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Despite roadblocks that endure, bizav holds faith in China market

by Ian Sheppard & Chad Trautvetter

If anything was revealed at last month's ABACE show in Shanghai, it was that the Chinese government's anti-corruption and austerity campaigns appear only to have changed the way the business aviation sector is behaving outwardly. The underlying excitement about the potential for bizav growth in the People's Republic seems undimmed, even if there has been a dip in charter demand and aircraft deliveries.

At the same time, businesses in Greater China are becoming increasingly aware of the value of business aircraft as tools. This sentiment might help reshape the image of these aircraft from luxury toys to workhorses that save time and add value for corporations.

"The anti-corruption cloud [in China] is really targeting high-end luxury items, and sadly business aircraft fall into that," Charlie Mularski, chairman of the Asian Business Aviation Association (AsBAA), told **AIN**. "But the point is that it is not a luxury item. It's a tool, so how can we persuade the authorities and the public of this?" He recognized that the austerity measures and anti-corruption campaign have had an impact on orders and deliveries in China, but said AsBAA is determined to have its own "No Plane, No Gain" drive. "The reason for it here is to fight the stigma," he explained.

Continues on page 32 ▶

DAVID McINTOSH

Last month's ABACE, the biggest ever, featured some 40 aircraft on static display at Shanghai Hongqiao.

Intimidation of airline mechanics

AIN columnist John Goglia, a former member of the NTSB, has been looking into reports of airlines intimidating mechanics who flag safety-of-flight issues. NASA's Aviation Safety Reporting System provided Goglia with access to reports filed by airline mechanics, and his findings make for a sobering read. The NASA reports reveal instances of supervisors exerting pressure on mechanics to violate FAA safety rules, from reusing damaged hardware and overlooking airframe damage to classifying a lightning strike as chipped paint.

Among the more disturbing, one report describes how a lead mechanic directed his colleagues to "strip parts from the scrapped [A320] thrust reverser and use acetone to remove the SCRAPPED red lettering."

NASA told Goglia that the reports represent "the lower measure of the number of such events that are occurring." See "Torqued" on **page 76.**

Kestrel and Eclipse merge, rebranding as One Aviation

by Rob Finfrock

VLJ manufacturer Eclipse Aerospace merged with Kestrel Aircraft, developer of the K350 turboprop single, to form One Aviation, the new company announced on April 15 at Aero 2015 in Friedrichshafen, Germany. Kestrel founder Alan Klapmeier is CEO of One Aviation, and Eclipse Aerospace chief executive Mason Holland is One Aviation's chairman; Eclipse Aerospace president Ken Ross is president of the new company.

"The concept of One Aviation started coming together quite a while ago," Ross told **AIN** during Aero 2015. "Mason, Alan and I have been friends for many years, and we've talked for some time about [bringing] together the most innovative products with the best sales, service and support."

The newly formed company will be headquartered at Eclipse's primary facility in Albuquerque,

Continues on page 54 ▶

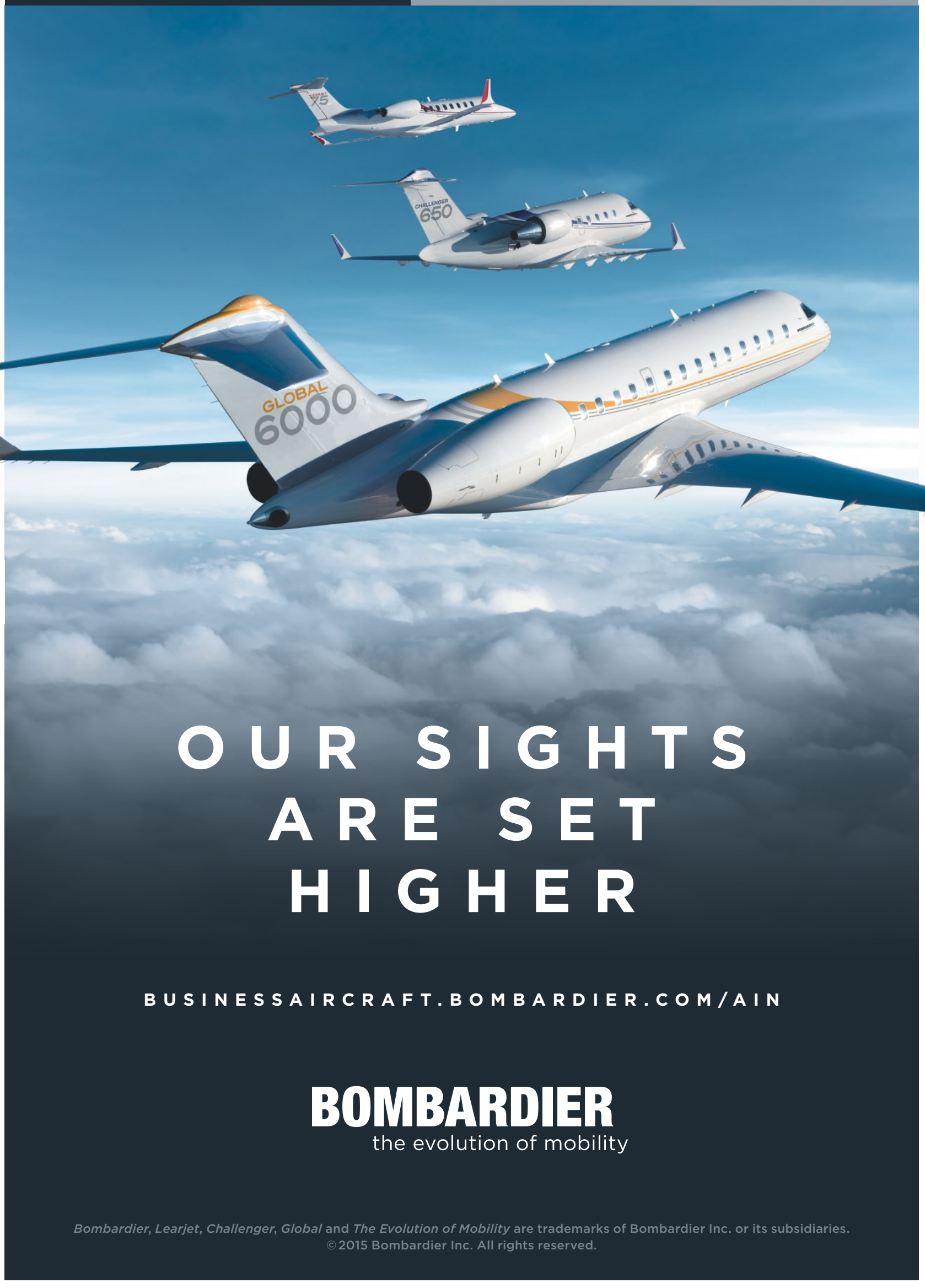
Pilot report
Citation Latitude
Cessna introduces the first new Citation fuselage cross section in four decades, but the airplane will feel familiar: excellent handling, intuitive avionics and a super-quiet cockpit. **page 46**

Safety
First-quarter accident stats
There were no business jet fatalities anywhere in the first quarter, but the sector experienced more nonfatal crashes in the first three months than in the same period last year. **page 6**

Accidents
New details in Bedford GIV crash
A flight control issue, possibly the position of the gust lock, is one theory the Safety Board is considering to explain why the aircraft ran off the runway at Bedford in May last year. **page 14**

Special Report
FBO Survey: Eastern Hemisphere
Business aviation traffic has not bounced back everywhere the way it has in the U.S. as the industry faces myriad challenges. However, FBOs continue to look ahead to a rebound. **page 20**

LEARJET CHALLENGER GLOBAL



OUR SIGHTS ARE SET HIGHER

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BOMBARDIER
the evolution of mobility

Inside this issue

AIN FBO SURVEY
Europe, Middle East, Asia, Africa

While business aviation traffic in North America has picked up, for ground handlers in many other regions it remains stalled. However, part of the uptick by the U.S. fleet is a surge in international flights, and that is helping ground handlers stay active in regions where local operations are stagnant or retreating. **PAGE 20**

AIRPLANES, ENGINES and UNMANNED

8 Provisional ticket for HondaJet
Interim approval for new light jet keeps production line moving, pending full signoff 'within months.'

12 Phenomenal century
Embraer delivers the 100th U.S.-assembled Phenom–a 300 for NetJets.

16 M stands for more
M600 turboprop single, top dog in Piper's new M series, has a new wing, more fuel, more power, more range.

41 G500 and G600
How Gulfstream quietly developed two new jets to fill a gap between the legacy large-cabins and the widebody G650 flagship.

AIRPORTS and FBOs

32 Change in the air for FBOs in Europe
Europe is poised to implement reforms in the access rules for airport ground handlers.

AIRSHOWS and CONVENTIONS

1, 10, 58 ABACE news
Despite some enduring roadblocks, bizav holds faith in the Chinese market.

56 EBACE Preview
The 15th edition of Europe's bizav convention gathers in Geneva this month.

AIR TRANSPORT

67 Cockpit occupancy
In fallout from the Germanwings disaster, the EASA changes its position on manning the flight deck.

67 MH370: Missing inaction
One year after the 777 disappeared, Malaysian report reveals radar and procedural failings.

68 Cheap oil
Study shows the cut price of jet-A is barely affecting airliner deliveries and retirements.

68 IFC looking beyond Bombardier
Russian lessor is reviewing its commitments to CSeries and Q400.

AVIONICS and ATC

62 Microsoft Surface Pro 3
Tablet-size laptop from the house that Windows built is finding its way into airliner cockpits as an EFB.

64 AEA news
Fans STC options, ADS-B compliance equipment take top billing at annual avionics convention.

FLIGHT OPS, SAFETY, SECURITY, TRAINING

6 Positive 1Q safety stats
There were no fatalities in business jet operations anywhere in the first quarter.

14 The Bedford GIV accident
NTSB docket reveals insights into last year's fatal takeoff crash.

18 The TSA and GA
Cast of characters at security agency changes but initiatives remain in focus.

34 International Operations
Annual NBAA session helps business aircraft operators navigate a world of change.

76 Intimidation of airline mechanics
AIN columnist and former NTSB Member John Goglia has been digging, and what he's unearthed is rotten.

HELICOPTERS and POWERED-LIFT AIRCRAFT

69 Air Medical to be bought
New York investment bank will acquire the second-largest U.S. helo EMS provider.

69 Bell layoffs
OEM cites declining military tiltrotor production and soft commercial market.

69 Guilty plea
Former Patriarch exec charged with felony ethics transgressions.

69 Hamptons noise
Curfew seen as likely for East Hampton Airport. Legal challenge already filed.

70 French HEMS
Operators still searching for solution to mandate for second crewmember.

70 Sikorsky's fate
News analysis: Will UTC sell the OEM whole or piecemeal?

72 AW119 pitched to U.S. Navy
AgustaWestland and Bristow propose Koala for trainer role.

72 New York commute
Gotham Air booking service to speed intra-airport/heliport travel.

72 Re-engined 407 approved
Eagle Copters STC replaces R-R engine with Honeywell HTS900.

72 Rega heading all-IFR
Swiss air-rescue operator equipping its AW109SPs for all-weather capability.

INDUSTRY and MANAGEMENT

1 Kestrel + Eclipse = One
The two companies merge to form One Aviation.

4 Textron Aviation's formative year
'Fast and furious' describes the first 12 months of the combined Beech, Cessna and Hawker.

12 FEC fines NATA
Trade association violated federal campaign finance laws.

PILOT REPORT

46 Cessna Citation Latitude
We fly the midsize jet that introduces the first new Citation fuselage cross section in more than four decades.

REGULATIONS, GOVERNMENT, ENVIRONMENT

8 CS/FAR 23 rewrite
With release of its proposed amendment, the EASA is well ahead of a laggard FAA.

14 Small-aircraft exemption
FAA renews extension for 44th year of cost-sharing options.

40 European single-engine rule next year
EASA regulators expect to release new rules on commercial operation of turbine singles in IMC next year.

DEPARTMENTS

80	Accidents
67	Air Transport Update
86	Calendar
83	Completion & Refurb Update
82	Compliance Countdown
74	Hot Section
52	In The Works
6, 8, 10, 12	News Briefs
84	People in Aviation
81	Pre-owned Update
69	Rotorcraft Update
78	Touching Bases

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As we go to press

PIAGGIO BEGINS AVANTI EVO DELIVERIES

Piaggio Aerospace handed over the first Avanti Evo on April 20, to a Greek customer for use in charter operations. The Evo is the third generation of the P.180 turboprop twin and incorporates new features such as winglets, redesigned nacelles, a reshaped front wing, Hartzell five-blade scimitar propellers and other system upgrades. Piaggio secured initial European certification for the airplane late last year and expects to deliver six Evos this year. The first Evo delivered had an extended-range and full-option configuration.

BOMBARDIER FACILITY AT TIANJIN UNDER WAY

Bombardier started construction of its first factory-owned business aircraft maintenance facility in Mainland China on April 23. The groundbreaking followed agreement of a joint venture with the Tianjin Airport Economic Area, paving the way for construction to begin on a 95,766-sq-ft (8,897 sq m) facility. The center, to open in the first half of 2017, will support a Bombardier fleet in the Greater China region that has grown to 120 aircraft.

VISTAJET U.S. ADDS CHALLENGER 350

VistaJet expanded its fleet in the U.S. with the addition of the Bombardier Challenger 350, the company said on April 23. The 350 joins VistaJet's U.S.-registered Global 5000s, which are managed and operated by Jet Aviation Flight Services. The global services provider plans to add up to 10 Challenger 350s to its U.S. fleet over the next two years.

SIGNATURE DEDICATES DTW, STL FACILITIES

Signature Flight Support dedicated renovated facilities at Detroit Metropolitan Wayne County Airport (DTW) and Lambert-St. Louis International Airport (STL) late last month. The Detroit opening comes less than a year after Signature acquired the assets of AFCO/Quantem FBO Services (known as Metro Flight Services) at the airport. Signature invested $1.3 million to renovate the facilities at DTW, including a 75,000-sq-ft hangar and improved access to the FBO. The terminal has been revamped to provide new conference rooms, a pilot lounge with separate quiet room and VIP lounge. Renovations at STL involved upgraded furnishings and expanded pilot lounge and flight-planning areas.

SURF AIR EXPANDING

Surf Air, the all-you-can-fly membership charter service, is adding four destinations in California: Santa Rosa, Monterey, Sacramento and Palm Springs. The new destinations will offer service on Surf Air Pilatus PC-12s from Santa Rosa to San Carlos and Hawthorne (beginning May 22); Monterey to the same destinations (July 20); Sacramento to San Carlos, Hawthorne and Santa Barbara (August 24); and Palm Springs (Bermuda Dunes Airport) to Oakland and Burbank (November 5). Surf Air currently operates nine PC-12s.

HONEYWELL DEVELOPS WX UPDATE APP

Honeywell Aerospace has rolled out an online service that continuously updates in-flight weather information through a mobile app. The Weather Information Service app provides pilots with graphical weather updates along the planned route of flight without needing to rely on radio dispatch, Honeywell said. It will alert pilots to potentially hazardous weather along the flight path, equipping them to plan weather-related diversions. The app presents weather radar in graphical format localized on a map.

NETJETS DONATES $1M FOR NEXTGEN STUDY

NetJets donated $1 million to further its aviation research and professional development partnership with The Ohio State University. The fractional ownership provider formed the partnership with Ohio State four years ago to establish the center for aviation studies that would focus on NextGen initiatives. The most recent donation is designed to support faculty, research initiatives, outreach and internships.

EMBRAER DELIVERIES LEVEL IN Q1

Embraer made a relatively level start in terms of aircraft output during the first quarter, delivering 12 executive aircraft and 20 airliners. This was consistent with the 34 aircraft delivered in the first quarter of 2014 (20 executive jets and 14 airliners). Business jet deliveries in the first quarter included nine Phenom 300s and a Phenom 100, as well as two Legacy 500s. This year, Embraer expects deliveries of its large executive jets to climb by at least 50 percent year-over-year now that the Legacy 500 is certified.

GKN TO MAKE G500/G600 WING SKINS

GKN Aerospace was selected to supply wing skins for Gulfstream's new G500 and G600. GKN will produce the upper and lower wing skins from its machined structures plant in Wellington, Kan., which has produced more than 5,000 wing skins, including for Gulfstream's G550. The G550 wing is produced by Triumph, along with the wing for the G450 and more recently the G650 and G280. But Gulfstream has decided to move wing assembly in-house for its new G500 and G600 models. GKN will produce the 500/600 wing upper skins without fasteners and joints to reduce weight and maintenance, the company said. Lower skins will involve several panels and complex design features.

'Fast and furious' year for Textron Aviation

Kerry Lynch and Matt Thurber

Textron Aviation recently celebrated its one-year anniversary, following a busy 12 months in which the company integrated teams; facilities; labor agreements; support; and the iconic brands of Cessna, Beechcraft and Hawker.

Textron Aviation was born out of Textron's $1.4 billion acquisition of Beechcraft on March 14 last year. The merger gave Textron an installed base of 250,000 aircraft, an employee base of approximately 10,800 workers worldwide, support network of 21 company-owned facilities and the promise of $65 million in "synergies" in 2014 and $85 million over two to three years.

"We quickly aligned our businesses and became one company," said David Rosenberg, vice president of integration and strategy.

The results were almost immediate. The combined operation has been profitable since the merger, and the synergies have been on schedule, if not ahead of schedule. "We brought $4.56 billion worth of [annual] revenue and have operating profits of $234 million, which is substantial," said Kriya Shortt, senior vice president of sales and marketing for Textron Aviation. "It's been an incredibly exciting year for us, and we feel very proud of the accomplishments of the combined team."

The Beechcraft product line retains its branding under the Textron Aviation umbrella.

