manual and the rate of change is nearly perfect - quick enough to relieve sidestick control pressure, and slow enough to prevent over-control.

During the direct law demonstration we configured for landing, slowed to Vref and descended on a 3-deg. glidepath to 14,500 ft., where I executed a simulated go-around, reconfigured to SF2, retracted the landing gear with a positive rate of climb and leveled off at 15,000 ft. Thrust, configuration and speed changes produced mild pitching moments that easily were controllable with sidestick inputs and use of the manual pitch trim system.

We transitioned back to normal mode, engaged the autothrottles and stabilized the aircraft at 250 KIAS. Girard then shut down the No. 3 engine to demonstrate that...
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the autothrottles remain fully functional with the remaining two engines operating. Afterward, we disengaged the autothrottles so we could maintain the No. 3 throttle at the idle position and restarted the engine.

Handling Qualities

With all three engines back on the line we climbed to FL 400 to assess handling qualities. Qualitatively, the aircraft appeared to be quite stable with good Mach buffet boundaries at light gross weights. However, as wing area remains unchanged from the 7X, the 3,000-lb. greater weight will slightly reduce Mach buffet boundaries.

We then executed a simulated emergency descent by reducing thrust to idle, initially pitching over to 20-deg. nose down, extending the spoilers all the way out to the AB2 position and pushing speed up to the maximum operating limits.

There was noticeable, moderate airframe rumble with the spoilers extended to AB2, but descent rate was impressive. Passing through FL 160 I partially retracted the spoilers to assure that we did not overshoot the bottom altitude. I leveled off at FL 150 in 1 min., 15 sec. and noted that extending the spoilers midway to the AB1 position results in a moderate increase in drag, but virtually no buffet.

Returning to Istres for pattern work, we arrived at a landing weight of 44,000 lb. Based on using SF3 configuration, Lascourreges computed VREF at 110 KIAS. Using the autothrottles to manage thrust, I aligned with Runway 33, captured the glidepath using the visual approach slope indicator and flew a normal approach. Though landing weight was 22 tons, the aircraft displayed the handling ease, agility and responsiveness of a far smaller aircraft. The Falcon 10’s genes can be found in the 8X’s DNA.

At 50 ft. the autothrottles automatically reduced thrust to idle and we followed the radio altimeter’s aural cues to touchdown. The aircraft’s long-travel, trailing-link main gear and slow approach speeds all but guarantee a soft touchdown. We used plenty of reverse thrust from the single reverser on the center engine to slow the aircraft, using only light wheel braking to prevent heat buildup.

Our second takeoff would be a simulated one-engine-inoperative maneuver. Based upon a departure weight of 44,000 lb. and using SF2, takeoff speeds were 94 KIAS for V1, 102 KIAS for VR and 110 KIAS for V2.

Five knots below VR, Girard pulled back the No. 3 throttle to idle and, soon after, called “Rotate.” As we rotated, it took less than 70 lb. of force on the left rudder pedal to maintain the aircraft in balanced flight. The FBW system’s yaw damping function made rudder and aileron control inputs to provide limited yaw and full roll stabilization. There was no doubt that we had lost thrust on the right engine because of the associated yawing moment, but directional control was easy, especially centerline, as the approach speed was comparatively low and the aircraft so agile. We realigned with the runway within 0.5 nm and landed smoothly and uneventfully.

Conclusion

The Falcon 8X is just as nice to fly as the 7X. Its EASy III avionics suite provides new functions and features that assure it will be one of the safest and most capable ultra-long-range business aircraft when it enters service in the second half of 2016.

The advertised 6,450-nm range with eight passengers clearly puts the 8X in the ultra-long-range class. But to achieve that range, operators will need to watch weight as carefully as a fashion model on a Paris runway. Dassault’s quoted 36,100-lb. basic operating weight does not include satcom, broadband connectivity, HUD and EVS among other popular options, and there is no weight allowance for a flight attendant.

Add in the extras, plus a fourth crewmember, and weight could increase by 400-500 lb. or more. Dassault argues it is unlikely that more than six 200-lb. passengers will be aboard as that is the maximum number of lay-flat berths provided in three cabin sections.

Falcon 7X operators said they wanted more range, a usable crew rest bunk, more galley space for stores and a larger work area for a flight attendant. The Falcon 8X delivers the goods with some important qualifiers. Assuming operators practice strict weight discipline, this trijet Falcon flagship promises to be a strong competitor in the ultra-long-range class. —Fred George

The Falcon 8X cockpit features EASy avionics. The left-side HUD/EVS will be available at the Falcon 8X’s service entry in the second half of 2016; dual HUDs will be offered in 2017.
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Second-Generation Lineage 1000E2 to Have BBJ Range

Marco Tulio Pellegrini, president and CEO of Embraer Executive Jets, is looking forward to the next Lineage 1000 that will be based on the second-generation E190-E2 regional jet. It could be much more range competitive with the BBJ and A319CJ.