When scuttlebutt first surfaced of a potential Textron acquisition of Beechcraft, observers wondered whether Beechcraft would be absorbed into Cessna and disappear. But Textron put those questions to rest immediately after its acquisition plans were revealed. The company would maintain the brands but operate them as a combined entity. "We made it clear from day one," Rosenberg said.

The decision was key to establishing ties with a new Beechcraft and Hawker customer base that Textron recognized as "fiercely loyal," while strengthening relationships with the existing and also loyal Cessna customer base. It also helped bring on board an embattled Beechcraft workforce that had persevered through a potential sale that collapsed (to Chinese firm Superior Aviation), a Chapter 11 bankruptcy proceeding and a significant restructuring that included the shuttering of all the Hawker jet lines.

Integration Efforts

After Textron announced its intention to purchase Beechcraft, the companies established an organizing committee that paved the way for the integration and the roll-out of the newly formed Textron Aviation as soon as the acquisition was completed.

The company immediately stood up operating units that integrated business lines. Rosenberg said the first order of business was to incorporate best practices of both companies. The company also immediately created a leadership team comprising executives from both Cessna and Beechcraft. Rosenberg himself came from Beechcraft and his job was to lead integration.

The merger was not without loss. More than half a dozen senior executives, from both Beechcraft and Cessna, left the new company or lost their positions. The merger also resulted in approximately 750 layoffs. Rosenberg noted that was one of the early and most difficult tasks.

At the same time, though, labor leaders were brought on board through the transition, and as a result the International Association of Machinists and Aerospace Workers agreed to unify the contracts of Cessna and Beechcraft covering 4,100 workers. This agreement came even though the Cessna contract was not up until 2017. Rosenberg listed the labor agreement as among the most important achievements last year.

The company reached out to customers to ensure the continued support not only of the Cessna and Beechcraft product lines, but also the Hawker jets that are now out of production. Beechcraft had previously considered discontinuing certain support efforts for a few of the Hawker models.

Not only did it promise to honor warranties and support aircraft, but it had since rolled out a series of new programs to expand those efforts. The most recent is an expansion of the ProAdvantage fixed-price maintenance program to Hawkers. That program was originally developed for Cessna Citations and extended to Beechcraft King Airs last year. The Hawkers were added in March.

Beyond warranty and other support programs, Textron Aviation began adding capabilities to its service center network to ensure each one could support all three brands. That support is in place through mobile support teams now, and the company is adding in-house capabilities at the centers, said Rosenberg. This effort will continue throughout this year. Parts distribution was a key focus of the support effort, he said. Beechcraft had used third-party support. Textron Aviation is bringing more of that in-house building up its inventories.

The integration is continuing with the facilities. Two companies across town now were operating as one. Executives were relocated. East (former Beechcraft) and West (former Cessna) campuses were established. Some work shifted, such as component work, and some facilities consolidated. Business and administration functions, including marketing, sales and the headquarters, moved to the West campus. That is also where the Cessna jets are produced. The East campus continues to make the turboprops and pistons. It also houses defense activity.

The company vacated some of its leased facilities and is in the process of consolidating some of its work into new "centers of excellence" (COE). It is turning the former Beechcraft composites facility, known as Plant III, into a COE. Rosenberg emphasized that the company has no plans to make composite aircraft but will use the technology for composite parts.

It is also establishing a

Continues on page 60 ▶

G280

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NEWS BRIEFS Compiled by Chad Trautvetter

Pilatus Tops $1B in Revenues

Revenue at Pilatus Aircraft reached a new record last year at $1.21 billion, up 16 percent year-over-year and marking the second year that revenue at the Swiss aircraft manufacturer has topped a billion dollars. Earnings also climbed 30 percent from the year-ago period, to $207.4 million, according to year-end figures. Pilatus delivered 127 aircraft–split evenly between civil and military types–last year, 15 more than in 2013. The civil shipment tally included 66 PC-12 NGs, of which 50 went to U.S. customers. Of the 10 Pilatus PC-6 Porter utility turboprops delivered last year, nine went to China. Pilatus also noted that it continues to move forward with the PC-24 program, with first flight pegged for this month. Certification is on track for mid-2017, the company added.

MEBAA Chairman to Bizav: Emissions-reduction Initiatives Needed

Middle East Business Aviation Association founding chairman Ali Al Naqbi is asking business aircraft operators to heed the Air Transport Action Group's (ATAG) call for submissions detailing aviation-related projects that help to reduce carbon dioxide emissions. ATAG will select the 100 "most enterprising, innovative or interesting case studies" and feature them in its Global Sustainable Aviation Summit 2015 publication that will be presented to governments, ICAO and other attendees at the COP 21 climate meeting in Paris in December.

Landmark Buys TWC

Landmark Aviation bolstered its aircraft management division with the purchase of TWC Aviation, which manages a fleet of more than 50 jets and turboprops from bases at California's San Jose International and Van Nuys Airports, Scottsdale (Ariz.) Airport and Westchester County Airport in White Plains, N.Y. The company now manages some 120 business aircraft.

Viking Slashes Twin Otter Production

Canada's Viking Air is slashing production of the Twin Otter 400 twin turboprop by 25 percent and laying off 116 employees, nearly 20 percent of its workforce, in the face of slowing orders. The company will continue to employ 432 and plans to deliver 18 aircraft this year, down from its earlier forecast of 24.

Advent Aerospace Spins Off Unit

Advent Aerospace spun off its Tulsa, Okla.-based Aircraft Systems subsidiary on April 1. Now known as Advent Aircraft Systems, the spun-off company will continue to certify and produce components and systems for aircraft. It began with Advent ABS, an anti-skid braking system for light turbine aircraft that was certified in December 2013 as a retrofit for the Eclipse 500 and is now standard on new Eclipse 550s.

Tamper-proof Avionics in Test Phase

New York-based InFlight Labs is testing a series of what it calls tamper-proof smart avionics that will alert authorities to attempts to power down critical airborne systems for any reason. The systems—Smart Acars, Smart ADS-B, Smart FDR, Smart ELT and Smart transponder—provide continual aircraft tracking of aircraft almost anywhere around the world. The self-powered transponder, for example, monitors the power system of the existing transponder, watching for signs of tampering. Should the standard transponder power down because it is turned off, tampered with or experiences a true power failure, the Smart transponder will automatically squawk 7700. The system will send a detailed burst message to authorities within moments of a similar incident.

Bizjet operators post positive Q1 safety stats

by Gordon Gilbert

Following a year in which the business jet fleet experienced its highest level of fatalities in decades (**AIN**, *February 2015, page 8*), it is encouraging to report there were no fatalities anywhere involving business jets in the first quarter of this year, according to **AIN** research. Nine people lost their lives in three crashes worldwide in the same period last year. Preliminary data showed that in the first three months of 2014 five people perished in two fatal crashes of U.S.-registered business jets (both operating under Part 91) and that four people died in one crash of a non-N-numbered business jet operating as a private flight.

Although no fatal accidents befell any N-numbered business jets in this year's first quarter, there were eight nonfatal accidents compared with two last year, both involving aircraft operating under Part 91. Of these eight nonfatals in the first quarter, six happened to Part 91 operators, and one each involved Part 91K and Part 135 operators. Nonfatal mishaps of non-U.S.-registered business jets also rose from two in last year's first quarter (one private, the other government) to three so far this year (all private).

Turboprops with N numbers also had more nonfatal mishaps in this quarter compared with the same period a year ago, but fatalities dropped to three this year (all Part 91) from 10 last year. The only aircraft segment to record more fatalities was non-U.S.-registered turboprops: 14 people died in two accidents this period compared with eight in two accidents last year.

On February 7 this year one of the more intriguing incidents in the first quarter, still under NTSB investigation, involved a 1987 Gulfstream IV attempting to take off. According to the Board, the pilot reported that before he taxied the airplane a flight control check felt "normal." During the initial takeoff attempt, the pilot engaged the autothrottle. He reported that at approximately 75 knots, a triple chime sounded and a master warning illuminated. He immediately rejected the takeoff, coasting to the end of the runway. The pilots reported they saw no message on the crew alert system, no exceedances and no tripped circuit breakers.

The pilot decided to attempt another takeoff. This time he did not use the autothrottles. But as the airplane accelerated through approximately 75 knots, the triple chime/master warning activated again and he saw the engine low-pressure (LP) turbine speed in the yellow arc. He subsequently reduced engine power slightly to return the LP turbine speed to the white arc and continued the takeoff. At rotation speed, he pulled back on the control yoke but the

Continues on page 50 ▶

Accidents/Incidents Worldwide 1Q/15 vs. 1Q/14

U.S.-registered Business Jet and Turboprop Accidents/Incidents Worldwide

Business jets	Total		Part 91		Part 91K		Part 135		Public/Gov't		Mfr.	
	2015	2014	2015	2014	2015	2014	2015	2014	2015	2014	2015	2014
Nonfatal accidents	8	2	6	2	1	0	1	0	0	0	0	0
Fatal accidents	0	2	0	2	0	0	0	0	0	0	0	0
Total accidents	**8**	**4**	**6**	**4**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**
Fatalities	0	5	0	5	0	0	0	0	0	0	0	0
Incidents	10	11	10	9	0	1	0	1	0	0	0	0

Business turboprops	Total		Part 91		Part 91K		Part 135		Public/Gov't		Mfr.	
	2015	2014	2015	2014	2015	2014	2015	2014	2015	2014	2015	2014
Nonfatal accidents	7	2	6	2	0	0	1	0	0	0	0	0
Fatal accidents	3	3	3	3	0	0	0	0	0	0	0	0
Total accidents	**10**	**5**	**9**	**5**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**
Fatalities	3	10	3	10	0	0	0	0	0	0	0	0
Incidents	10	6	10	6	0	0	0	0	0	0	0	0

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

Involving Non-U.S.-registered Business Jets/Turboprops

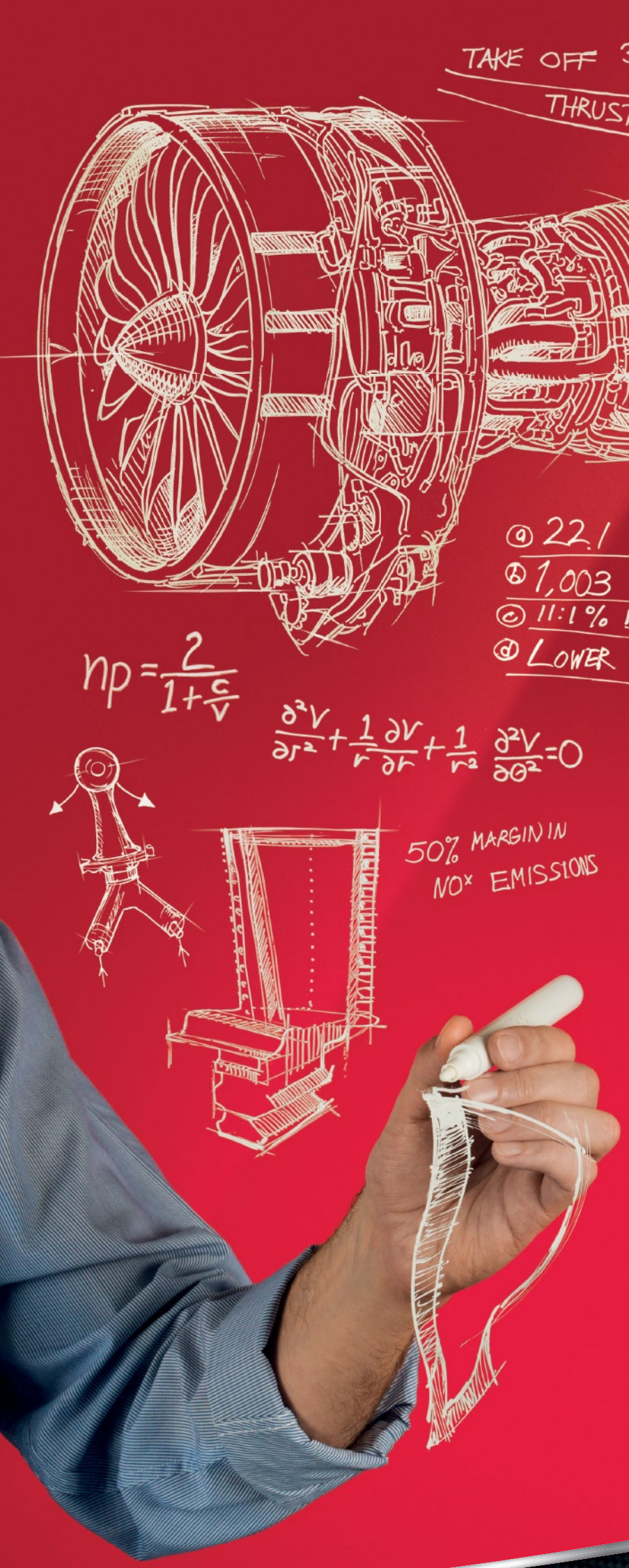
Business jets	Total		Private		Charter		Other*		Unknown	
	2015	2014	2015	2014	2015	2014	2015	2014	2015	2014
Nonfatal accidents	3	2	3	1	0	0	0	1	0	0
Fatal accidents	0	1	0	0	0	0	0	1	0	0
Total accidents	**3**	**3**	**3**	**1**	**0**	**0**	**0**	**2**	**0**	**0**
Fatalities	0	4	0	0	0	0	0	4	0	0
Incidents	2	0	1	0	0	0	1	0	0	0

Business turboprops	Total		Private		Charter		Other*		Unknown	
	2015	2014	2015	2014	2015	2014	2015	2014	2015	2014
Nonfatal accidents	3	2	1	0	1	1	1	1	0	0
Fatal accidents	2	2	1	0	0	1	1	1	0	0
Total accidents	**5**	**4**	**2**	**0**	**1**	**2**	**2**	**2**	**0**	**0**
Fatalities	14	8	10	0	0	3	4	5	0	0
Incidents	4	1	3	0	0	1	0	0	1	0

**For example: air ambulance, aerial survey, ferry, training, testing, government (non-military)*

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

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



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NEWS BRIEFS Compiled by Chad Trautvetter

FAA Guidance on Wind Shear Sim Training

The FAA issued InFO 15004 in support of recommended improvements to wind shear and microburst simulator training that evolved from the July 2011 stick pusher and adverse weather event training aviation rulemaking committee. FAR Part 60 flight simulation training device (FSTD) qualification standards require a minimum set of wind-shear models to be available to instructors during critical phases of flight, including before takeoff rotation; at liftoff; during initial climb; and on final approach, below 500 feet agl. The ARC determined the labeling of available wind-shear models is not standardized, so the InFO recommends enhancing the FSTD instructor operating stations to ensure wind-shear models are properly configured and labeled.

Astronomer Uses Falcons To View Eclipse

To observe the March 20 total solar eclipse in optimal conditions, astronomer and lecturer Xavier Jubier coordinated a flight of three Dassault Falcon 7Xs some 45,000 feet above the Atlantic Ocean, near the Faroe Islands, on the same trajectory as the eclipse. Business aviation charter firm Amjet Executive organized the flight, with assistance from Dassault Falcon Service. The first Falcon took off from Geneva International Airport, and the other two departed from Paris Le Bourget Airport. The three aircraft met up and then followed the trajectory of the eclipse to observe the perfect alignment of the Moon between the Earth and the Sun.

Online Charter Broker Victor Expands

Online air charter portal Victor announced its expansion into the U.S. early last month, thanks to a new $8 million mezzanine funding round that enables a push beyond the European private jet charter market it has been serving since 2011. "The U.S. is the largest region for private aviation, accounting for 49.7 percent of the global market," said Victor CEO Clive Jackson. "Expanding our operations to the U.S. ensures we have a presence in the most dominant market." Victor claims access to 7,000 jets worldwide and 40,000 airports internationally through its partnerships with charter operators. Customers are able to view the provider, airplane and operator of each booking before making a payment, the company said.

Collins Intros Vector SMS in Spanish

Rockwell Collins introduced a Spanish-language version of its Vector safety management system (SMS) software for ArincDirect customers, allowing flight departments in Latin America to implement an SMS in their native language. ArincDirect customer Grupo ALFA recently used the Spanish-language version to obtain Phase I SMS certification from DGAC, Mexico's civil aviation authority.

Global Aerospace Subsidizing Upset Training

Aviation insurance firm Global Aerospace is offering customers a subsidized loss-of-control in-flight training program provided by SM4 safety program partner Calspan. As such, Global will be subsidizing 25 percent of the cost per pilot to those customers who complete Calspan's advanced maneuvering and upset recovery training this year.

Pilot Buys Michigan FBO

Executive Air Transport, the sole services provider at Michigan's Muskegon County Airport, was sold to pilot Terry Boer. The FBO is open 24/7 and offers aircraft charter and management and a flight school, along with sales ands maintenance for Hawkers, Citations and King Airs. The location is home to half a dozen turbine-powered aircraft, ranging from a Falcon 2000 to a King Air 200.

EASA releases A-NPA on light aircraft standards

by Kerry Lynch

The European Aviation Safety Agency (EASA) released for comment an advance notice of proposed amendment (A-NPA 2015-06) that would rewrite certification standards covering most piston, turboprop and light turbine aircraft. Issued in late March, the A-NPA moves forward on an international effort to create a consensus approach to certification standards for CS-23/Part 23 aircraft. It was developed through an industry-government rulemaking committee that reflects the recommendations of the international Part 23 Reorganization Aviation Rulemaking Committee (ARC). The ARC, which included industry and regulatory officials from numerous countries, had established a goal of doubling safety while halving the cost of certification.

In releasing the A-NPA, the EASA said, "Through this reorganization…a new concept will be introduced. The EASA certification specifications will be replaced by objective requirements that are design-independent and applicable to the entire range of airplanes within CS-23."

The high-level objective requirements facilitate the development of more detailed standards that are adopted by a global standard-setting body. They provide for acceptable airworthiness design standards and means of compliance. "This flexibility is intended to encourage the introduction of safety-enhancing features and reduce certification costs for these types of airplanes," the EASA said. The agency was careful to point out that while the consensus process will enable faster adoption, it still retains ultimate responsibility for acceptance of those standards.

Streamlined Process

Greg Bowles, director of European regulatory affairs and engineering for the General Aviation Manufacturers Association, said the rulemaking package is "technology neutral," written to accommodate new technologies such as electric airplanes. The proposal moves away from the prescriptive approach (for example, what needs to be in place for recovery from loss of control) to one that is more performance-based (such as how to prevent inadvertent loss of control).

The rulemaking essentially covers aircraft that carry up to 19 passengers and weigh up to 8,618 kilograms (19,000 pounds), which is the same scope of the U.S. FAR Part 23 rules. While they cover the range from light pistons to more sophisticated turbine-powered aircraft, the standards would be better tailored to the performance and complexity of the aircraft.

Bowles notes that the A-NPA significantly streamlines the CS-23 rule, from the current 170-page document to a potential rule spanning about 20 pages–a figure that does not include the specific standards for each aircraft.

The publication of the A-NPA puts the EASA on a much faster pace to release the document than the FAA. The EASA is accepting comments for three months and hopes to have an NPA later this year, in time for a decision in next year's first half. This rule would not require European Commission review, Bowles said.

The EASA had been coordinating with the FAA on the development of the new rule, hoping to align the timing of the release. But FAA officials have pushed back the timeline by a couple of years and have ceased open discussions since the proposal entered the rulemaking process. The EASA's publication of the A-NPA and its call for comments might provide the FAA with an opportunity to provide input and provide a sense of direction, observers hope.

As for the timing of the U.S. rule, Congress had mandated that the FAA complete the final rule by year-end. But senior FAA officials have said the agency is targeting the end of 2017, two years after the congressional mandate. Industry groups were pushing the agency to release a notice of proposed rulemaking this summer.

The CS-23/Part 23 rewrite has the potential for serving as a template for similar rewrites for larger, more complex equipment. The FAA and industry are looking at some of the concepts for Part 27 and 29, and FAA Administrator Michael Huerta has not ruled out possibilities for Part 25. ❑

HONDAJET RECEIVES PROVISIONAL FAA CERTIFICATION

Honda Aircraft received provisional certification for the HA-420 HondaJet from the FAA on March 27. Full certification is expected "in the next few months," according to the company, "following the completion of final testing and approval by the FAA." Provisional certification allows an aircraft manufacturer to keep the production line moving, with final-phase manufacturing, including completion activity, continuing on customer aircraft so they can be delivered on schedule.

"Honda Aircraft has completed nearly all of the testing and reports required by the FAA," said company president and CEO Michimasa Fujino, "and we are close to achieving final type certification for the world's most advanced light jet. Provisional type certification for the HondaJet is a tremendous milestone for the program, and we are pleased to reach this significant step toward customer deliveries and entry into service."

Four design-conforming flight-test HondaJets have logged more than 2,500 flight hours. Twelve HondaJets are on the final assembly line at Honda Aircraft's factory in Greensboro, N.C., and another five "are currently in the production flow," according to the company. Deliveries are slated to begin after receipt of full FAA type certification.

"It is a milestone for a first-time aircraft manufacturer to receive its first type certificate," said Melvin Taylor, manager of the FAA's Atlanta Aircraft Certification Office.

Honda Aircraft received provisional certification for the HA-420 HondaJet on March 27 from the FAA. Full certification is expected "in the next few months," according to the company, "following the completion of final testing and approval by the FAA."

The composite-fuselage HondaJet features a unique over-the-wing mounting configuration for its recently FAA-certified GE Honda HF120 turbofans. Avionics are a three-display, touchscreen-controlled Garmin G3000 system. Performance numbers include 420-knot maximum cruise speed, four-occupant NBAA IFR range of 1,180 nm and 43,000-foot maximum cruise altitude.

The engine mounting arrangement opens space in the cabin for a fully enclosed lavatory and seating for up to seven occupants. –*M.T.*

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EMBRAER
Executive Jets

NEWS BRIEFS Compiled by Charles Alcock

Jeppesen Partners with Mainline

Jeppesen signed an agreement with Chinese aviation services provider Mainline "to collectively discuss enhancing business aviation operations in China." Steve Card, director of Jeppesen Aviation Client Management, said he is looking forward to finding ways to integrate the Boeing-owned company's services with Mainline in China. Mainline plans to establish various services for Chinese business aviation operators, "including domestic dispatch, airport analysis, aeronautics information services, flight planning, weather data, flight monitoring, fuel set-up, training and international trip planning."

Newly Merged Sino Jet Makes Debut

Sino Jet made its debut at ABACE as a company newly merged with Bear Jet, following acquisition last fall by Tsing Hua Capital. The combined entity will continue under Sino Jet's name with a new logo, a fleet of 15 aircraft (among them a BBJ) and offices in Hong Kong and Beijing. It expects to take delivery of three Embraer Legacy 650s over the next year. Tsing Hua Capital acquired Sino Jet Commercial Aviation Management in November, a year after it acquired a majority stake in Beijing Bear Jet Aviation.

Gama Aviation To Manage Chinese Fleet

Gama Aviation is preparing to start an Asia-Pacific aircraft management joint venture. The first two customer aircraft, a pair of Bombardier Globals, will be based in Hong Kong. The UK-based company announced in January that it had reached an agreement with Hutchison Whampoa China (HWCL), and the deal takes Gama's managed fleet to 146 aircraft. Gama CEO Marwan Khalek said the company is happy to support aircraft owners anywhere in the region, but it definitely intends to operate in Mainland China. Since the focus will be on private owners, it will not be necessary for Gama to obtain a Chinese air operator certificate immediately. Khalek said, "Everything Gama will do in Southeast Asia will be through our joint venture, Gama Hutchison." The Gama strategy, he said, is to establish aircraft managment services first and secure FBO/maintenance assets later.

Charitable Medical Service Launched

Angel Jet Network (AJN), a charitable organization established to provide medical transportation for underprivileged patients across the Asia-Pacific region, was launched at ABACE in Shanghai. Like its U.S. counterpart the Corporate Angel Network (CAN), it plans to partner with corporate aviation providers willing to donate empty legs, empty seats or flight hours to transport patients from remote locations to medical facilities. Though CAN transports only cancer patients, AJN will extend charity medical flights to those with cardiac and pulmonary diseases, as well as congenital disorders.

NetJets Launches Jet Card for China

NetJets announced a new jet card for the Chinese market. The new prepaid Private Jet Travel Card for China-based travelers offers access to NetJets services in Mainland China connecting the region with the NetJets fleet, which operates in more than 170 countries. The U.S.-based group recently launched charter and management services in China through its NetJets Business Aviation Ltd. partnership with Hony Jinsi Investment Management Beijing and Fung Investments. With the card, travelers have access to the Hawker 800XP within the Executive Jet Management China Charter services, as well as other Signature Series aircraft in the U.S. and Europe, subject to availability.

DAVID McINTOSH

Textron Aviation's Bill Schultz (left), senior v-p of business development for China, and Mike Shih, v-p of strategy and business development for China, discussed expansion plans at an ABACE press conference.

Cessna, Caiga planning joint-venture charter op

by Charles Alcock

Cessna hopes to launch charter and management services in China next year under a joint venture called Zhonghen International Business Aviation (Guangxi). The Textron Aviation subsidiary formed its third Chinese joint venture late last year with manufacturing partner Caiga, a subsidiary of Avic, and customer Guangzhou Zhongheng Group.

The new business secured an operating license in March and has applied for its air operator certificate (AOC). Bill Schultz, Textron's senior vice president of business development, told reporters at ABACE last month in Shanghai that the joint-venture partners have assembled an organizing committee that is laying the groundwork to launch operations. The partners bring a background in operations, which should help facilitate a launch next year, he told **AIN**.

Caiga, which is teamed with Cessna on both the XLS+ and Caravan assembly joint ventures, has already secured a number of AOCs. The third partner, Zhonghen, took delivery of the first two XLS+s from the Cessna-Avic Aircraft (Zhuhai) venture in November, and one of the aircraft was on display at ABACE.

The new venture initially will manage Guangxi's XLS+s, but Schultz said it could move into managing all products in the Textron Aviation portfolio. The operation will be based in Nanning.

"Most [Chinese] customers are concept buyers," Schultz said, noting that these customers need help establishing their operations and learning how to manage their aircraft. The joint venture, he said, is intended to "raise the bar for the Chinese market and provide turnkey services."

Expansion Efforts

The venture is among a number of efforts under way by Cessna as it expands in China. The Cessna-Avic Aircraft (Shijiazhuang) venture, focused on assembly of the Caravan, recently was awarded its initial Part 145 approval. The service station is approved for Caravan services, but Shultz did not rule out the possibility of expanding services to Beechcraft King Airs if the market dictates.

Meanwhile, Cessna-Avic Aircraft (Zhuhai) applied for its Part 145 certificate for maintaining the XLS+.

Cessna announced an order for the third aircraft to come from the joint venture. Shanghai-based FT Business Jets signed a contract for an XLS+ for use in charter. That aircraft will be delivered later this year.

During the show, the company also received orders from four companies for Cessna 172 Skyhawk piston singles, all for use in the growing training market. Hubei Sky Blue International Aviation Academy placed an order for five; Shanghai Avieye GA ordered a standard configuration and one with amphibious floats; and Zhejiang Aviaeast GA and Shandong Hairou GA each ordered two. Zhejiang Aviaeast GA also placed an order for two T206 Turbo Stationairs for tourism flights. ❑

Dassault Taps Deer Jet for Falcon Support in China

China's Deer Jet signed an agreement with Dassault Aviation to establish a Beijing service center to provide Falcon jet owners in the region with both line and scheduled maintenance. The facility, which will provide support for all Chinese-registered Falcon 7Xs, is applying for FAA and EASA certification.

Dassault will base two technicians at the center to guarantee maintenance and service quality, as well as provide 24/7 aircraft-on-ground support. It will house a parts inventory of more than $5 million.

"This agreement is essential for us because it will bring us together to continue providing high-quality maintenance services for our customers in the Beijing area," said Olivier Villa, Dassault's vice president for civil aviation, at an ABACE show press conference, adding that the facility will benefit


CURT EPSTEIN

Deer Jet president Zhang Peng (left) accepts a model of a Falcon 7X from Dassault v-p for civil aviation Olivier Villa. Deer Jet will support the 7X.

based customers as well as "our worldwide customers who travel more and more into China and Asia."

Previously, Dassault authorized Shanghai Hawker Pacific Business Aviation Centre to conduct Falcon maintenance, and since Deer Jet is a shareholder in Hawker-Pacific Asia Aviation, the facility's parent company, it will now be able to provide service to Dassault customers in both Beijing and Shanghai.

Separately, Deer Jet introduced the next generation of its jet card program. The new card offerings consist of 10-hour ($120,097/789,000 RMB), 25-hour ($298,214/1.96 million RMB) and 50-hour ($588,985/3.87 million RMB) flight-time blocks for use on Deer Jet's Gulfstream G550s. The company is also working on developing tailored jet card plans. The transferable cards can also be redeemed for use on the company's other offerings, including yachts and helicopters.

According to Deer Jet vice president Frank Fang, the package is less expensive than the current charter market price, and the jet card will not expire as long as there are flight hours left. Cardholders can also exchange their use for other aircraft types among the company's fleet. Deer Jet's international flight rates are the same as its domestic rates, said Fang. *–C.A.*

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HondaJet

NEWS BRIEFS Compiled by Chad Trautvetter

IBAC Acquires Bizav Safety Data Firm

The International Business Aviation Council (IBAC) purchased business aviation safety data firm Robert E. Breiling Associates. IBAC, NBAA and other IBAC member associations, insurance companies, manufacturers, operators and safety regulators have all used Breiling's data since the 1960s. Breiling provides quarterly and annual reports and analysis on turboprop and turbine aircraft and helicopter accidents, identifying where and how occurrences happen, their causes and the critical phases of operation of each aircraft. This data also has been the foundation for IBAC's annual Business Aviation Safety Brief. The association intends to continue providing such analysis to the industry and is considering adding products built on the data. IBAC will also explore cooperating with ICAO on data exchange to foster greater understanding of global business aviation operational safety.

FAA Floats New Policy on Airspace

FAA proposed Order 8260.19G offers new national guidance for all FAA personnel responsible for implementing the U.S. flight procedures and airspace program. The proposal also provides guidance for the military and other government agencies to use when interacting with the FAA on instrument flight procedures. Those procedures often determine the alignment and location of navigation facilities as well as the location, marking and lighting of airport landing and maneuvering areas. Changes would include removal of "DME" from approach procedures that previously included that acronym in their name. In addition, the proposal would change the naming routine for instrument procedures using "VOR/DME Rnav" to read "Rnav (VOR/DME)." A final order is expected to be released this summer.

Helicopters Still Face Low-Level Threats

Wire obstacles present a significant danger to helicopter operations, according to a recent United States Helicopter Safety Team (USHST) analysis into the dangers of low-altitude flight. Approximately 16 percent of all helicopter accidents have been attributed to wire or obstacle strikes, the report says. Seventeen percent of those accidents resulted in fatalities. Because helicopters spend the majority of their flight time at low altitude, wires or other obstacles can be difficult to identify, especially in poor weather. The USHST says helicopter threats can be reduced if crews maintain maximum altitude for as long as possible and use conservative routes that might add a few minutes to a trip.

Learjet 75 Handed Over in Poland

Bombardier Business Aircraft in late March delivered the first Learjet 75 that will be based in Poland. It was handed over to an undisclosed customer in the Eastern European country following type approval by Poland's Civil Aviation Authority.

JetNet iQ Summit Coming to NYC

The fifth-annual JetNet iQ Global Business Aviation Summit will be held in New York City on June 23 and 24. JetNet iQ's summit will feature speakers and panelists from across the industry spectrum, including leaders of business aircraft OEMs, aircraft sales and finance experts, Wall Street aerospace and defense analysts, aircraft owners/operators, aviation trade organization directors and research professionals covering the ultra-high-net-worth-individuals market, the company said. JetNet vice president of sales Paul Cardarelli and JetNet iQ director Rollie Vincent will also present insights from their company's latest research and 10-year business jet delivery and fleet forecast.

FEC levies fines against NATA for campaign finance violations

by Kerry Lynch

The Federal Election Commission (FEC) is fining the National Air Transportation Association more than $90,000 and a former employee more than $50,000 for violating federal campaign finance laws by using the salaries of 20 employees to help fund the association's Political Action Campaign (PAC).

Both NATA and Eric Byer, the association's former vice president of government and regulatory affairs, signed conciliation agreements last month accepting the fines and admitting to their roles in the activities.

The FEC began its investigation after NATA president Tom Hendricks uncovered the PAC funding system, put a stop to it and reported it to the agency. NATA has since made numerous changes and implemented a number of controls to ensure that the association remains in full compliance with FEC rules and election laws. "It's been a long process," Hendricks told **AIN** and praised the FEC for working with the association and recognizing its efforts to correct its practices.

"NATA thanks the FEC for its assistance and guidance through a very difficult period," Hendricks said in a statement. "The commission confirmed the results of our own internal investigation that concluded federal campaign finance violations occurred within the organization prior to its present leadership….With the help of the commission, NATA's new leadership is moving forward with a political activities regime that is fully compliant with all federal election regulations."

According to an FEC First General Counsel's Report that was dated July 14 but just released today, NATA helped fund its PAC through salary increases of 20 employees. The funding mechanism was presented and signed off by the board in 2001 and continued through 2012.

According to FEC documents, Byer, who was then a government affairs specialist for the association and later became vice president of government and industry affairs, had discussed the funding mechanism with then NATA CFO Alan Darrow to help build the PAC, which they feared was "non-existent in the political process" during a time when Congress was debating FAA reauthorization legislation.

The idea was presented to the board. Byer was not at the board meeting, but both then-president Jim Coyne and Darrow were believed present. According to the FEC documents, the former treasurer was not properly certifying PAC disclosure reports.

Voluntary Reporting

After investigating, the FEC was unable to determine the extent of Darrow's involvement or evidence of Coyne's direct involvement and decided to take no action against either (although Darrow received a letter of caution). The FEC found that Byer violated federal campaign finance laws, but agreed that the violations were neither "knowingly" nor "willfully" conducted. Byer, however, was fined more than $53,000.

"I really wish the leadership of NATA had gotten legal advice back in 2001 when this practice was being considered," Byer said in a statement. "I believed all along it was permissible because it was voluntary and NATA employees were properly reporting all the funds as income. In hindsight, I'm sorry I didn't press for independent legal review, and I encourage all PAC administrators to get proper legal advice. I myself have undertaken to get proper legal training on the relevant rules and will make sure such mistakes do not occur on my watch."

More than $214,000 was funneled to the PAC from December 2001 to August 2012 through employee salaries. This violates laws that "no person shall make a [PAC] contribution in the name of another person," the FEC said. "That prohibition extends to knowingly permitting one's name to be used to effect the making of a contribution in the name of another."

Continues on page 60 ▶

NETJETS TAKES DELIVERY OF 100th U.S.-MADE PHENOM

On April 2 Embraer Executive Jets delivered the 100th Phenom assembled at its Melbourne, Fla. facility, just three years after the first light jet rolled off the line there. The milestone aircraft also marked the 40th handover of a Signature Series Phenom 300 to NetJets. Registered as CS-PHF, the jet will be the seventh Phenom 300 to join NetJets' European fleet; the fractional provider's remaining 33 Phenoms are based in the U.S.

NetJets and Embraer inked a $1 billion purchase agreement for 50 Phenom 300s and options for 75 more in October 2010. In December, NetJets converted options on 10 Phenom 300s to firm orders. "The Signature Series Phenom 300 has proved itself to be a success in meeting our expectations and, more importantly, the expectations of our customers," said NetJets senior vice president of global asset management Chuck Suma. "The Phenom 300 is the best-selling aircraft in our fleet."