While the current Lineage 1000E can fly nine passengers more than 4,500 nm, the combination of the E2’s new, longer span, lower drag wing and Pratt & Whitney PW1900G geared turbofans, among other improvements, potentially could boost range by 20 to 25%.

Pellegrini declines to predict actual range performance, but sources close to the program say the aircraft will be able to fly between most Eastern European and west coast North American cities. The aircraft also will cost 40% less to buy along with having lower direct operating costs because of its smaller size and weight.

Cabins typically are configured with five living areas, including an aft stateroom with queen-size bed and lavatory with walk-in shower, high-speed satcom Internet and 323-cu.-ft. aft baggage compartment that is accessible in flight.

The E2 also will have Embraer’s latest generation three-axis fly-by-wire flight control system, developed for the Legacy 450 and 500 along with the KC-390 twin-turbofan military transport. Cockpits will feature next-generation Honeywell Primus Epic 2 avionics with large, high-resolution, landscape displays, advanced graphics and Honeywell’s next-generation flight management system.

The second generation 1000E2 could be available as soon as late 2018, depending upon the availability of delivery slots in Embraer’s regional aircraft production run.

—Fred George

TAG Geneva Renews IS-BAO Certification

TAG Aviation SA Geneva has renewed its IS-BAO Stage 2 certification. Awarded by the International Business Aviation Council (IBAC), the IS-BAO program, launched in 2002, is an industry code of practices that certifies the highest standards of safety, security and efficiency in business aircraft operations. The Switzerland-based operated center also renewed its accreditation to the Wingman Wyvern safety program earlier this year.

TAG Aviation, which provides FBO and MRO services, includes TAG Aviation Europe, TAG Aviation Asia in Hong Kong and TAG Aviation Middle East in Bahrain.

Midcoast Founder Tucker Dies at 82

NBAA marked the passing of John T. Tucker, a longtime leader in business aviation, who died August 30 in Vero Beach, Florida. He was 82. Tucker founded St. Louis-based Midcoast Aviation in 1971 and served as its president for 20 years, overseeing its growth from a small fixed-base operation into a major provider of jet maintenance and modifications. Tucker was known for his leadership skills and recognizing talent. He mentored several employees who went on to fill leadership roles. “He was extremely influential,” said Bob Quinn, NBAA’s Midwest regional representative.

Stuart Jet Center Expands Florida Facility

The Stuart Jet Center FBO at Witham Field, Martin County, Florida — named Florida’s 2015 General Aviation Airport of the Year by the Florida Department of Transportation — recently broke ground for its new hangar. To be completed in early 2016, the 24,000-sq.-ft. facility will complement the 250,000 sq. ft. of existing hangar space, along with more than 15 acres of lighted and secure ramp space.

The new hangar will accommodate aircraft up to Global Express and Gulfstream G650 size, and will be wind-coded to Miami-Dade specifications for optimum safety. Stuart is at Booths C8816A and C8816B.

Manion Now Sales Rep for Meridian Jet Center

Manion Aviation is now an authorized sales representative for Teterboro, New Jersey-based Meridian Jet Center, providing MRO service sales for various business aircraft. Manion represents business aircraft owners and operators who are looking for the best MRO solutions. Meridian Jet Center is an FAA-approved Part 45-certified repair station also certified by the European Aviation Safety Agency (EASA). The maintenance hangar at Teterboro Airport has 40,000 sq. ft. under roof, with another hangar slated for construction in 2016.

West Star Expansion Steaming Ahead at CHA

West Star Aviation (Booth N4421) is working toward the opening of its newest MRO facility at Chattanooga Metropolitan Airport (KCHA), Tennessee. The 20,424-sq.-ft. heated hangar space, which has 28-ft.-high doors, sits on a ground-lease footprint of 170,798 sq. ft., with ample ramp space for uncongested aircraft movement, and will house maintenance, interior, avionics and a mobile response team. It also features 20,424 sq. ft. of heated and air-conditioned mixed-use space that will be used for administrative and customer offices. Thomas Hilboldt, former KPWK satellite manager in Chicago, has been promoted to director of operations at the new facility.
The State of FBOs: Déjà Vu All Over Again?

The famous mangled quotation attributed to the late New York Yankees catcher Yogi Berra might apply to the tepid state of the FBO industry for this year and last. And yet, there are signs that this service industry is improving slowly but steadily in some quarters.

Several FBOs have expanded their facilities and report they are pumping more Jet-A than last year. Some, like Atlantic Aviation, have grown through acquisition over the last year. Traffic is up but the level of business is nowhere near where it was in 2007, the year when FBOs reported their strongest earnings.

Argus International Inc., which tracks monthly business aircraft flight activity in the U.S., showed an uptick in flight activity for most business aircraft from March through July 2015, compared to the same period in 2014. That’s a positive sign.

And yet, sales of jet fuel at FBOs were mixed earlier this year, according to a mid-year survey conducted by the Aviation Business Strategies Group (ABSG), which tracked the first six months of 2015 compared to 2014. The survey seems to suggest a partial recovery at best.

Seventy-one percent of FBOs reported rising or flat sales of Jet-A, ABSG reported. The survey compared fuel sales for the first six months of 2015 and 2014. Forty-five percent of the FBOs reported rising fuel sales were up from the year earlier period while 26% said sales were the same. Conversely, 29% report that Jet-A fuel sales were down in the first half of 2015 compared to the previous year.

Over 50% of the respondents said their average price per gallon of Jet-A over the last six months was between $4.00 and $5.00; 2% reported their Jet-A price was under $3.00 per gallon.

Oddly, the relatively low cost of fuel has not yielded a corresponding revenue benefit for FBOs. “This has not really increased flight hours, which is the key for more fuel sales for FBOs,” said John Enticknap, cofounder of ABSG.

The volatility of the stock market and the lukewarm state of the businesses for which business aircraft operate are holding back the recovery. “Everyone is waiting for the big jump,” said Enticknap.

Unfortunately, the U.S. economy has yet to jump.

Regardless of the current cost of fuel, FBOs must find ways to maintain a profitable margin. At its National Air Transportation Association (NATA) FBO Success seminar, ABSG advocated a target margin of $2 per gallon. Yet that is rarely achieved due to heavy discounts demanded by operators or third-party fuel providers.

What’s to Be Done?

“FBOs are no different than other businesses,” said Ron Jackson, ABSG cofounder. “They must modify their business model or die.”

FBOs can no longer afford to give their services away for free, he added. Labor costs, for everything from marshalling an aircraft to parking, unloading baggage and towing, must be passed on to the operator.

A year ago, ABSG asked FBOs if it was time for a new business model, which would be based in part on the European version, where fees for service are commonplace. Aircraft operators using FBOs must contribute in some meaningful way to their revenue streams.

To increase their margins, some FBOs are charging a facility fee as well as the once-feared ramp fee for those aircraft operators that don’t purchase fuel. (Signature was the first chain to introduce a ramp fee in the mid-1990s.)

“Change is slow and it has taken this long for ramp fees to become a fairly universal practice throughout the industry,” Jackson said.

If generating revenue is so tough for FBOs, why do investors – larger chains and investment capital firms – still invest in them?

Because there is money to be made in servicing business aircraft. The growth-through-acquisition strategy insulates larger FBOs from market fluctuations.

“When chains purchase an independent FBO, they typically consolidate some of the departments under the corporate umbrella, such as accounting, purchasing and human resources,” said Jackson. “In addition, the chains bring in more marketing horsepower, standardize training and basically run a more efficient operation.”

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BBA to Buy Landmark Aviation
A major competitive concern of small independent FBOs and midsize chains - and expected to be a major topic at NBAA this year - is the proposed $2.065 billion acquisition of The Carlyle Group’s Landmark Aviation by BBA Aviation plc, parent of Signature Flight Support.

The top FBO chain is attempting to acquire the No. 3 chain in what is being described as the largest acquisition of its kind. At present, Signature has over 100 locations worldwide, followed by Atlantic Aviation with around 68 and Landmark with 60+, according to ABSG.

“There will be repercussions from this deal felt throughout the FBO industry,” said Brian Foley, president of Brian Foley Associates, an aviation consultancy. “This deal could make it tougher for mom-and-pop FBOs to compete.”

There also will be competitive pressures on smaller chains with the merging of these two leviathans, Foley added.

Enticknap said the proposed acquisition is a sign of continued consolidation “of viable FBOs,” typically by a larger well-heeled chain.

ABSG defines a “viable FBO” for possible acquisition as one located on an airport that has a 4,000-ft. or longer hard-surface runway. The FBO also must pump at least half a million gallons of fuel per year. Between 1,400 and 1,500 FBOs fall into the viable FBO category in the U.S. and Canada presently. Of that number, chains of varying size, which constitute approximately 17% of the viable FBO market, operate 250 FBOs.