According to Suma, NetJets' Phenom 300 fleet has accumulated more than 23,000 hours since the type entered service at the company in May 2013, adding that the jets have exceeded guaranteed availability numbers. He said Phenom 300 deployment will be split 80/20 between the U.S. and Europe, respectively.

NetJets took delivery of CS-PHG, its 41st Phenom 300, which is also joining the NetJets Europe fleet, early last month. *–C.T.*

Embraer Executive Jets president and CEO Marco Túlio Pellegrini (left) hands over the keys to the 100th U.S.-assembled Phenom 300 to NetJets senior vice president of global asset management Chuck Suma. The light jet is also the 40th Phenom 300 to be delivered to the company.

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Randy Gaston has been with Gulfstream for more than 20 years and was chief test pilot during development of the GV. He is a graduate of the USAF Test Pilot School at Edwards AFB. Randy was test pilot with the FAA Aircraft Certification Office and chief test pilot for the B-1B bomber.

As cockpit technology advances, one thing never changes: The Best Safety Device in Any Aircraft Is a Well-Trained Crew. The advanced-technology systems built into today's aircraft offer many benefits and advantages. While the understanding and appropriate use of automation are important, developing and maintaining core airmanship skills are paramount, especially in emergency situations. A crew's first focus in an emergency should be flying the aircraft and maintaining or working to return to stable flight. Only when the plane is under control should attention turn to analyzing the situation, determining the cause and, finally, taking corrective action. A new series of courses from FlightSafety enables crews to experience and recover from challenging situations – based on analysis of actual incidents – that demand solid flying skills, swift and accurate decisions and precise communication.

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MASSACHUSETTS STATE POLICE

The pilots of the Gulfstream IV that crashed on May 31, 2014, in Bedford, Mass., received a "rudder limit" advisory (blue) message on the takeoff roll, according to NTSB data. The aircraft overran the runway after a failed takeoff, struck lighting and an antenna assembly and came to rest in a gully before being consumed by a post-crash fire, killing all seven on board.

NTSB docket reveals insights into the Bedford GIV accident

by Robert P. Mark

The NTSB last month opened the evidence docket into the nighttime crash of a Gulfstream IV at Hanscom Field (BED) in Bedford, Mass., on May 31 last year. A flight control issue, possibly the position of the gust lock, is one theory being considered to explain why the GIV went off the end of Runway 11, broke up and caught fire, killing all seven people aboard.

Although the "whys" behind this accident are not yet definitively revealed, the docket has delivered a number of facts that could ultimately explain what happened that night. For example, the experienced IS-BAO Stage 1-certified Gulfstream crew appeared to reject the takeoff too late in the ground roll to halt the aircraft. Main-gear tire skid marks appeared only on the last 1,440 feet of the 7,011-foot runway.

Some behavioral aspects of the crew related to preflight checks were also brought to light in the docket. The GIV's quick-access data recorder (QAR) showed that the cockpit crew fully tested the aircraft's flight controls before takeoff on only two of the previous 176 flights. A full control check was defined as stop-to-stop motion of the elevator, ailerons and rudder at some point between the beginning of the FDR power cycle and takeoff. If the gust lock had been engaged, the restrictions to conducting that control check might have raised awareness about a potential problem. Although investigators discovered the gust lock in the wreckage was not engaged, for some reason the flight power shutoff valve (FPSV) handle was pulled up. This would have removed hydraulic pressure from the flight controls. In that case, the Gulfstream system would revert to manual mode (akin to losing the power steering in an automobile).

The accident aircraft, N121JM, was registered to SK Travel and operated by Arizin Ventures under Part 91 regulations. The crew began the takeoff roll at 21:39:05 local time. Fifteen seconds later, they noticed a "rudder limit" warning indicating the rudder had reached one of its left-right travel limits. This prompted the pilot not flying to mention "rudder limit light is on." The flying pilot asked if the copilot was on the rudders, to which he replied no. The takeoff continued until 21:39:59 (54 seconds elapsed time), when the copilot announced numerous times the "lock is on." Fourteen seconds later (68 seconds after the takeoff began) the copilot said, "I can't stop it." The recording ended seven seconds later–one minute and 15 seconds elapsed. The GIV had reached a speed of 160 knots–well above rotation speed–before the crew made any attempts to slow the aircraft, and it went off the end of the runway at approximately 100 knots.

Systems Testing

Much of the cockpit remained intact, so the NTSB tested the throttle quadrant and the autothrottle systems recovered from the aircraft. Internally developed NTSB objectives were to look at simulated abnormal operations, as well as to validate engine power ratio (EPR) models, characterize aircraft power lever angle and engine EPR response during acceleration and validate the presence of an aerodynamic hold on the gust lock. The Board also reviewed engine data gathering, autothrottle disengage force tests, autothrottle/interlock disengage tests and high-speed taxi tests to characterize the effect of air load on the elevator gust lock release and autothrottle hold characterization.

NTSB system testing began with the facts uncovered during initial inspection of the cockpit. The thrust levers were found at between half and full throttle, and the thrust reverser handles were stowed. The control lock was discovered in the full-forward–gust locks not engaged–position. The speed brakes were also stowed.

Docket reports explained that Gulfstream's autothrottle system would be expected to disengage if the crew attempted to take off with the gust lock in place. "When contacting the throttle interlock and when the autothrottle hold mode became active at 60 knots, there was no change in thrust or throttle position," essentially meaning that pushing harder on the throttles would not translate into more thrust. In some tests, though, the NTSB learned that when attempting to remove the gust lock at the last minute if the aircraft was accelerating–a procedure not supported by Gulfstream–the lock could sometimes be disengaged and other times not. Investigators noted, "It [would have been] very difficult for the copilot to pull the gust lock handle back and unlatch it."

Gulfstream reported that when hydraulic pressure is removed from the ailerons, both the left and right aileron surfaces can "float" in response to aerodynamic loads. The FDR showed that at approximately 21:40:05, one second after the call to "rotate" was made, the right and left ground spoilers and the right and left inboard flight spoilers began to "float" up to between 1 degree and 3 degrees, as both the left and right aileron surfaces moved in an upward direction. The FDR data further showed that at approximately 21:40:06 the yaw damper disengaged. The flight power shutoff valve can affect the operation of each of these systems.

Another report confirmed that the gust lock system interconnection with the throttle levers was intended to prevent advancing the throttle levers beyond a minimum power setting with the lock engaged. The pin that holds the gust lock in place was found sheared on N121JM, although it is unclear if this happened before takeoff or during the accident. Additional testing concluded that considerable force would be required to disengage the elevator hook at high speed on the ground.

Investigators found a pair of broken sunglasses inside the airplane's throttle pedestal that impeded the gust lock sheave movement and halted the gust lock handle's travel before reaching the full down position. Further testing revealed there were multiple ways the sunglasses could have partially restricted the movement of the gust lock sheave.

Finally, the docket notes an item in the GIV Line-Up checklist reminding crews, "At sixty (60) knots, the pilot shall confirm the elevators are free and the yoke has reached the neutral position. If the Flight Power Shutoff Handle (valve) is pulled at rotation due to a flight control problem, high pull forces will be required to achieve the takeoff attitude. There will be a delay in airplane rotation and, once airborne, a push force will be necessary to maintain the climb attitude. Application of forward trim will be required shortly after becoming airborne. To avoid running out of forward trim, reduce speed as necessary." ❑

FAA KEEPS SMALL-AIRCRAFT EXEMPTION RUNNING FOR 44 YEARS

The FAA is extending NBAA's "Small Aircraft Exemption" through March 31 next year. The extension, granted on March 20, continues an exemption that has been in place since 1972. But this year's extension is for only one year; in many of the past years the FAA granted two-year extensions. Further, NBAA said the FAA is exploring the possibility of removing certain limitations for operations conducted outside the U.S.

The exemption, 7897G, permits operators of piston aircraft, small airplanes and helicopters to use certain cost-sharing options contained within Part 91 Subpart F of the Federal Aviation Regulations. NBAA cites as examples the carriage of a guest aboard a company aircraft or the use of an aircraft by a subsidiary company. It also covers time-sharing, interchange and joint-ownership agreements, and it permits certain alternative maintenance options.

Part 91 Subpart F otherwise would limit the cost-sharing options to use of aircraft weighing more than 12,500 pounds, multi-engine jets (no size limitations) or aircraft used in fractional programs (again, no size limitations). The exemption applies only to NBAA members and does not apply to use of aircraft under Part 135 or in fractional programs.

Noting that many small aircraft fly to international destinations, NBAA has asked the FAA to remove limitations on the use of the exemption for operations outside the U.S. The agency is reviewing whether such a move would comply with International Civil Aviation Organization standards, NBAA said.

The exemption was last extended in 2013 for two years. While most of the exemptions have covered two years, not all have. In 2012 the FAA granted a one-year exemption. But NBAA was not as concerned about the one- or two-year differential, saying the FAA has supported its continuation over the years and has even moved to provide a little more flexibility.

"NBAA is pleased that the FAA continues to recognize the importance of this tool to NBAA member business aircraft owners seeking to maximize the efficiency and usability of a small aircraft," said Doug Carr, NBAA's vice president of regulatory and international affairs.

The exemption originally carried the designation 1637 but in 2002, after it had reached the designation 1637U, the FAA switched to the new number. *–K.L.*

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Piper unveils M series

by Amy Laboda

Piper Aircraft president and CEO Simon Caldecott delivered a 1-2-3 punch of energy to the sub-6,000-pound general aviation market on April 13 when he introduced the M series of piston and turboprop singles (formerly the PA-46 series) and a new flagship at a celebration at the company's 750,000-sq-ft manufacturing plant in Vero Beach, Fla. The M series starts at $1.1 million and ranges upwards to a little less than $3 million for a fully loaded top-of-the-line model.

First to be undraped was the M500, formerly the Meridian, featuring the leather interior (complete with USB and AC power ports) that Boston-based Blokx Design created for the full M series. The upgrade is in addition to the improvements announced in January. Those upgrades were necessary to bring it up to par with the two new M-series airframes. Each of the M series sports a full Garmin glass cockpit; digital capacitive fuel quantity sensors; digital pressurization; Aspen Avionics EFD1000 standby flight instruments; electronic stability control; auto go-around function; and stall protection. Iridium connectivity is an option.

While the M600 bears a resemblance to the Meridian, it sports a new, cleaner wing with mini-winglets.

M350

Next to be unveiled was the smaller, piston-powered M350 (formerly Mirage), a six-seat, 350-hp Lycoming TIO-540-AE2A-powered single capable of 213 knots max cruise and a range of 1,343 nm for $1.15 million. Caldecott said Piper's engineers have revamped this pressurized airplane by maximizing the functionality of its Garmin G1000 avionics. "We have added electronic stability protection, underspeed [stall] protection and automatic level mode... and both the M350 and the upcoming M600 can now safely fly unassisted to lower altitudes in the rare case that the pilot is non-responsive at high altitudes," Caldecott said.

Some recent high-profile accidents were caused by hypoxic pilots who either flew the aircraft outside its envelope or simply fell unconscious and stopped flying the aircraft altogether. The M350 is often the first pressurized aircraft pilots fly into the flight levels, so Piper created a stability safety zone for it that is more than just a "level up" button on the panel (similar to the Garmin-based Cirrus Perspective product). Combating loss of control, the autopilot polices the aircraft envelope, insistently nudging it back into safe flight parameters. It won't let the aircraft stall, either, taking over and pushing the nose down, which should inspire the pilot to add power. (Without input the aircraft will drift down in an unstalled, controlled state. There is no autothrottle.)

Hypoxia prevention is integrated in the G1000 with a pilot-worn pulse oximeter and a carbon monoxide warning system, but that is just the passive side of the mechanism. Above

Piper unveiled the M500 in January and last month revealed a special edition version that offers options for upgraded cabin and cockpit interiors.

14,900 feet msl, if the system does not "sense" the pilot at the controls every few minutes it cues the pilot with the question, "Are you alert?" If the pilot does not answer correctly the autopilot takes the aircraft to below 14,900 feet msl, then asks the question again, demanding pilot input. If it receives no input, it will complete the controlled descent to about 12,000 feet msl and ask again. A similar emergency descent mechanism (EDM) is an option on Cirrus aircraft equipped with the Garmin GFC 700 autopilot. Caldecott announced that the M350 received its FAA certification on April 13.

M600

Finally, Caldecott pulled the cover off what he described as a clean-sheet airframe that will cap the M series properly. The Piper M600 turboprop is not a Meridian, but to look at it there is no question from whence it came. It is also clear at first glance, however, that the M600 sports a different wing: gone are the vortex generators littering the top surface; also gone are the extended swept-back leading edges at the roots; and new wingtips are twisted up into mini-winglets. Beyond that the new wing holds more fuel, promising more range. Powered by a Pratt & Whitney Canada PT6A-42A flat-rated to 600 shp, the M600 carries up to six people at a maximum cruise speed of 260 knots; max range is 1,300 nm with 45 minutes reserve. Its maximum payload is 1,200 pounds, and full fuel is 1,768 pounds. With all the seats filled it can still go 1,000 nm, a considerable bump over the M500, whose PT6A-42A is flat-rated at 500 shp and fed by a maximum of 1,156 pounds of fuel.

In the M600 panel there is a triple-screen Garmin 3000 suite paired with dual GTC 570 touchscreen controllers, backed up by the Aspen Standby 1000EFD. The additional performance provided by the wing and engine, combined with the safety features of the GFC 700 autopilot with enhanced automatic flight control system (AFCS), hypoxia prevention and EDM, ADS-B in/out and onboard radar, make the M600 a capable aircraft for a base price of $2.82 million. For passengers, its cabin comfort and richness are on par with larger aircraft. The interior features ergonomic seating with integrated lumbar support and some adjustability of the recline angle. Side panels hide retractable lightweight, laminated woodwork tables.

"Our customers and dealers asked for an aircraft with more payload and range," said Caldecott during the unveiling. "We listened and we delivered. With the advent of the M600, we have given our customers an option to travel nonstop from New York to Florida," he said.

Piper expects to receive FAA type certification for the M600 in this year's fourth quarter, in time for deliveries to start next year. So far, the aircraft has logged 800 hours of flight-testing over 470 flights. "The first 12 months' production of the M600 is fully allocated to our worldwide dealer network," said Caldecott. ❑

TSA working to address GA issues

by Kerry Lynch

Despite continual change at the Transportation Security Administration (TSA), the agency has remained focused on several key general aviation initiatives and is working closely with industry groups to see that they move forward. At least one of those issues, access to Ronald Reagan Washington National Airport (DCA), has started to gain momentum.

The TSA's General Aviation Branch has undergone a series of leadership changes in recent years. But those senior officials, including Zach Carder, Kerwin Wilson and Brian Delauter (all of whom have either left the agency or moved on to different roles), laid a foundation for collaboration with industry on general aviation issues.

While that effort continues under the management of the TSA's Kevin Knott, Congress passed a bill in December that requires continued TSA collaboration. That bill, the Aviation Stakeholder Participation Act, directs the TSA Administrator to consult with an aviation advisory committee on security matters. The committee is to represent a spectrum of industry, including general aviation. A primary venue for this collaboration is the Aviation Security Advisory Committee (ASAC), which had reactivated in recent years and most recently renewed its charter six months ago. Jens Hennig, vice president of operations for the General Aviation Manufacturers Association and chair of the ASAC's general aviation working group, said the TSA has tasked the ASAC to work on a number of issues, from DCA access to airport security guidelines and flight training.

Access to Reagan National

Access to DCA has been a priority for the TSA, which in recent years has chipped away at some of the more onerous requirements in the DCA Access Standard Security Program (DASSP). The TSA has reduced the number of prohibited items and changed advance notice requirements for crew. It also altered the background checks and significantly expanded the number of gateway locations to nearly 100.

But business aircraft traffic has flattened out at the lone fixed-base operation at DCA, remaining at roughly six to seven operations daily, depending on the day and time of year. Industry leaders point to a requirement to carry an armed security officer (ASO) on board as the single largest obstacle to improving access to DCA and increasing traffic there.

TSA officials have long promised to address this. Wilson had hoped to have an alternative to the ASO in place by the end of 2013. But before the year ended, he had moved out of the GA Branch.

After Wilson departed, Charlie LeBlanc, vice president of security services for Frontier-Medex and founding member of the NBAA Security Council, had expressed frustration at the turnover, telling **AIN** "Just when we get traction with TSA the staff and leadership changes."

But he was encouraged that the industry had gathered sufficient data to support the notion that Part 91 aircraft did not need ASOs and that it had developed alternative solutions. Carder, who stepped in as engagement leader after Wilson left, told the National Air Transportation Association Air Charter Summit last summer that the agency was considering alternatives to

eliminate the requirement, such as extra vetting.

The TSA tasked the ASAC to collaborate with the agency on the program. "The ASAC continues to review different GA security programs and has identified several streamlining opportunities," Hennig said. "One program on the docket for this year's work is the DASSP and the long-debated requirement to have an ASO on board."

But instead of looking at an alternative to the ASO requirement, the agency had asked the ASAC to consider its elimination. Such a move would require careful coordination with other government agencies with security interests, such as the Secret Service.

Hennig noted, however, "A number of things have changed since the ASO requirement was introduced a decade ago, including the requirement for ASOs on airliners at DCA. Also, the DASSP has proved itself as a program that achieves the government's security objectives."

The issue was so important to the TSA that the agency asked the ASAC to act quickly on a measure to support the elimination of the ASO requirement from the DASSP and to support TSA coordination with other agencies on the issue. The ASAC originally had planned to address the issue in May, but the TSA asked the group to vote on it instead in February, saying the ASAC signoff would be helpful with interagency coordination, according to minutes of the meeting. The ASAC readily agreed, unanimously approving it.