While indicative of continued consolidation, the proposed sale of Landmark also demonstrates the growing value of FBOs in the marketplace. This is the second time Carlyle has owned Landmark. Carlyle repurchased Landmark in 2012 for an estimated $700 million and is now about to sell it for significantly more money.

This is not all “pure profit,” noted Foley, because Landmark made numerous acquisitions during the 2012-15 time frame, including the $375 million purchase of the Ross Aviation chain.

“But, if approved, the sale would be a pretty good return on investment,” said Foley.

It will be months before the acquisition is approved. Anti-trust concerns by the U.S. Justice Department must be resolved before the deal is finalized and the necessary purchase funding is raised.

Despite these challenges, most believe the deal will go ahead, in part because of the parties involved. Both Signature and Landmark have ample experience in resolving anti-trust concerns raised by the DOJ.

Both sold FBOs as part of their growth-through-acquisition strategy to satisfy past anti-competitive concerns. In July 2014, the DOJ ordered Landmark to sell Ross Aviation’s service operations at Scottsdale Municipal Airport as a condition of its $330 million acquisition of Ross Aviation. In 2008, the DOJ ordered Signature to sell its FBO services at Indianapolis International Airport as a condition of acquiring seven Hawker Beechcraft-owned FBOs.

“It is very possible that Landmark will sell several FBOs to alleviate any anti-trust concerns,” said Leonard D. Kirsch, an attorney with McBreen & Kopko. “It would be a smart thing to do.”

Up to eight FBOs could be sold to independent FBOs, sources indicated. Likely candidates for sale would be at airports where Signature and Landmark both operate. Landmark Aviation’s operation at Washington Dulles International Airport is one likely candidate for sale, according to sources.

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Corporate Angel Network arranges free flights to treatment for cancer patients in the empty seats on corporate jets.

Since 1981, Corporate Angel Network, a not-for-profit organization, has worked with over 560 major corporations including half the Fortune 100, to fly more than 48,000 cancer patients to specialized treatment and currently transports 225 patients each month. The process is simple. Corporate Angel Network does all the work. All you have to do is offer an empty seat to a cancer patient on your next flight.
Other Industry Concerns

Another concern of FBOs gaining traction is the continued acquisition and assumption of managing FBOs by airport authorities. In some cases, airports hire another FBO to manage the property after it is acquired.

The Airport Authority for the Piedmont Triad International Airport in Greensboro, North Carolina, decided recently to let Stevens Aviation’s lease expire at the end of this year, after which the airport authority would run the FBO.

The same story played out this year in Fort Wayne, Indiana, where the airport authority announced it would take over the FBO managed currently by Atlantic Aviation in January 2016.

“Is it annoying that Fort Wayne did this,” asked Atlantic Aviation CEO Louis Pepper? “Yes it is. We offered to spend a lot of money there and put in a beautiful facility. But they decided they would rather do it themselves.”

This practice gained notoriety years ago when TAC Air became embroiled in a controversy with the Chattanooga Metropolitan Airport Authority over its FBO managed by the Wilson Air Center. TAC Air claimed the airport-owned FBO had an unfair competitive advantage. The rocky relationship with the airport continued for four years until January 2014, when the airport bought TAC Air for $12.37 million.

Some industry experts and FBO leaders find the practice of airport authorities taking over FBOs troubling because it is government taking over private business. Others, however, don’t view this as a major trend or serious threat, particularly for FBOs at larger airports.

“I don’t see a runaway train where this will turn the current FBO business model on its head,” said Foley. “Most municipalities don’t want to get into the fuel pumping business.”

Taxation

Yet another concern of FBOs and related businesses is the revenue-draining state taxes on labor, parts and maintenance as well as federal taxes on aircraft management services. Some states still levy a sales tax for MRO work, while Florida and Georgia and others have removed it.

“This situation often arises from a lack of understanding of common aviation business practices, a distinguishing feature of many proposals developed without stakeholder consultation,” said Bill Deere, NATA’s SVP for government and external affairs.

On the federal level, the ongoing issue is whether aircraft management services companies, some of whom are associated with FBOs, are subject to air transportation taxes. NATA threw its support behind legislation introduced in late September 2015 by U.S. Sens. Sherrod Brown (D-Ohio) and Rob Portman (R-Ohio), which states that the companies are not subject to these taxes. The legislation is in response to the IRS chief counsel’s opinion in March 2012 that aircraft owners employing aircraft management services companies, which allow the aircraft to be chartered, are subject to a 7.5% commercial ticket tax.

Several states exempt maintenance done on non-resident aircraft regardless if they operate under FAR Part 91 or Part 135 regulations, according to Nel Stubbs, VP and co-owner of Conklin & de Decker. Several also exempt work done on resident Part 135 aircraft and some exempt work on resident Part 91 aircraft, said Stubbs.

The federal tax issue was tabled in May 2013 pending further clarifying regulations. NATA said the Brown-Portman legislation would prevent “the double taxation of aircraft owners who seek to defray the costs associated with ownership through the chartering of aircraft.”

Fuel taxes remain a concern of FBOs and business aircraft operators, but the levels vary widely throughout the U.S. and there doesn’t appear to be a concerted effort to reduce them. Wilson Air Center reports a 7.5% state fuel tax at its Charlotte, North Carolina, facility, 4.5% at Memphis and no tax at its Texas FBO. Fuel tax in San Francisco is very high, FBOs there report.

The FBO industry in North America might not be recovering as fast as some would like, but it is far better off than FBOs elsewhere, according to several analysts who track the industry. Currency devaluation, inflation, sagging stock markets and a 50% drop in oil prices have hurt FBOs in South America, Europe and Asia – in China particularly, where traffic is down from last year and business aircraft are viewed as ostentatious by the Chinese government, which is waging an anti-corruption campaign.

—Robert W. Moorman
As can be seen by the spreadsheet above there is more to the question of which states exempt parts and labor from sales/use taxes. Several states exempt Part 135, some states exempt Part 91 and some states only exempt non-resident aircraft. In addition, although you can have work done on the aircraft in a state where it is not taxed, the work may be taxed in your home state.

Credit: Nel Stubbs and Conklin & de Decker
Rules Eased for Business Jets to Cuba

True capitalists are always looking for new ways to expand business, and with the tropical chill there now warming, U.S. business leaders – and the aircraft that carry them – are pointing south to Cuba, that Communist white-beach bastion, and market, seemingly frozen in time.

While the outreach by the Obama administration to improve political and economic relations with the island nation has its share of critics, the chance to expand tourism and to satisfy the hunger for goods and services of Cuba’s 11 million residents has caught the attention of American travelers and businesses.

“There’s pent-up demand and interest among Americans about Cuba,” says David Rimmer, president of JFI Jets, a charter operator with bases in Farmingdale, New York; Long Beach, California; and West Palm Beach, Florida. He believes the recent, well-publicized visit by the Pope further heightened interest in Cuba.

“According to Rimmer, “There are few occasions in this business to pioneer a new market. I see Cuba as a huge opportunity.”

As a result, early this year JFI sought and received the necessary approvals from various federal agencies to enable its aircraft to traverse the Florida Straits and alight at Havana’s José Martí International Airport. To date, JFI has operated three flights into Cuba; it has another three booked and more in the pipeline.

While the flights are quick – it’s just a 250-nm hop from Palm Beach International Airport to José Martí – initiating them has been complicated, though even that glacial effort is thawing as well.

At the moment, licenses to travel there are restricted to a dozen mission categories such as media, cultural exchanges and such – notably, tourism is not among them, but Rimmer and others believe that will change in time. Operators must depart from and return to one of 19 “gateway” airports, of which Palm Beach is one. JFI relies on its passengers to arrange trips through tour operators in part to ensure they qualify. And passengers must complete affidavits attesting to the legality of the trip, which the operator must keep on file for at least five years.

In early October, the NBAA alerted members that recent changes by the federal treasury and commerce departments now allow U.S.-based aircraft operators authorized by the FAA to fly into Cuba to keep their aircraft there on “temporary sojourn” up to seven consecutive days. Previously, aircraft were limited to a single overnight.

The latest revisions also allow, on a case-by-case basis, for export/re-export to Cuba of items “to help ensure the safety of civil aviation and the safe operation of commercial passenger aircraft,” including aircraft parts and components, software and technology related to safety of flight, air traffic control, aviation communications and weather equipment, airport safety equipment and devices used for security screening of passengers and baggage.

And air ambulance and other related emergency medical services for travelers in Cuba are now authorized by general license.

Although Cuba has 10 international airports, Rimmer says that so far all his charter customers wanted to land at Havana only. However, with opportunities expanding to telecommunications and Internet services, and the ability to open bank accounts and offices in Cuba, the capitalist flights and destinations are likely to expand as well.