"I think there is opportunity to make some real headway on this issue this year," Hennig said.

Beyond DCA

The ASAC is also looking at flight training. Vetting of foreign nationals has been an enduring concern for the flight training community since 9/11. The TSA provided some relief on the requirements when it took over background checks that formerly were handled by the Department of Justice. But the industry has been meeting requirements of an interim final rule that was issued more than a decade ago and clarified numerous times.

Working toward a final rule will enable the agency to clean up a number of technical issues that have arisen from the requirements over the past decade, Hennig said. A key goal of industry officials is to ease the paperwork requirements, particularly for "known" pilots so they don't have to undergo a full process for each time they undergo current/recurrent training, he said.

The TSA further is working with the ASAC on revising general aviation airport guidelines that were assembled not long after 9/11. The industry has changed substantially since then and practices have evolved, Hennig said. New security programs have been implemented and new security requirements adopted since the guidelines were released.

The TSA, meanwhile, is continuing to work at ways to ease temporary flight restrictions. The agency can do little to limit the number of TFRs, but the industry is working with the TSA to introduce earlier notification about TFRs so as to make violations less likely. The TSA has worked on gateways and alternate airport possibilities, but industry groups are still pushing for easier access for operators with approved programs such as DASSP.

Despite its open collaboration on a number of these issues, the TSA remains quiet on the large aircraft security program. The agency has long stated that it is planning a supplemental notice of proposed rulemaking, and it remains on the agency's regulatory agenda. In fact, the agenda suggests a proposal could be out this summer. But that seems unlikely, and most observers don't expect to see such a proposal any time soon. ❑

2015 • Europe, Middle East, Asia, Africa

AIN FBO SURVEY

Data compiled by David Leach; narrative by Curt Epstein

Hawker Pacific Flight Centre, Sydney

In many regions traffic remains stalled, but glimmers of hope emerge

While business aviation traffic in North America has picked up over the past year, the story for the rest of the world isn't as clear, with activity in many regions remaining mired. "We've become a delinked market," noted Richard Aboulafia, vice president for analysis at Teal Group. "The U.S. is doing acceptably well, and elsewhere [activity is] disappointing." Over the past year, usage of U.S.-registered business jets helped to bolster the international market, according to FAA statistics. While the U.S. business jet fleet saw approximately the same number of operations last year (4,285,910) as in 2003 (4,235,910) the percentage of international operations over that span went up by 37 percent, to a record 708,872 last year.

According to Aboulafia, the situation at present represents a nearly complete reversal from 2008 and the start of the global economic downturn. Back then, hope for industry recovery lay in large-cabin jets and emerging markets such as the BRIC nations (Brazil, Russia, India and China). This year, a North American-based recovery is fueling the industry, while each of the BRIC nations is experiencing conditions that hamper business aviation growth.

BRIC Growth Slows

The recent downturn in oil prices might be having some effect on that, in Brazil, Russia and China. According to analysis by Bank of America Merrill Lynch Global Research, one-fifth of the large-cabin business jet fleet worldwide may have been funded by the oil industry, with approximately half of the in-service fleet based outside the U.S. "In my view, utilization of big-cabin jets is just going to come down," noted industry analyst Brian Foley, president of Brian Foley Associates, "particularly internationally, because that's where all the activity was–in emerging markets going after these natural resources."

That said, FBO operators in Brazil–home to the world's second largest fleet of business aircraft–saw last summer's hosting of the world's largest sporting event as an opportunity to attract new customers. "The last year was atypical, thanks to FIFA World Cup," said Cynthia de Oliveira, managing director of operations for Lider Aviação, the country's largest business aviation services provider. "We noticed in general a decrease of 10 percent on domestic flights and an increase of 17 percent on international flights."

Overall during the tournament, 2,839 aircraft from domestic locations were granted 21,537 slots; and 635 foreign aircraft were granted 1,518 slots, a tally that is not likely to be exceeded until next year's Summer Olympic Games. Yet infrastructure–and other–challenges remain. "Look at Brazil and its problems right now. [They are] oil-related," Foley told **AIN**. "As such I would expect FBOs in that country to be feeling the effects already, and it will certainly continue this year."

By contrast, Foley expects traffic at Mexican FBOs to climb, as a result of their proximity to the U.S. "Even though Mexico has a strong oil component, it's also a fact that the U.S. is Mexico's strongest trading partner and as such it will be drawing on the coat tails of the U.S. and have a pretty good go at it this year."

In Europe, the industry has certainly been hampered by geopolitics. While Russia had been a growth area, business aviation traffic between it and Europe is down by 8 percent over the past year, according to statistics provided by Eurocontrol. That decline is attributed in part to the disagreements over the handling of the crisis in Ukraine. "The ones that will feel it the most in the business aviation world will be the charter operators that used to have a nice healthy business going back and forth between someplace in Europe and Russia and the FBOs," Foley said. "Those were pretty long trips in pretty big airplanes that needed a lot of services." Unlike at North American FBOs, at most international

Top Rated FBOs in Europe, Middle East, Africa and Asia-Pacific

FBO	Airport	Airport Code	Line Service	Passenger Amenities	Pilot Amenities	Facilities	CSRs	Overall Average
TAG Farnborough Airport	Farnborough	EGLF	8.7	9.3	9.1	9.4	8.9	9.1
Universal Aviation	London Stansted	EGSS	9.4	8.8	8.9	8.5	9.2	9.0
ExecuJet Europe	Zurich	LSZH	8.8	9.0	8.8	8.9	9.1	8.9
Aviapartner	Nice Cote D'Azur Int'l	LFMN	9.0	8.7	8.4	8.6	9.0	8.7
Jet Aviation	Geneva International	LSGG	8.5	8.8	8.5	8.9	8.9	8.7
TAG Aviation	Geneva International	LSGG	8.4	8.8	8.5	8.4	8.6	8.6
Dassault Falcon Service	Paris Le Bourget	LFPB	8.8	8.0	7.8	8.3	8.4	8.3
Hong Kong Business Aviation Centre	Hong Kong Int'l	VHHH	8.3	8.4	8.0	8.3	8.6	8.3
Landmark Aviation	Paris Le Bourget	LFPB	8.5	8.1	8.0	8.4	8.5	8.3
Swissport Executive	Nice Cote D'Azur Int'l	LFMN	8.6	8.1	8.2	7.8	8.7	8.3
Universal Aviation	Paris Le Bourget	LFPB	8.9	8.0	7.9	7.9	8.8	8.3
Harrods Aviation	London Luton	EGGW	7.9	8.4	8.0	8.1	8.4	8.2
Signature Flight Support	Paris Le Bourget	LFPB	8.3	8.4	7.5	7.8	8.4	8.1
Hawker Pacific Flight Centre	Sydney Kingsford Smith	YSSY	8.4	7.9	8.0	7.4	8.5	8.0
Landmark Aviation	Nice Cote D'Azur Int'l	LFMN	7.6	7.9	8.2	8.0	8.4	8.0
Jet Aviation	Zurich	LSZH	7.5	7.8	7.5	7.5	7.7	7.6
Jetex Paris FBO	Paris Le Bourget	LFPB	7.8	7.9	7.6	7.2	7.5	7.6
Signature Flight Support	London Luton	EGGW	8.2	7.6	7.1	7.0	7.8	7.6
VIPPort Vnukovo-3	Moscow/Vnukovo	UUWW	6.1	7.1	5.1	5.8	5.6	6.0

** Ties are listed alphabetically by FBO names.*

FBOs profits are tied not to fuel sales but to à la carte aircraft services, and a declining volume of aircraft handled takes a toll on the location's bottom line.

Several factors are causing fluctuations in traffic levels at Italian airports, according to Carlo Panerai, president of Florence-based FBO and charter company Delta Aerotaxi and founder of the ItalyFBO group. "We have seen an 18- to 20-percent reduction in the number of Russian aircraft, but at the same time traffic from the U.S. is surging back," he told **AIN**. He indicated that intra-European traffic levels have remained about the same overall.

European business aviation traffic declined by half a percentage point over the past year, according to Eurocontrol, despite a fall-off of nearly 40 percent in 2014 in Ukraine, as operators give the nation a wide berth after the downing of a jetliner last summer. Among Europe's top 50 business aviation airports, 26 saw departures decline year-over-year and 24 saw gains, according to data compiled by industry information provider WingX Advance. Indeed, even in a sample size as small as the top five airports, Le Bourget and London Luton saw slight gains in traffic, while Geneva and Moscow Vnukovo saw declines. Nice Cote d'Azur remained virtually static last year.

The Picture for China and Africa

For the remainder of the world, the picture varies depending on the source, as trip-support providers such as Universal Weather & Aviation and UAS note different regional strengths. "Traffic in the Americas is steady; Europe is steady, but travel to Africa and the Middle East is slightly elevated," noted UAS executive vice president Jay Husary, who said his company's customers seem to be flying more this year. "The biggest growth, however, is clearly in Southeast Asia." While Asia is starting from a much lower level of activity, according to WingX all 10 of the busiest business aviation destinations logged gains in their international traffic, led in volume by Hong Kong International, up 17.8 percent year-over-year along with a 26-percent rise in fuel uptake.

While Universal reported handling 10 percent more flights to China, political concerns there have curtailed domestic use of private aircraft over the past year. "We're seeing a bit of a quieting down with China at the moment," said Jonathan Howells, Universal's senior vice president, international. "There are some campaigns from the Chinese government at the moment that make ownership of business aircraft a bit challenging for some owners, so they are tending not to fly or to fly commercially." The country is still seeing growth in its FBO infrastructure, with Deer Jet, the country's largest private aviation company, adding several locations over the past year.

For Universal, it is Africa that is seeing strength. "We've seen at least 10 percent more traffic into the African continent," Howells told **AIN**. "A lot of the oil companies were driving that; obviously… the price of oil will really have impacted some of that traffic and some of those locations, but Africa has been a positive growth area." Howells added that proper ground handling on the continent remains a challenge.

"Customers based in the U.S. are often surprised by how little FBO infrastructure exists in developing countries," said UAS's Husary. "However, we keep seeing new, bigger and more beautiful FBOs being built around the globe, a trend that will continue."

While no Middle Eastern FBOs received enough evaluations for consideration in this year's survey, traffic to the region remained steady, with Israel's Ben Gurion Airport seeing the most international departures (nearly 3,000, according to WingX). Dubai International Airport's approximately 800 departures to Europe and North America last year represented a gain of 130 percent over 2013 numbers. "I don't think there is any rapid growth going on," said Howells of the region. "I don't think there is any rapid decline there at the moment. Flat is the new growth, right?" ❑

FBO SURVEY RULES AND METHODOLOGY

This report of **AIN**'s 2015 FBO survey covers fixed-base operations in Europe, the Middle East, Asia and Africa–in other words, the Eastern Hemisphere. Last month's report covered FBOs in the Western Hemisphere.

AIN has been conducting surveys asking about the service that FBOs provide their customers and publishing reports of the results from these surveys since 1981. Initially, **AIN** sent out a paper survey questionnaire by mail to qualified subscribers in the U.S., these being pilots, flight attendants and dispatchers–the people who use or make arrangements with FBOs. In later years, qualified subscribers in the rest of North America and the rest of the world were added.

In 2006, **AIN** moved the FBO survey online. **AIN** has continued to add more and more FBOs each year and now offers our respondents a comprehensive list of more than 4,500 FBOs worldwide. Via e-mail and announcements in **AIN**'s e-newsletters, **AIN** invited all qualified subscribers to participate in the survey. Each invitee receives a discrete code to enter the survey website, to prevent individuals from filling out the questionnaire more than once.

The questionnaire asks readers to evaluate FBOs they visited the previous year in five categories: line service; passenger amenities; pilot amenities; facilities; and customer service representatives (CSRs). For each of these categories, the participant is asked to assign a number from 1 to 10, one being the lowest and 10 being the highest.

To arrive at the averages for the categories, each FBO's ratings in each of the five categories are added separately and the resulting five sums are then divided by the total number of responses received for each respective category.

An FBO's overall average is calculated by adding all the individual category ratings received by that FBO and dividing the resulting sum by the total number of all category ratings received by the FBO. In other words, if a particular FBO was evaluated by 50 people (and assuming that all these 50 evaluators gave that FBO a rating in each of the five categories), then the FBO would receive a total of 250 category ratings. These 250 category ratings are added together and then the sum is divided by 250 to arrive at the overall average for this FBO. *–D.L.*

Top-ranked FBOs

by Curt Epstein

While the scores for international FBOs tend to lag those given to North American locations, the service providers most highly regarded by **AIN**'s readership are starting to close the gap, with two scoring 9.0 or higher in this year's survey. In all, 15 locations earned overall ratings of 8.0.

TAG Farnborough

London, UK

9.1

TAG Aviation Farnborough once again landed on the top of the hill in this year's international FBO survey and is the only international FBO to receive an overall score higher than nine, achieving a rating of 9.1, as it has the last two years. Given that TAG owns the dedicated business aviation airport, its FBO is the only service provider there, and the facility handled nearly 25,000 aircraft movements last year, a gain of 5.6 percent, according to airport CEO Brandon O'Reilly. His numbers suggest that TAG Farnborough is serving more than a third of the entire London business aviation market. This year has gotten off to a fast start at Farnborough as well, with 42 percent more bizliner movements than in the first two months of last year, continuing a trend O'Reilly has noted over the past few years; visits by ultra-long-range business jets are up by 9 percent.

The location is home to 45 aircraft, sheltered in two hangars providing 240,000 sq ft of space.

TAG Farnborough earned top scores this year in both the passenger and crew amenity categories, offering concierge service, direct ramp access for customer vehicles, crew lounge with snooze rooms, conference rooms and an onsite hotel. Recently introduced is "drive-through" immigration clearance for those flights that are not met upon landing by a Border Force agent.

TAG Aviation, Farnborough

The location also earned a 9.4 for its facilities, the highest category score awarded by our readers this year. In an effort to dedicate even more space within the terminal to customers, over the past year the location's administrative staff moved to a new location within the Farnborough Business Park. The reclaimed 12,000 sq ft of space will be used for upgrades such as additional lounge space and a crew gymnasium. The company is also in the process of introducing a "fast track" airport entrance for the exclusive use of passengers and crew. "The ongoing investment underpins our commitment to enhance facilities and services, maintaining our position as Europe's leading business aviation airport," O'Reilly told **AIN**. Since taking over control of the airfield from the UK's Department of Defense more than a decade ago, TAG has invested in excess of $150 million in infrastructure at Farnborough.

CONTINUES ON NEXT PAGE

Universal Aviation, Stansted

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Universal Aviation

London Stansted, UK

9.0

Universal Aviation's location at London Stansted has seen 10 percent more business over the past year, a boost the company attributes in part to its around-the-clock operations. "The main thing we tend to find that's driving business at Stansted is that it is a 24/7 airport," noted Jonathan Howells, Universal's executive vice president for international operations. "The only other 24/7 airport in the London area is Luton, and we're hearing from a lot of our customers that they're finding Luton quite congested."

Universal has been in operation at Stansted for more than 30 years, and its 10,712 sq-ft standalone facility underwent an extensive refurbishment in 2013. The company has no immediate plans to expand on those recent improvements. "You can build a Taj Mahal," Howells told **AIN**. "The challenge is that a lot of our customers really don't spend very much time in our facility at all. They want to get from aircraft to car as quickly as possible, and the same in reverse." Toward that end, passenger vehicles can meet arriving aircraft rampside, and be escorted through a secure gate.

This past year the location doubled its ramp space to approximately 40,000 sq ft. Line service staff at Stansted undergo both NATA Safety 1st line service training as well as in-house training to Universal's ground handling operations manual. That attention to safety clearly was noticed by **AIN**'s readership, which awarded the location a 9.4 in line service, the highest individual category score among international FBOs this year. (TAG Aviation received a 9.4 for facilities.) The location, which is also home to Universal's European operations center, garnered the highest individual score for customer service representatives. Through its Air Culinaire subsidiary, Universal provides private aviation catering to all the area airports from a kitchen at the Stansted facility.

The Universal FBO is one of five service providers at Stansted.