—William Garvey

Liebherr Aerospace Highlights Systems Technology Expertise

Liebherr Aerospace is exhibiting state-of-the-art systems and components from its product lines at this year’s show. At its Booth N3135 Liebherr is showing a cooling pack and components of flight control and nose landing gear systems, as well as a humidification system that can be installed in various types of aircraft.

Liebherr-Elektronik GmbH, based at Lindau, Germany, will be represented at the NBAA Convention for the first time this year, displaying an integrated air system controller.

The company offers a broad range of hardware platforms in the power, control and electronics monitoring fields. “We are envisaging new customers for our electronic products and services in the aerospace market, and we are looking forward to presenting our know-how and experience to the aerospace community at NBAA,” says Dr. Ralf Cremer, managing director, sales and engineering, aerospace and railway.

Liebherr’s aerospace and transportation systems division employs some 4,900 staff at production plants at Lindenberg, Germany; Toulouse, France; Guaratínguetá, Brazil; and Nizhny Novgorod in Russia. These are complemented by customer centers in Saline, Michigan; Seattle; Montreal; São José dos Campos, Brazil; Hamburg; Moscow; Dubai; Singapore and Shanghai.
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Bridging the Gulf: MEBAA and NBAA Unite

Business aviation is an intensely competitive industry, but that doesn’t mean that there isn’t scope – and need – for cooperation. A great example of the ways that business aviation entities can work together to mutual benefit was provided between 2010 and 2012, when two trade associations, NBAA and its Middle Eastern contemporary, the Middle East Business Aviation Association (MEBAA), teamed up to tackle a problem affecting both associations’ members.

“There was an issue about operating in Iraq,” says Ali Alnaqbi, MEBAA’s founding chairman. “The Iraqi authorities had issued a permit for one company, and that company was jacking up the price very high. NBAA came to us and we took that very seriously. MEBAA interceded and solved the problem – for the American aircraft as well, because there are a lot of American-registered aircraft flying to Iraq. We talked to everybody in Iraq, and we brought it up to ICAO. Then the Iraq government withdrew that contract and life went back to normal.”

Collaboration between the two associations did not just blossom overnight. Alnaqbi has put in the hard yards forging the bonds that can create such a fruitful working relationship, and this helps to explain MEBAA’s presence in Las Vegas this week.

“We’ve participated in every NBAA since we founded in 2006,” says Alnaqbi. “There are a lot of relations built between NBAA and us resulting from attending the show, and from NBAA attending our show as well. The cooperation between the associations is nonstop. If an issue gets raised, we attend to it immediately. And being present in Las Vegas is really promoting the association, as well as promoting the synergy between the two markets.”

Although business aviation travel to the Middle East from the U.S. accounts for only 4% of the activity in the region, the relationship between the two associations is critical. A presence at NBAA helps MEBAA communicate effectively, efficiently and proactively with the American business-aviation community.

“It helps to pave the way,” Alnaqbi says. “There are a lot of questions that Americans are asking, some related to safety, some to infrastructure. And by being at NBAA we can answer those questions. We don’t want them to have to go all the way [to the Middle East] to ask a question. We go to them and try to answer it.”

Safety and security issues are inevitably on the agenda in most discussions between American and Middle Eastern business aviation participants.

“When it comes to the operators, there are often questions about security,” Alnaqbi says. “Our region has some issues, as everybody knows. Where the operation is, there are no issues at all. You go to Saudi Arabia, the UAE, Qatar or Morocco, or if you go to Amman, everything is good. And that’s where the vast majority – 95% – of the business is. And there are no issues.

“Cairo was one of the cities, and Egypt one of the countries, that had a lot of business aviation activities, and that was definitely affected from the circumstances they went through,” he continues. “But most of the aircraft have transferred from there to the UAE, Amman and Saudi Arabia, and the operation continues nicely.”

Alnaqbi’s focus is on achieving several goals concurrently. He and his association exist to represent their members but also to advance the cause of business aviation in the region, no matter where the operators come from.

“When you come to the region, we work with our peer association, NBAA, to make sure that nobody is treading on anyone else’s feet,” he says. “That’s very important. Of course, my main target is promoting business aviation in our region. But to do that we’re building bridges, to make sure that all the issues facing business aviation – whether it’s coming from the U.S., from Europe or from our region – are discussed and solutions are put forward. So, yes, my interest is really the business aviation of the region, and promoting the region, and to make sure that we have processes that meet the demand of foreign aircraft coming to the region. But it’s also to promote our fleets when they go to other regions.”

MEBAA is also growing itself, with its biennial Dubai trade show now augmented with an event in alternate years in Morocco. The first of these took place in September and attracted over 2,000 visitors to Casablanca’s Mohammed V Airport. These shows will also be promoted by the association in Las Vegas, where it is at Booth N927.

—Angus Batey
Middle East Business Aviation Activity is Patchy

Business aviation activity is patchy across the Middle East and North Africa (MENA), according to Ali Alnaqbi, chairman of the Middle East Business Aviation Association (MEBAA). But in August there was a significant pickup that was linked to the worsening situation in Yemen. “Government departments were chartering left, right and center so that ministers could attend meetings all over the region. So, although private flying numbers were down, government charters largely compensated for the shortfall and the numbers were acceptable to us,” says Alnaqbi.

There are around 620 business aircraft across the 23 MENA countries. Bahrain and Kuwait movements were down, but there were a sustained number of movements in the UAE. Aircraft movements in Egypt have increased significantly, while Lebanon has seen fluctuations. “There was some movement in Baghdad, but operators have been warned off operating into potential war zones by various national authorities,” says Alnaqbi.

Some FBOs are less optimistic. Mike Berry, VP of ExecuJet Middle East, says “The outlook from general aviation operators [in the Middle East] is not a rosy picture. We still see opportunities for growth, but the way the market is right now we are not going to see a dramatic increase in business activity over the next year. I believe this is a generally held view by everyone in the business aviation industry at the moment.” ExecuJet Middle East has an FBO and maintenance operation at Dubai International Airport, and a handling operation at Dubai World Central.

Berry, among others, reckons the factors driving this downturn include the decline of the Russian ruble, the dramatic drop in oil revenues and continued worries over the Chinese economy. “We’re pretty much operating at the same activity levels that we achieved last year, and in some respects we’re about 10% down on figures we achieved two years ago in terms of FBO movements.”

“There’s just not as much traffic coming through Dubai as there was two years back. I think this is generally felt by all the operators, aircraft charter and FBOs; we know that numbers are down.” But not everything is doom and gloom, he says, referring to his company’s managed aircraft fleet, which continues to grow.

Another Middle Eastern company executive claimed to have had slight seasonal deviations over the last two years but notes that 2016 looks tough, with the Russia/Ukraine situation in particular having a definite impact on business.

—Mike Vines

Middle East Business Aviation Growth Slows

Middle Eastern business aviation activity is pretty resilient, say many in the industry, but while some try to talk the market up, others working at the sharp end cast a relatively gloomy picture and await an upturn in activity.

Jet Aviation Dubai has celebrated its 10th year in operation as an FBO and maintenance facility at Dubai International Airport. The operation was opened in May 2005 but officially inaugurated at that year’s Dubai Airshow.

The General Dynamics subsidiary opened a second FBO facility, at Dubai World Central’s Al Maktoum International Airport, in December 2012. The company is an authorized service center for maintenance and warranty support to a wide range of business jets and holds approvals from aviation authorities in Afghanistan, Bahrain, Bermuda, Cayman, India, Pakistan, San Marino, Saudi Arabia and the UAE.

“Ten years ago, Jet Aviation Dubai was established to strengthen the company’s global network for its clientele in the Middle East,” says Stefan Benz, SVP of Jet Aviation’s MRO and FBO operations for Europe, the Middle East, Asia and Africa.

“Today, it is our major MRO hub for the Middle East and a leading FBO and MRO service provider in the region. We thank our valued customers for their trust.” Jet Aviation is here at Booths N5131 and C11216.
Shanghai Hawker Pacific Had Record October

While Western observers believe the Chinese market for business aviation has all but collapsed under the weight of the government’s anti-corruption campaign, there is another side to the picture: Flying activity there might be at record levels.

That is certainly the experience of Shanghai Hawker Pacific Business Aviation Service Center’s FBO, which has just reported its busiest-ever October.

Business jet movements at Shanghai’s Hongqiao Airport totaled 347 for the month, the largest flight activity ever for Shanghai. And at the city’s second business jet airport (actually the main international airport), at Pudong, business aviation movements reached 180 for the month. Shanghai Hawker Pacific handles movements at both airports.

“Traffic this year has been the heaviest since the company opened in 2010,” says general manager Carey Matthews, “up over 16% so far in 2015 compared to 2014. Those increases have happened in every month of the year.”

He notes that “Shanghai continues to be the center for business aviation in China, and both the Asian and international business communities keep flying whatever the daily economic news or drama. The numbers verify that business aviation is taking a deep root into the economic environment of China, and is being more robust than many are giving it credit for.”

Some observers believe that Shanghai accounts for up to 30% of China’s business aviation activity.