ExecuJet Europe

Zurich, Switzerland

8.9

ExecuJet operates 19 FBOs around the world, and **AIN**'s readers gave the highest rating to its facility at Zurich International Airport, which advanced by 1.4 points since the last survey. The company has had a presence there since 2003, when it took over the former Signature Flight Support/Zimex facility. The 5,000-sq-ft terminal features passenger and pilot lounges, crew briefing rooms, its own security staff

CONTINUES ON PAGE 24

ExecuJet Europe, Zurich

TOP AIRPORTS FOR DEPARTURES AND FUEL UPLIFT

	Airport	Departures	Percent change	Fuel uplift (U.S. gallons)	Percent change
North America	Teterboro, Teterboro, N.J.	66,700	4.9%	36,828,000	6.5%
	Love Field, Dallas	30,800	6.2%	9,973,000	4.4%
	Westchester County, White Plains, N.Y.	30,300	1.7%	14,419,000	3.8%
	William Hobby, Houston	29,700	5.0%	9,642,000	6.8%
	Dulles Int'l, Washington, D.C.	25,800	-2.7%	10,527,000	0.9%
	Palm Beach Int'l, West Palm Beach, Fla.	25,800	3.8%	11,730,000	3.5%
	McCarran Int'l, Las Vegas	25,000	3.3%	10,180,000	2.9%
	Centennial, Denver	24,400	8.8%	7,716,000	13.4%
	De-Kalb Peachtree, Atlanta	23,100	4.6%	5,627,000	4.6%
	Van Nuys, Van Nuys, Calif.	21,300	14.3%	10,917,000	17.3%
Europe	Le Bourget, Paris, France	25,800	1.7%	14,299,000	0.6%
	Geneva, Geneva, Switzeralnd	17,600	-3.5%	8,392,000	-6.1%
	Nice Cote d'Azur, Nice, France	15,800	0.4%	9,522,000	3.1%
	Luton, England	13,900	6.3%	13,285,000	9.5%
	Vnukovo, Moscow, Russia	12,400	-2.6%	13,397,000	-2.6%
	Zurich, Switzerland	11,100	-1.5%	5,399,000	10.1%
	Farnborough, England	11,400	7.8%	8,240,000	7.5%
	Linate Int'l, Milan, Italy	10,000	1.1%	3,580,000	8.1%
	Ciampino-G.B. Pastine Int'l, Plena, Italy	8,800	-1.6%	3,787,000	1.3%
	Vienna Schwechat, Austria	7,800	0.4%	2,937,000	3.1%
Latin America	Lynden Pindling Int'l, Nassau, Bahamas	7,500	6.3%	3,240,700	14.1%
	Marsh Harbour Int'l, Abaco, Bahamas	2,500	15.6%	652,400	28.7%
	Providenciales Int'l, Turks and Caicos	2,400	13.3%	1,580,100	21.4%
	Simon Bolivar Int'l, Caracas, Venezuela	2,200	-8.4%	2,040,900	10.3%
	Los Cabos Int'l, Los Cabos, Mexico	2,200	-14.9%	1,478,100	-14.1%
	L.F. Wade Int'l, Bermuda	2,100	6.8%	1,681,900	17.5%
	Princess Juliana Int'l, Saint Maarten	2,100	6.8%	2,466,000	6.7%
	Luis Munoz Martin Int'l, San Juan, Puerto Rico	1,700	10.4%	1,130,900	4.3%
	Adolfo Lopez Mateos Int'l, Toluca, Mexico	1,600	12.8%	1,630,400	106%
	Luis Ribas Dominicci, San Juan, Puerto Rico	1,500	6.5%	415,000	9.9%
Middle East	Ben Gurion, Tel Aviv, Israel	2,800	9.3%	1,005,000	21.3%
	Beirut Rafic Hariri Int'l, Beirut, Lebanon	2,000	3.6%	484,000	4.6%
	King Khalid Int'l, Riyadh, Saudi Arabia	1,300	16.3%	1,081,000	15.6%
	King Abdul Aziz Int'l, Jeddah, Saudi Arabia	1,300	-3.9%	540,000	0.9%
	Dubai Int'l, Dubai, United Arab Emirates	800	130.1%	1,090,000	128.4%
	Al Maktoum Int'l, Dubai, United Arab Emirates	700	-13.3%	554,000	-17.0%
	Nevatim AB Be'er Sheva, Israel	700	-42.2%	245,000	-21.3%
	Abu Dhabi Bateen, Abu Dhabi, United Arab Emirates	600	-18.5%	468,000	-30.4%
	Hamad Int'l, Doha, Qatar	500	16.3%	1,108,000	15.4%
	Marka Int'l, Amman, Jordan	500	4.2%	156,000	0.7%
Asia-Pacific	Capital, Beijing, China	300	1.1%	1,246,800	7.0%
	Hong Kong Int'l, Hong Kong	200	17.8%	1,186,700	26.0%
	Haneda Int'l, Tokyo, Japan	200	7.0%	995,100	4.5%
	Indira Gandhi Int'l, New Delhi, India	200	5.7%	596,100	-9.5%
	Ibrahim Nasir Int'l, Maldives	100	39.4%	671,700	60.1%
	Chhatrapati Shivaji Int'l, Mumbai, India	100	10.5%	518,900	18.2%
	Pudong Int'l, Shanghai, China	100	8.2%	500,400	17.4%
	Narita Int'l, Tokyo, Japan	100	6.1%	376,900	12.7%
	Kansai Int'l, Osaka, Japan	100	22.4%	314,400	34.1%
	Gimpo Int'l, Seoul South Korea	100	21.6%	291,800	27.1%

Source: WingX Advance

ABOVE & BEYOND

AIN's survey asked respondents to identify specific employees or teams who routinely go above and beyond when it comes to customer service. The four people below were listed repeatedly. View the full list at ainonline.com/above-and-beyond-fbo-2015.

Person	FBO	Airport Code
Dick Smart	Platinum Business Aviation Centre	YBCG
Entire Staff	Signature Flight Support	EDDM
Roj Kulnaratana	MJets FBO	VTBD
Fabrice Malingre	Landmark Aviation	LFPB

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CONTINUED FROM PAGE 22

and onsite customs and immigration service. The location's 20,000-sq-ft hangar can shelter three large business jets such as a Falcon 7X simultaneously, along with two midsize jets. Aircraft parking is available directly in front of the FBO.

According to Mark Abbott, the company's group FBO director, traffic at the location grew by better than 5 percent over the past year, fueled in part by the annual boost from the World Economic Forum held in nearby Davos. During the event the ExecuJet staff handled more than 400 movements at Zurich and nearby Dübendorf military airfield, which was pressed into service to compensate for parking limitations at Zurich. One of three FBOs on the field, the Shell-branded ExecuJet facility operates a trio of 20,000-liter jet-A refuelers dedicated to serving its customers. The location is normally open from 5 a.m. until 10:45 p.m. every day, as the airport closes at night.

Nicole Gut, the company's director of European FBOs, noted that budget-conscious customers are becoming more evident. "The FBO business has become very price driven and the client is asking for more service at less cost," she told **AIN**. "This seems to be a trend in all our European locations."

All of the company's FBOs are in the process of complying with the International Standard for Business Aviation Handlers (IS-BAH), Gut added, with Zurich and Berlin expected to achieve certification before the end of next month.

Aviapartner Executive

Nice Cote d'Azur, France

8.7

Travelers to Europe's third-busiest business aviation airport, Nice Cote d'Azur, are virtually assured of being well taken care of, as all three of its FBOs earned recognition in this year's international FBO survey. Highest scoring among them in this year's voting was Aviapartner Executive, which shares an airport-provided general aviation terminal with its two competitors. With those constraints, Aviapartner distinguished itself in the two survey categories that are exclusive of its facility's physical structure: its line service and customer service representatives, earning 9.0 scores in each.

According to Pascal Matha, the facility's executive manager, the company, which operates the largest FBO network in France with nine locations, recently instituted new CSR training at Nice. Personalized service from its multicultural, multilingual team (58 full-time staff in the peak summer months) is available in French, English, Russian, Arabic, German, Italian and Portuguese. Its CSRs are supported by key account managers for the Russian and Middle Eastern markets who can adapt to and anticipate customer requests, such as helicopter reservations. Customs and immigration service is available at the 4,000-sq-ft terminal, more than one third of which is devoted to an executive passenger lounge (with a children's corner offering pleasant diversions), and a smaller, more private lounge. Crew needs are well accounted for as well, with three separate lounges/work areas, including a quiet sleep room.

The location's line service staff handles approximately 5,000 arrivals a year, and according to Matha the company is the only handler at Nice with the ramp equipment to handle any type of aircraft. The FBO, which is open 24/7, recently upgraded its airside transportation fleet to all new Mercedes vehicles, and last month saw the arrival of a new dedicated 9,500-gallon jet-A refueling truck. The location is home to four private jets, based in a separate private hangar.

Aviapartner Executive, Nice

Jet Aviation, Geneva

Other Frequented FBOs in the Eastern Hemisphere

FBO	Airport	Airport Code	City
Abelag Aviation	Brussels National	EBBR	Brussels
Business Flight Center	Helsinki-Vantaa	EFHK	Helsinki
Cannes Airport Handling	Cannes-Mandelieu	LFMD	Cannes
Capital Jet/CJet	Beijing Capital International	ZBAA	Beijing
Corporate Air Service (Delta Aerotaxi)	Florence Airport, Peretola	LIRQ	Florence
ExecuJet Middle East	Al Maktoum International	OMDW	Dubai
ExecuJet Middle East	Dubai International	OMDB	Dubai
Grafair Jet Center	Stockholm City/Bromma	ESSB	Stockholm
Jet Aviation	Dubai International	OMDB	Dubai
Jet Aviation	Dusseldorf International	EDDL	Dusseldorf
KLM Jet Centre	Amsterdam Schiphol	EHAM	Amsterdam
MJets FBO	Don Mueang International	VTBD	Bangkok
Signature Flight Support	Munich	EDDM	Munich
Universal Aviation	Shannon	EINN	Shannon
Universal Aviation	Sydney Kingsford Smith	YSSY	Sydney

** These FBOs, listed alphabetically by name, received nearly enough responses to qualify their ratings for this report.*

FBOs Showing the Largest Increase in Overall Average from 2014 to 2015

FBO	Airport	Airport Code	Overall Average 2015	Overall Average 2014	Change 2015-2014
ExecuJet Europe	Zurich	LSZH	8.9	7.5	1.4
Swissport Executive	Nice Cote D'Azur Int'l	LFMN	8.3	7.4	0.9
Signature Flight Support	Paris Le Bourget	LFPB	8.1	7.5	0.6
Hong Kong Business Aviation Centre	Hong Kong Int'l	VHHH	8.3	7.9	0.4
Dassault Falcon Service	Paris Le Bourget	LFPB	8.3	8.0	0.3
Landmark Aviation	Paris Le Bourget	LFPB	8.3	8.0	0.3

** Ties listed alphabetically by FBO*

Jet Aviation

Geneva, Switzerland

8.7

While Jet Aviation conducted a major refurbishment and expansion of its Geneva facility in 2013, the company says it is continually working to enhance the experience there for its customers, with further improvements planned for the crew lounge, adding more work space and expanding it to face the tarmac. The terminal currently offers three private passenger lounges and a bathroom/shower facility for passengers, while crews have a dedicated lounge with separate snooze room and massage chairs, along with a private bathroom with showers.

A presence at the airport for more than 45 years, Jet Aviation handled approximately 8,000 movements last year, more than the previous year's tally despite the overall decline in business aviation traffic to Geneva, said general manager Joao Martins. So far this year, Martins describes traffic as consistent with 2014, but he concedes the company has had to offer a lot of promotions to maintain that pace. There are 65 parking positions at Geneva but the actual number of aircraft that can be accommodated depends on the size of the aircraft. The company noted that parking restrictions and prior permission required (PPR) for landing remain issues there for users.

The FBO can handle virtually any aircraft up to and including a 747, and has more than 44,000 sq ft of hangar space. "We see a trend with customers moving to larger aircraft," said Martins. "They are also asking for more services and higher service standards."

The FBO has 20 employees and is staffed from 5:30 a.m. until 10:30 p.m. Its Part 145 service station is authorized to work on most Gulfstreams, the BBJ, Global Express, Hawkers, Falcon 50/900/2000 series, Citation 550/560/XL/XLS and the Nextant 400XTi, and provides 24/7 AOG service.

CONTINUES ON PAGE 26

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www.jetaviation.com/fbo

JET AVIATION
A GENERAL DYNAMICS COMPANY

CONTINUED FROM PAGE 24

TAG Aviation

Geneva, Switzerland

8.6

TAG Aviation's Geneva location improved on its score from last year's survey, as the company completed refurbishment of the facility in November. Along with the addition of 2,700 sq ft of space, the FBO now features two separate entrances for passengers and crew, which provides a smooth and discrete travel experience through the 6,575-sq-ft terminal, according to Franck Madignier, president of TAG Aviation Engineering and FBO Services.

The newly redesigned building has three passenger lounges, a pilot lounge with snooze room, 12-seat A/V-equipped conference room and a crew kitchen. Among its amenities are concierge service for ground transportation and accommodations, along with onsite Swiss and French customs and immigration. EASA and FAA Part 145 maintenance is available from the 65,000-sq-ft hangar. The FBO is home to approximately 20 aircraft ranging from Citations to a Global and claims more than half of the business aviation traffic among the four service providers at the airport, a share that worked out to more than 18,000 movements last year.

"Despite the reconfiguration phase of our facility, we have been able to keep the same market but have faced a slight decrease in traffic, partly because of slots and parking restraints," noted Madignier, who added the company is part of a working group at the airport attempting to improve access there for business aircraft.

Madignier noted that the location is seeing a greater percentage of large-cabin aircraft of late. Many of these arrive from destinations in Europe, and the numbers are up from Asia, the Middle East and the Commonwealth of Independent States, he said. To accommodate them, the facility has 10 acres of ramp parking.

Dassault Falcon Service

Paris Le Bourget, France

8.3

With seven (soon to be eight) service providers operating at Paris's dedicated business aviation airport, the competition is certainly fierce, as four locations there earned scores of 8.1 or higher in this year's **AIN** International FBO Survey, but with nearly a half century of operations at Le Bourget, Dassault Falcon Service (DFS) trumps them all in terms of seniority.

Starting from the early days of the company's business jets, the facility has grown to include a 16,000-sq-ft terminal with a passenger lounge offering a panoramic view of the apron and direct access to the location's four acres of ramp space. Recently added was a separate entrance for the FBO's customers, along with a secure car parking area for passengers and crew. This year, the company plans to renovate its crew lounge, adding showers and a snooze room. According to Bertrand d'Yvoire, head of Dassault's airline and FBO operations, "Our refurbishment project will modernize our FBO and make it more efficient, while keeping the classical touch that is highly appreciated by our customers."

Over the past year traffic at the airport was flat compared with 2013, but the FBO maintained its market share of approximately 10 percent (6,000 movements) of the airport's annual traffic. Like most of the highly rated international FBOs, the location is seeing more large-cabin aircraft. "It should continue in this direction in the context of globalization and the higher performance of new business jets," noted d'Yvoire. The airport is open for takeoffs from 6 a.m. until 10:15 p.m., but landings are permitted around the clock. DFS is staffed from 6 a.m. until midnight, with call-out available after hours.

The location has 65,000 sq ft of hangar space and is home to 11 aircraft, seven of them Falcons available for charter. Its maintenance center is one of the world's largest dedicated Falcon repair facilities, employing 40 technicians, and can perform virtually any maintenance on any Dassault aircraft.

Hong Kong Business Aviation Centre

Hong Kong International Airport, Hong Kong

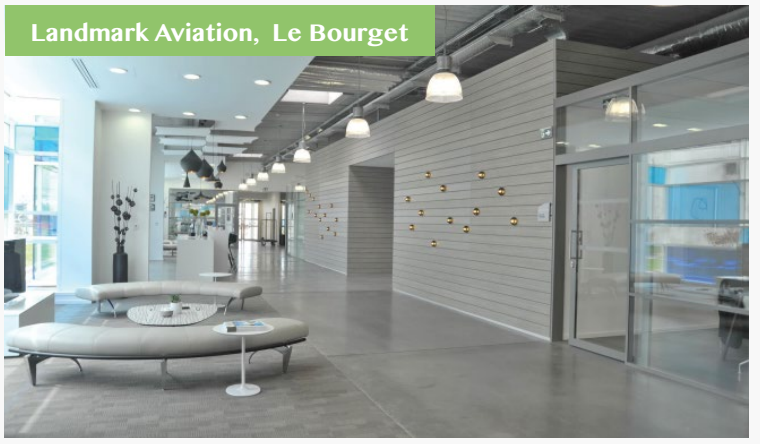
8.3

The only Asian FBO to rank among the top international locations in this year's survey, Hong Kong Business Aviation Centre (HKBAC) is the sole FBO on Hong Kong International Airport, and its score from **AIN** readers climbed to 8.3 this year from 7.9 last year. The FBO's business and services have been growing in tandem with the growth of Hong Kong itself since the facility opened in 1998, according to general manager Madonna Fung. Last year the FBO recorded double-digit growth in flight movements, and that level of activity has continued thus far into this year.

HKBAC is open 24/7 and was the first FBO in Asia to offer one-stop dedicated onsite customs, immigration and quarantine services. The approximately 67,000-sq-ft facility near the airport's south runway includes executive lounges, conference facilities, concierge and catering services as well as a newly expanded crew lounge and flight planning center where crewmembers can prepare, hold meetings and rest.

Hong Kong Business Aviation Centre

Landmark Aviation, Le Bourget



As it heeds the ever-increasing importance of superior customer service, the company cites its comprehensively trained staff as its biggest asset, especially when it comes to flexibility. "What makes our services unusual is that we entertain requests for ad hoc arrangements on short notice," Fung told **AIN**. "We also file flight plans for customers and provide coordinated one-stop services such as maintenance and special catering arrangements." Among the administrative services provided are arranging Chinese visas and landing permit applications.

The facility is home to more than 80 aircraft, and its three hangars encompassing more than 100,000 sq ft can shelter aircraft up to ACJs. For aircraft parking, HKBAC's apron covers 12 acres, and the company is currently concluding discussions with the airport authority to add even more capacity. Among the further improvements is the addition of fuel hydrants on the apron, which are awaiting final approval from the airport's fire services department. According to Fung, "the new hydrants will facilitate a timely customer-demand-centric into-plane service to accommodate dynamic business trip needs."

Landmark Aviation

Paris Le Bourget, France

8.3

Last year was a busy year at Le Bourget for Landmark Aviation. The Houston-based service provider moved from the terminal it had occupied since 2006 into a brand-new building in June. Located on the main avenue of the airport, the $4.1 million facility, just south of Landmark's former structure and nearly triple its size, offers more privacy for customers, including a conference rooms, larger passenger lounges, snooze room in the pilots' lounge and a prayer room. Unlike in the old 3,700-sq-ft terminal (which will be retained to provide client office space), passenger and baggage screening services in the new terminal will be discrete and unobtrusive.

Last year the location saw a 10-percent upswing in movements over 2013, a trend it expects will continue through this year, according to general manager Denis Bourgois.

CONTINUES ON PAGE 28

TAG Aviation, Geneva

Dassault Falcon Service, Le Bourget

Insights of Experience

from Pentastar Aviation

"I've met all kinds of inspiring people in aviation – I've shaken hands with three U.S. presidents out on the ramp. But overall, what really inspires me, and gives me the most satisfaction, is doing something that makes other people's lives easier. I'll do everything in my power to make sure our clients have the best experience, in every situation."

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Vice President,
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Thank you for voting Pentastar Aviation in the TOP 10% in the 2015 AIN FBO SURVEY. Your satisfaction is our success!

CONTINUED FROM PAGE 26

Landmark Le Bourget has a staff of 45 and is open every day from 5 a.m. until 11 p.m. with on-request fueling service available 24 hours a day. The company manages Esso's fuel farm and tanker trucks and fuels a large portion of aircraft at the airport.

Bourgois added, "The industry is starting to focus more and more on security, safety and customer service." Landmark's European locations participate in NATA Safety 1st line service training.

The location offers nearly five acres of ramp parking. One thing retained from the earlier facility is its 43,000-sq-ft heated hangar, which can shelter large-cabin business jets. Like most of the FBOs at Le Bourget, Landmark offers on-demand customs and immigration formalities.

Swissport

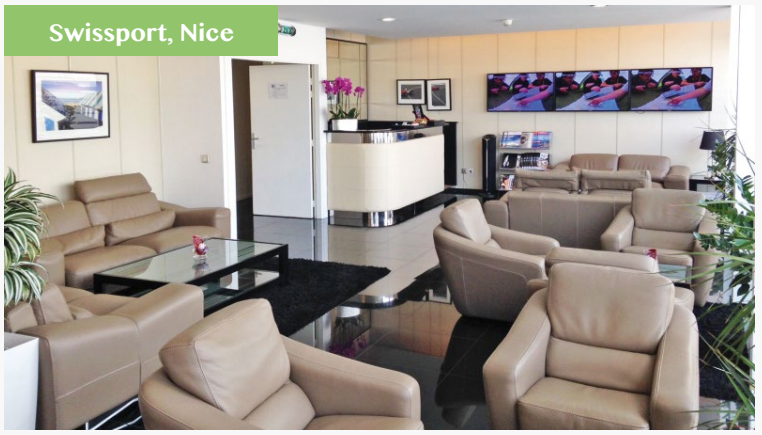
Nice Cote d'Azur International Airport, France

8.3

Swissport has been providing FBO services through its Swissport Executive Aviation brand since 2001, and its facility at Nice Cote d'Azur Airport (LFMN), operated as a joint venture with Universal Weather and Aviation, was the company's first private aviation location, followed later by a wholly owned facility in Cork, Ireland. The company also operates PrivatPort FBOs at Zurich, Geneva and Munich under a joint venture with PrivatAir.

One of three business aviation service providers at LFMN, Swissport claims approximately one third of the traffic, which totaled nearly 11,000 movements, according to recently named FBO director Rochdi Touri. The compact facility, at approximately 4,000 sq ft, is the same size as its competitors and contains a passenger lounge with a tarmac view, an operations center, six-seat A/V-equipped conference room and pilots' lounge. A crew snooze room is planned. The facility is open 24/7.

None of the FBOs at LFMN has its own dedicated ramp or aircraft parking area, with spaces first-come first-served among the three providers. Likewise, none of the providers has its own hangars. "The airport allocates several parking spaces for general aviation, and then when it starts to get too busy, they allocate commercial aircraft parking," said deputy


Swissport, Nice


Harrods Aviation, Luton

FBO director Rafaël Fromentin. "Today's aircraft are becoming larger and larger so it can be problematic at times," he added, noting peak periods of airport activity such as during the Monaco Formula One race. During the peak summer season, the facility's staff nearly doubles to 62 employees from 34. The company noted a strong start to this year fueled in part by a resurgence of U.S. traffic, and it expects to see a solid year despite the continuing crisis in Ukraine, which is limiting private flights from the region.

Universal Aviation

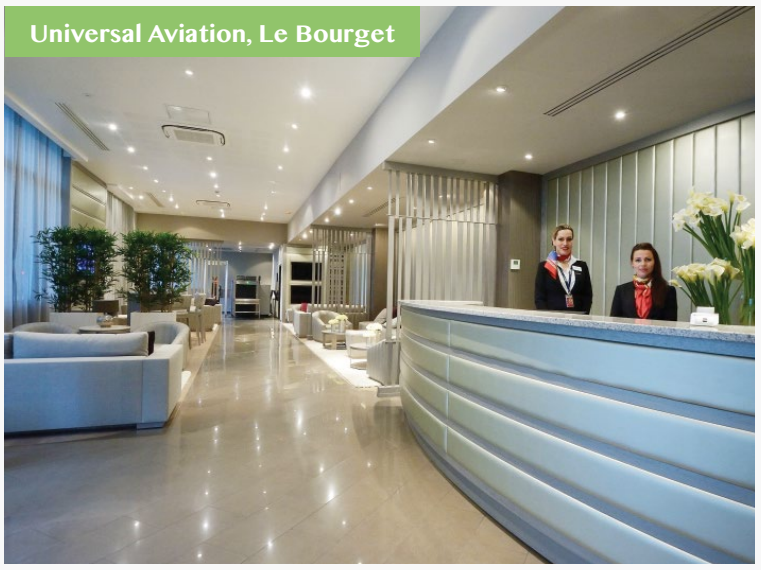
Paris Le Bourget, France

8.3

To celebrate 25 years at Le Bourget, Universal Aviation completed a $250,000 refurbishment of its 5,400-sq-ft facility last year, staging an official ribbon cutting in April. "We recognize the strategic importance Paris serves as a destination for business aviation operators and also the many ground support options they have at Le Bourget," said Jonathan Howells, the company's senior vice president for international operations. "As part of our ongoing program to further enhance our clients' experience on the ground at all of our locations, we have updated our historic FBO at Le Bourget with features and amenities our clients told us they wanted." Those improvements included renovated crew and passenger lounges, a business center, client meeting rooms and private passenger-screening facilities. Reflecting the many cultures and nationalities that converge on Paris, the FBO offers 1,947 digital newspaper titles in 57 languages from 97 countries. A prayer room is also available.

The location, which is open from 8:30 a.m. until 8:30 p.m. (after hours by callout), also added 130,000 sq ft of ramp parking space over the past year, bringing its total to more than seven acres. Universal's 32,000-sq-ft heated hangar can accommodate a pair of BBJs simultaneously, and it offers rampside customs and immigration clearance as well as UVair contract fuel. Like all of the company's 13 FBOs, it participates in NATA Safety 1st line service training as well as Universal's own proprietary safety training program.

Universal's catering subsidiary, Air Culinaire, operates its regional kitchen at Le Bourget, and representatives can meet arriving flights to arrange orders from an extensive menu, including special requests, with the crews.


Universal Aviation, Le Bourget


Signature Flight Support, Le Bourget

Harrods Aviation

London Luton, UK

8.2

Sharing the same name as the legendary London department store is no coincidence for Harrods Aviation, which has been part of the same company for the past 20 years. It operates FBOs at both London Luton and London Stansted and, according to sales and marketing director Will Holroyd, takes some cues from its famous retail sibling. "Our FBOs, as you would expect from Harrods, provide the highest level of customer amenities," he told **AIN**. At its Luton base, the company just concluded a year-long $600,000 interior redesign and upgrade. As part of the renovation, the lounges were refurbished with new furnishings and fittings, while the passenger screening areas were relocated from their original position in the passenger lounge to a more discreet location to enhance the privacy of arriving and departing passengers. New guest and baggage screening equipment was also added to ensure a swift departure on commercial flights.

The company saw a slight uptick in business aviation traffic at Luton year-over-year and is maintaining its market share of approximately 40 percent of that business, according to Holroyd, who noted the larger size of aircraft frequenting the facility. "To meet the demand to handle larger aircraft and [their higher passenger count], we have purchased a new airside mobile baggage screening vehicle," he said. Though the facility has 59,000 sq ft of hangar space–enough to accommodate aircraft up to a 757–and five acres of parking, Holroyd acknowledges that the influx of larger aircraft comes at a cost. "There is not unlimited space at Luton, and with larger aircraft parking for longer periods on the ramp, the number of aircraft we are physically able to handle drops," he said. "In years to come, and as locations like Luton remain as popular as ever for their proximity to London, aircraft operators will have to look elsewhere."

As Air Elite Global Network members, Harrods Aviation's entire staff, numbering more than 250 at the two locations, attended Ritz-Carlton customer service training over the past year.

Signature Flight Support

Paris Le Bourget, France

8.1

The fourth FBO at Europe's most active business aviation hub to earn recognition by **AIN**'s readers this year, Signature Flight Support is one of

CONTINUES ON PAGE 30

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AVFUEL

CONTINUED FROM PAGE 28

the largest hangarage providers at Le Bourget with more than 145,000 sq ft of storage spread over nine heated structures that can accommodate aircraft up to a Global. The location has nearly 10 acres of dedicated apron parking, along with another four acres available to accommodate jetliners up to 747s, along with the ground handling equipment to service them. Signature also owns a de-icing truck, making it independent in winter weather. Its terminal is open from 6 a.m. until 10 p.m. (call-out service available) and offers 24/7 rampside customs and immigration clearance.

Courtesy car service whisks customers from the ramp directly to the customized security area for passenger and baggage screening, en route to the passenger lounges, which feature en suite bathrooms and shower facilities. The air-conditioned terminal has an executive bar area, A/V-equipped conference rooms with seating for up to 30 people, a private prayer room, individual crew snooze rooms and pilots' work lounge with large-screen television and cable programming. Dedicated car parking is available for customers and crew. There is also a separate limousine drivers' lounge and onsite catering. Fuel is available on request from Exxon, Shell or Total.

Hawker Pacific Flight Centre, Sydney

Hawker Pacific Flight Centre

Sydney Kingsford Smith International, Australia

8.0

Proof that FBO facilities don't have to be large to gain recognition is Hawker Pacific's FBO at Sydney Kingsford Smith International Airport in Australia. While the company has had a maintenance presence at the airport for the past three decades, its FBO–at 12 years old–is the oldest among the company's seven bases scattered through Australasia, and has a staff of just five full-time and 10 part-time workers. Hawker Pacific recently cosmetically refreshed the interior of its terminal with new furniture, paint and carpeting.

Though the company has long wanted to replace its 30-year-old structure, it has been hamstrung by the privatized airport authority's ever-fluctuating 20-Year Master Plan. "Every five years at least we get told that we're going to be relocated over to another part of the airport and we're going to have to build a new facility and so on," said Graham Owen, the company's vice president of flight services for Australia. "We haven't been able to invest in the current facility because we always sort of think we have a five-year horizon when we're going to be moved out, so it's been a bit difficult."

Domestic operations have been fairly flat over the past year, according to Owen, who added that as the FBO business in Australia is still relatively young, only recently are

most domestic operators beginning to accept using an FBO rather than self-handle. International traffic, on the other hand, has risen by more than 15 percent over the past few years, with last year's G20 Summit in Brisbane providing a welcome boost. Onsite customs and immigration clearance is available. Recently, the company was awarded a government aircraft-handling contract at all four of its bases in Australia. The location has an 11,000-sq-ft hangar that can accommodate the pair of Challenger 604s and a Citation III that are based there. The location can handle any aircraft up to and including a private 747. "Because fuel is not a major earner for Australian FBOs, the key differentiator is customer service," said Owen. Indeed, the location's highest score was for its CSR staff.

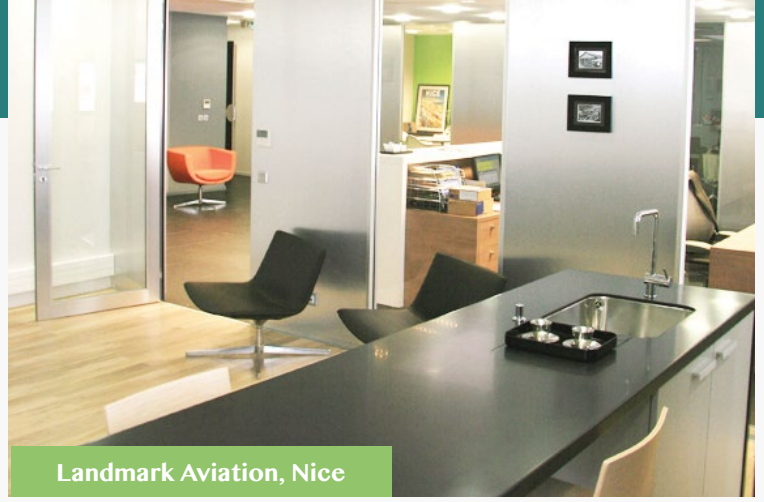
Landmark Aviation

Nice Cote d'Azur, France

8.0

The third service provider at Nice Cote d'Azur Airport (LFMN) is Landmark Aviation, which has had a presence at the French Riviera gateway since 2008. Like its competitors, the company occupies one third of the airport-provided general aviation terminal. While compact, the location offers everything required of an FBO, including pilots' lounge, flight planning and passenger lounge, yet in an effort to allocate more space to enhance its customers' experience, Landmark over the past year relocated some of its accounting staff to a remote facility. The company says it is working with the airport on an expansion plan to make more space for passengers and crew.

With no hangar space and a common-use ramp, service providers at the airport exist mainly for transient traffic, and Landmark claims approximately 40 percent of it at Nice. "We handled 6,553 aircraft last year, which was up 7.6 percent from 2013," said Cy Farmer, the company's vice president for international operations, indicating an increase in market share, as business for the airport overall was rather flat year-over-year. According to industry data provider WingX Advance, LFMN saw an uptick of 3.1 percent in fuel uplift last year, for a total of 9.5 million gallons of jet-A, and for the past several years Landmark has operated its own pair of refuelers at the airport, which gives it more control over service quality and wait time for departing customers.



Landmark Aviation, Nice

Before this year the facility existed as a joint venture with MAP Handling Executive, but now Landmark owns 100 percent of the FBO. The facility has a staff of 45 and is open 24/7. Given the area's status as a summer playground for the wealthiest of patrons, the location's concierge service regularly finds itself providing services such as helicopter transfers and yacht charters, along with the more mundane hotel and limousine reservations. ❑

Europe is set to reform access rules for handlers

by Charles Alcock

The European Union's 1996 directive deregulating access to the airport ground handling market did much to improve the competitiveness of services provided to airlines. But the rules took little or no account of the particular needs and characteristics of the business aviation sector. Depending on how thoroughly they were implemented within each EU member state–and on whose opinion you ask–the rules either did not do enough to stimulate competition in the FBO sector or created a free-for-all that resulted in excessive, unsustainable competition.

Last year, the European Commission (EC) signaled its intention to revise its rules on market access for ground handling. The current rules require airports to admit competing handling providers once they have an annual throughput in excess of two million passengers. The business aviation community has argued that this threshold is meaningless in the context of their limited volumes of traffic, but it has provided a legal threshold at which would-be handling providers can demand access to an airport–even if there is no suitable infrastructure for the creation of more FBOs. Some industry observers believe the EU's revised rules, which could be issued later this year, will limit the number of FBOs to two at locations other than dedicated business aviation airports such as Paris Le Bourget.

Italian Issues

Nowhere has the application of EU market access rules been more complicated and contentious than in Italy. In the late 1990s, the country's municipally owned airports largely resisted implementation of the EU law, resulting in accusations from operators that a lack of competition had resulted in poor service and excessive prices at some locations. However, successful legal challenges by aspiring handling providers brought belated liberalization of the market to an extent that some say has resulted in unsustainable competition at smaller airports. There also has been confusion about the exact terms under which handlers are authorized to operate at any given airport and a suggestion by more established handlers that, in some cases, companies are not being transparent with customers about the fact that they are providing no more than remote supervision of handling provided by a third party.

It was this confusion that inspired the formation of a new consortium called Italy FBO by a group of Italian airports and FBOs that are promising a more assured standard of ground handling. Italy FBO was launched in January and consists of a mix of private FBOs and airport companies in Cagliari, Salerno, Bari, Brindisi, Perugia, Florence, Pisa, Treviso, Venice, Verona, Brescia, Genoa, Milan Linate, Rome Ciampino, Olbia, Bologna and Siena.

Delta Aerotaxi, one of the founding companies behind Italy FBO, is pursuing a policy of targeted growth built around plans to develop a chain of handling providers around the country. It recently won a tender to provide general aviation handling at a couple of airports in southern Italy, only to find that the airport management company had allowed a rival handler similar access to the facilities for a lower bid. Current market access rules do not allow airports to limit the number of competing handlers once the two-million-passenger threshold has been breached.

According to Delta Aerotaxi, the company is seeking rights to establish handling facilities at several other airports. The goal is to make significant investments in establishing facilities matched to the needs of business aircraft operators, and the privately owned company believes this can be achieved in a commercially viable way only if airports are restrained in the number of handlers they allow. Meanwhile, other airports–including Palermo and Trapani on the island of Sicily–are looking to join the Italy FBO consortium.

The Italy FBO consortium has as its mission to ensure that when customers walk into a participating facility they can expect a similar standard of handling service.

Other airports already passed the two-million-passenger threshold, including Olbia, and this will likely trigger a bidding contest among would-be handlers. Florence Airport, which for a long time has been severely slot-restricted, could soon be a more viable option with the anticipated construction of a new runway.

Separately, the management of Rome's Ciampino Airport is planning to suspend access rights for existing ground handlers and initiate a new tender process that will result in just three competitors. They will be required to guarantee minimum levels of investment in infrastructure and to meet specific security and equipment requirements. The same policy is expected to apply at Milan's airports. ❑

Hope for China market

▶ *Continued from page 1*

While business aircraft order announcements were lacking at this year's ABACE show, a growing number of joint ventures and previously announced partnerships are coming to fruition *(see page 10)*.

In the short time since business jets were introduced to China, the market has already experienced a full cycle, from a peak in 2009 to today's trough. "In China, there hasn't yet been a steady period of sales normalcy and predictability, only extremes," said aviation analyst Brian Foley. "Eventually, a more representative market will emerge somewhere in between."