Shanghai Hawker Pacific’s Hongqiao FBO hosts the annual ABACE business aviation event. The next one will take place there April 12-14, 2016.

—John Morris

Asian Sky Group Lowers Regional Forecast

Asian Sky Group had forecast single-digit growth at the upper end in early 2015, but it now appears that annual growth may be just under 5%, half of what the Hong Kong-based consultancy and brokerage had earlier predicted.

That includes new and used deliveries but does not take into account aircraft that leave the area.

In March and April of 2015, the market turned upward with recovery predicted in June onward, the company said. However, market momentum turned down in September.

“This all foretells a difficult fourth quarter this year, which we are already seeing in reality,” says Jeffrey Lowe, managing director for Asian Sky Group.

At the same time, “Greater China continues to grow at the highest rate, followed by Southeast Asia and North Asia, respectively,” Lowe says. Business aviation activity remains high in Asia, which seems encouraging, but the amount of time it takes to complete a transaction is longer. The process now takes four to six months, as previous first-time buyers now are first-time sellers.

Most of the additions to the fleet are in the large-cabin and bigger segments. Growth in Hong Kong has specifically been Gulfstream G650s, while in Mainland China, there is more of a range of aircraft types from Citation Excels through G550s, Lowe says. Greater China’s fleet totaled 439 aircraft at the end of 2014.

In Mainland China the national B-registry is the most popular choice of registration, despite the market conditions. But in Hong Kong, Cayman appears to be the registry of choice,” Lowe notes.

The difference in pricing expectations between buyers and sellers currently remains high, he says. That is compounded by a rapidly changing market. Essentially, aircraft are depreciating faster than expected. And buyers and sellers are more skittish.

“They are focused on short-term economic indicators, which results in last-minute reactions. That means they may change their minds regarding a purchase or a sale,” Lowe says. —Molly McMillin
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Global 7000 Primed to Enter Service in 2018

My passport freshly stamped, David Coleal’s words of praise about the wondrous machine just completed, and now climbing into the still unfinished prototype, bare-boned but bedazzling under the bright lights of the glistening white production facility, I felt a frisson of familiarity.

The occasion was a media premiere of the Global 7000, Bombardier’s new ultra business jet. And from what I saw and heard in Toronto on Nov. 2, this, the biggest of all Globals, will be glorious. The systems, the know-how are in place to make it happen. Getting it done, however, has been challenging.

As one of the most ambitious aircraft makers of recent times, Bombardier has steadily introduced all-new or derivative models for the airline, business aviation or special operations markets. Many designs, including earlier Globals, have soared. However, development of its latest airliner gambit, the CSeries, has been rife with problems and a huge drain on corporate capital. Compounding that was anotherBombardier black hole – the Lear 85. And thus the frisson.

Years ago, I visited the brand-new facility Bombardier built in Queretaro, Mexico, for the express purpose of manufacturing the Model 85, the largest in Learjet history and the manufacturer’s first all-composite aircraft. While skeptics queried the sensibility of abandoning aluminum for “plastic” construction, Learjet management, which had once included Coleal, put forward their company’s rationale. I was invited to examine the initial fuselage, and did. That cursory inspection failed to reveal any looming troubles.

Turns out, making composite, aviation-grade structure is not an easy undertaking. And doing so at Queretaro’s 6,000-ft. altitude adds another level of complication. As a result, the Learjet 85’s development dragged on, consuming better than $1 billion while program managers tried to address its myriad problems. Awash in red ink, Bombardier “paused” the program last January and then, short of answers and funds, shut it down completely 10 months later.

With the CSeries - Bombardier’s project No. 1 - still in flight test and needing billions more investment dollars, could the 7000, now two years behind schedule, meet the 85’s fate? Unlikely, for several reasons.

First, the production team at Bombardier’s Downsview Airport plant knows what it is doing. This, after all, is just another aluminum Global, and they’ve built more than 600. Meanwhile, the production hangar has been newly equipped with laser-guided robotic equipment that should both ease and speed production with exactitude.

Second, the 7000 has a new engine and upgraded avionics from General Electric and Rockwell Collins, respectively, both solid suppliers. For example, the 16,500-lb.-thrust Passport engine has already passed 25 of its 27 certification tests, including icing, bird ingestion and fan blade failure, and will have accumulated 4,000 hr. by service start.

Third, Coleal became president of Bombardier Business Aircraft this year, having been enticed from Spirit AeroSystems, where he served as general manager of its fuselage segment post-Learjet. He, too, knows how to build airplanes, and delivering the 7000 into service by late 2018 should both ease and speed production with laser-guided robotic equipment that should both ease and speed production with exactitude.

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