In 2009, sales of large-cabin business jets in China were robust; today, the country's slowing economy and austerity are putting a damper on sales. "It seems to be a universal axiom that when a country's economy is in a down cycle, political leaders and shareholders deprecate business aviation," Foley noted.

During the U.S. financial meltdown in 2008, politicians were quick to denounce auto industry executives for flying their private jets to Washington, D.C., to ask for financial assistance. "China's current austerity movement is essentially the same reaction, just presented a little differently," Foley said. "Once economic recovery firmly takes hold, denunciations are eventually forgotten and buyers no longer feel the need to take cover." He believes China will move beyond the current slow patch and begin to see some improvement next year.

Meanwhile, AsBAA and its U.S. allies at NBAA are eyeing the Chinese government's next Five Year Plan for 2016-2020 as a possible platform for further loosening of restrictions on business aviation's use of airspace and a stimulus for developing much needed airport infrastructure. Publicly, the bizav lobby has shown positive reinforcement for the limited progress made in persuading Chinese officials to create a more user-friendly environment.

Privately, however, some operators complain that regulatory progress in China has not brought tangible benefits. Speaking on condition of anonymity, one U.S. flight department manager based in Asia decried talk of progress. "What are they [China] truly offering us? Nothing. No parking. No permits. No support. They take our money and tell us to go away," he complained. ❑

DAVID McINTOSH

The ABACE show has continued to grow since it was relaunched a few years ago. During last month's edition at the Shanghai Hawker Pacific facility some 8,000 visitors gathered to see 185 exhibitors, up significantly from the early days of the event.

Bizav in Asia: Key Indicators

- Asia-Pacific business jet fleet in 2014: up 15 percent on 2013 at 744 (new and pre-owned), according to Asian Sky Group.
- Business aircraft movements at Shanghai Hawker Pacific FBO: up 17.7 percent in March this year compared with March 2014.
- ABACE 2015 show: 185 exhibitors, 40 aircraft, 8,000 visitors [ABACE 2005: 54 exhibitors, 12 aircraft, 2,100 visitors]

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NAVIGATING A WORLD OF CHANGE

by James Wynbrandt

The 42nd annual NBAA International Operators Conference (IOC) recently brought hundreds of pilots, flight-planning specialists and support professionals to San Antonio, Texas, to gather the latest on the ever-changing rules and realities of international business aviation operations. "This is the venue where you've heard about the changes and how they'll affect you," said Steve Thorpe, chairman of the NBAA IOC Committee, welcoming the 565 attendees. The four-day conference featured more than 40 immersive presentations (all available online: http://www.nbaa.org/events/ioc/2015/presentations/#2015-03-23Tab) from highly experienced subject-matter experts. Even stripped of accompanying narration, the charts, tables, resource and checklists, airport diagrams and additional data in the presentations can be invaluable planning or educational tools in their own right.

This year organizers introduced an IOC app (for iOS smart devices) that provided access to the downloadable presentations and enabled attendees to respond to instant e-polls, pose questions for Q&A sessions, make comments about presentations, and even post selfies taken during the gathering to the event's web page.

The attendees themselves represent a reservoir of operational knowledge and experience that was tapped throughout the conference as personal experiences and insightful questions were shared during Q&A sessions, and in networking opportunities like the daily breaks, lunch and after-conference socializing in the hospitality suites hosted by Jetex, Universal Weather and World Fuel.

Throughout the gathering, master of ceremonies Scott Harrold of Landmark Aviation kept the agenda moving forward and the energy level high, leavening the proceedings with goodie giveaways, contests and the occasional short, amusing video.

Safety

Safety, historically the IOC's foundation and preoccupation, was the subject of National Transportation Safety Board Member Robert Sumwalt's keynote presentation, "Professionalism in Aviation." Sumwalt used several fatal business aircraft accidents to demonstrate "cases where lack of professionalism can be a factor," whether it stems from pilots' flouting SOPs or their lack of systems knowledge of an aircraft. Citing an accident caused in part by pilot fatigue, Sumwalt noted the pilot had spent 12 hours at the FBO lounge waiting for his passengers for the ill-fated evening return flight, rather than seeking proper rest. "Why would someone not get a day room?" he asked. "Are they trying to be cheap? Companies will spend several millions on airplanes, but pilots will try to save nickels and dimes."

The risk of operational errors rises with both the level of sleep deprivation and length of the work shift, said Daniel Mollicone, Ph.D. and CEO of Pulsar Informatics. One week of chronic sleep restriction of six hours or less per night equates to one full night of total sleep loss, he said. Continuing the theme, safety auditor Bernard Flashman of The-Flash outlined the elements of a fatigue risk-management program that meets IS-BAO standards. A fatigue management guidance manual for general aviation operators of large and jet-powered airplanes will be released this year, he said.

The crash of Germanwings Flight 9525 was certainly on the minds of conference attendees. Had information about the actions of the first officer been known at the time, Dr. Quay Snyder of Aviation Medicine Advisory Services would likely have noted the crash's relevance to his presentation on Fitness For Duty (FFD). Chair of NBAA's FFD working group, Snyder noted that in addition to medical conditions and fatigue, psychological, cognitive and nutritional factors also play a role in determining whether a pilot is fit for duty.

He offered key elements of an effective FFD program and enumerated common institutional barriers to their implementation.

An effective FFD program contains mechanisms for identifying and monitoring behaviors and signs that indicate a potential problem, such as training difficulties, operational errors, frequent sick leaves and "do not pair" requests from fellow crewmembers. A sound program also provides career and financial protections for pilots, so they are not discouraged from seeking help or reporting suspicions about colleagues.

Institutional barriers include privacy concerns, operational demands, lack of insurance or disability coverage, absence of a properly trained internal medical staff or external evaluators, and concerns about discrimination suits.

Equipment Mandates

Shawn Scott of Scott International Procedures, in his session on emerging datalink technology and airspace integration, found that "errors in datalink-equipped aircraft are nearly on a par with non-datalink" aircraft, in a recent review of 22 weeks of incidents occurring in NATS (North Atlantic Track System) airspace. Of 96 aircraft involved, 44 were Fans 1/A (ADS-C and CPDLC) equipped, and 52 were non-datalink equipped. The errors included six gross navigational errors, 38 vertical errors, 36 lateral deviations of less than 25 nm, and 26 ATC interventions to prevent lateral errors. The most common cause: pilots are flying the flight plan rather than the clearance. Use headsets when getting clearances, Scott advised. With NATS in the midst of phasing in reduced separation minimums, the airspace is becoming unforgiving of poor decisions, he said.

Approximately 75 percent of responding attendees fly Fans-equipped aircraft, according to an app poll at the conference.

Failure to equip will be costly for operators that ply the North Atlantic. Scott's colleague Bill Smith said fuel burn is about 22.5 percent higher for an aircraft rerouted out of NATS because it lacks the proper equipment, while Carey Miller of Universal Avionics noted that aircraft relegated to routes at FL330 and FL340 because of equipage issues burn 10 percent more fuel than when flying at FL370 and FL380. Miller noted that in addition to proper equipment (updated FMS, CMU, annunciator cube for messages, aural alert capability and data-capable CVR, and Level D satcom system) for Fans, U.S.-registered operators need an LOA from the FAA. In 2013 the FAA processed seven Fans LOAs; last year it received 107, and "we expect about 3,000 applications" this year, he said.

Meanwhile, in the rush to move toward the paperless cockpit, Mitch Launius of Air Training International was among the presenters who advised keeping paper copies of documents authorities would likely ask to see (including aircraft registration, noise certificate, insurance) gathered together in a binder that can be immediately presented.

Crews know what to have when they are landing in Indonesia; now they need to be prepared with overflight permits if they are just passing by.

THE REGIONAL REVIEWS

Highlights of new developments and recaps of essential information on airspace, infrastructure and services across large swaths of the globe–are cornerstones of the IOC. This year organizers linked the eight regions via an imaginary around-the-world flight, originating and ending in San Antonio. Data and input for each of the eight regional portions of the route were provided by conference sponsoring flight-planning services, all using the average annual wind component and a Mach 0.80 cruise speed for planning purposes. The meandering route presented a spectrum of destinations and airports on the flight plans of today's international operators and highlighted the attendant challenges of such operations. The regional presentations examine necessary permits, vaccinations, operating rules for the route, and briefings on the airport conditions, facilities and services, security issues and more. As the presentations underscored, while each region has its specific anomalies, lessons from one location are often universally applicable.

Mike Wittman of Pilot Weather Training provided a daily brief of typical weather for each day's Regional Update routes, covering in his first presentation the conditions associated with the six Koppen Climate System classifications: tropical humid, dry, mid-latitude, severe mid-latitude, polar and highland. The round-the-world flight encountered each of these.

Southeast Asia and Pacific

Southeast Asia & Pacific, the region traversed by the global route's first leg–San Antonio (KSAT), Honolulu (PHNL), Port Moresby (AYPY), Jakarta (WIII), Manila (RPLL), supported by international planners Jetex Flight Support and BaseOps–quickly put attendees in their accustomed operating mode, combining both adventure and uncertainty.

Dustin Duke of Anadarko Petroleum, who flies extensively in Southeast Asia, noted the recent typhoon that swept Vanuatu in Oceana is the type of event operators need to consider, given the region's limited infrastructure and administrative resources. Should Port Moresby be in a typhoon's path, for example, "there's not much hangar space, and if you need to leave in a hurry, permits take time, and local holidays [of which there are many] can increase permitting time."

Rich Nath of World Fuel, parent company of BaseOps, noted Indonesia has ramped up enforcement of its overflight permit requirement, recently scrambling Indonesian Air Force jets three times to intercept aircraft entering its airspace without overflight permits. As of June 25 this year, all aircraft operating at or above FL290 in Indonesia's airspace will require ADS-B. Similarly, as of last December 11, ADS-B is required throughout the Hong Kong FIR. The region's airspace will likely see more regulation as part of "an effort to increase capacity in South China Sea airspace by reducing lateral separation between routes, and will be predicated on RNP [Required Navigation Performance] 4," Nath said. "It's several years away, but it's almost inevitable."

China, Russia and the "Stans"

China limits operators to two flight plan change requests for each flight, noted Joe Morgan, senior flight coordinator for Ivanhoe Capital, during the briefing on the route across China, Russia & the Stans–Manila (RPLL), Shanghai (ZSPD), Beijing (ZBAA), Novosibirsk, Russia (UNNT), Moscow (UUWW), Astana, Kazakhstan (TSE). Any alteration of routing, destination, day of operation or aircraft constitutes a change; alterations of departure time or passenger manifest do not. But since changes are virtually inevitable in international operations, Morgan suggested crews in China simply "hold on to the changes, and go from [request] one to four, instead of giving them two and three, as well."

Sheng "Jimmy" Young, country manager for Universal Aviation, said "a third revision can be negotiated if you ask nicely." Young reminded attendees Beijing Capital Airport has instituted a 48-hour time limit on business aircraft parking. The airport has sent "warning letters" to some international service providers and operators that have exceeded the limit, Young said, though no enforcement action has been reported.

Russia, by comparison, takes a relatively laissez-faire approach, and operators are "welcome to change schedules, times and exit points and make technical stops in Russian territory, and the permit is still valid," said Dimitry Konovalov, Universal Aviation, Eastern Russia. Russia aims to create a 72-hour visa-free window for transiting passengers at 10 airports. He noted that as "exchange rates are incredibly high, fuel and handling prices are down at least 30 percent" over the past year.

India and the Middle East

Heading south across the Himalayas to the Subcontinent, operators face mountain weather, summer monsoons, poor infrastructure and low visibility, among the litany of challenges Mark McIntyre of Mente cheerfully described as he covered India, first stop on the presentation's route from Russia to the Middle East–Astana (TSE), New Delhi (VIDP), Mumbai (VABB), Dubai (OMDB)–handled by Jeppesen.

Crews who arrive in India without approval from the controlling authority can't use the "normal" minimums shown on approach charts, but must use Restricted AOM (Airport Operating Minima), not shown on charts. "At the end of a long flight, you're a little fatigued, your bandwidth is challenged by the controller, so have paper charts with the restricted numbers put in," McIntyre recommended, adding, "We like to keep our eyes on the luggage, but in India that's difficult. It's an uncomfortable situation." Do bring a tow bar ("They might not have one for your aircraft") along with chocks and a ladder. Be familiar with converted meteorological visibility standards and calculations.

Flight crews in Saudi Arabia must observe cultural norms and prohibitions regarding dress codes, alcohol and relations between men and women, which apply to fellow crewmembers, as well. Fraternizing with the opposite sex in a hotel's concierge lounge is permissible because it's not considered a public place, unlike a hotel restaurant. If a female is on the flight deck, the panel's consensus was to have a male crewmember handle communications with controllers. McIntyre suggested female flight crewmembers don an abaya before deplaning, though a pilot attendee who's been "living in the Kingdom for 25 years" said women needn't cover their faces, but should wear a garment that covers their arms down to their hands.

Africa

From Dubai, the first leg of the route featured in the Africa Regional Review–Dubai (OMDB); Nairobi, Kenya (HKJK); Johannesburg, South Africa (FALA); Abuja, Nigeria (DNAA); Dakar, Senegal (GOOY)–ended in Nairobi. Steve Knouse, an international captain with John Deere Global Aviation, chose a looping northerly route for his G550 that kept him away from Horn of Africa and Arabian Peninsula hot spots. (He also noted CPDLC is available over large areas of Africa.)

In contrast, Rod Turpin, flight operations supervisor at Rockwell Collins, which provided the route's planning data, chose a direct route that overflew Yemen, which he acknowledged "many people don't want to" do. (McIntyre had cited FDC 4/6334 (A0060/14) Security Advisory for Yemen, which advises against flight below FL260, in his "sampling of current Middle East prohibitions restrictions and notices.") The direct route does, though, allow use of recently reopened airspace following February's lifting of FAA FAR 87, Prohibition Against Certain Flights Within the Territory and Airspace of Ethiopia.

Bart Gault, a pilot with World Wide Operations, said Nigeria, third stop on the route (Abuja), is becoming the financial hub of the continent. "More and more American companies are involved in Nigeria, so you may go there yourself," he told attendees. "Brief passengers that things don't happen very quickly." Also, "carry appropriate spares and tooling and a third crewmember: a mechanic," he advised. Should you need a part, "have someone bring it in as baggage on a commercial flight."

The Ebola outbreak of the past year has created a new concern for operators and passengers in West Africa, though Senegal, last stop (Dakar) on the route through Africa, was not a site of the recent epidemic. "In West Africa, everybody wants to help and shake hands," Galt said. "That's not a good idea." He noted that flocks of bats, which are known carriers of the Ebola virus, have been observed during daytime in the region, adding another level of danger to "bird" strikes. "You have to clean it. Put a mask on, gloves, long sleeves, clean it, and then throw away the clothes. Don't have them cleaned."

Russia has long held promise as a growing market for business aviation, once it can address the regulatory issues that are hampering growth. Here attendees gather at JetExpo.

Continues on next page ▶

Continued from preceding page

South America

"Make sure passengers know how to use survival gear," Capt. Antonio Donizeti Savio of Lider Aviation said as he briefed the transatlantic leg to Recife for the South America Regional Review. That flight–Dakar (GOOY), Recife (SBRF), São Paulo (SBGR), Lima (SPIM), Bogota (SKBO)–was supported by Colt International. "Because the clouds can be higher near the equator, you might not be able to climb above the weather."

Operators and Brazilian aviation authorities are preparing for the 2016 Summer Olympics in Rio de Janiero (August 5 to 21), and both groups are planning to incorporate lessons learned from the 2014 World Cup. "People are asking about the Olympics," Cynthia de Oliveira said of Lider Aviação's customers, and more than 1,000 business aircraft are expected for the Games. Operators can "expect restrictions," she said, but details of temporary rules haven't been made public. Departing Brazil may be relatively easy. "We didn't need [the required] slots for departures at the World Cup, so we don't anticipate we'll need departure slots for the Olympics," de Oliveira said. Just make sure your bill is paid. "During the World Cup, fees were three times higher than usual," she said, and the Olympics will likely be similar. "You won't get a flight plan unless your fee is paid."

Venezuela's internal problems have been reflected in changes to operations in and over the country in the past year. "A big factor is the new requirement for visas," said Nathan Lee, a sales representative at Spire Flight Solutions. Active crews are exempt for 72 hours, but non-active crewmembers and passengers require visas, which in the past have taken five to 15 days for approval but might now take up to three months, "so get started right away" if intending to go, he advised. Landing permits require "a conservative time frame of seven to ten business days." Overflight permits are required, and the airspace is expensive. "Other countries charge only about 30 percent of what Venezuela charges for navigation fees," he said. The government began requiring prepayment of the overflight fees about a year ago.

Traffic during last year's World Cup soccer tournament provided a trial run for Brazil as it looks ahead to next year's Olympic Games.

The Caribbean and Mexico

No overflight permits are required for transiting the airspace between Colombia and the Mexican border, under the control of Cenamer (Central American Control), but "If you have unpaid bills for navigation services from previous overflights and you land in Central America, you will not be allowed to leave," said Juan Portela, of Costa Rica's Aeroservicios. International Trip Planning Services (ITPS) laid out the route through the region: Bogota (SKBO); Tapachula, Mexico (MMTP); Toluca, Mexico (MMTO); Grand Cayman, Cayman Islands (MWCR); Nassau, Bahamas (MYNN).

North of Cenamer's airspace, Mexico has been stiffening its regulations, according to Helmuth Rueckert of ASM in Monterrey. Among the examples he cited: a 2013 regulation requires foreign operators to maintain a security manual for operations. Authorities subsequently began asking to see the security protocols, "and now they're asking for a manual specifically for operations in Mexico," he said.

In his review of the Caribbean, John Howard, a meteorologist with ITPS, noted that a Caricom APIS, similar to a U.S. APIS, is required 24 hours before arrival at many Caribbean locales. (Caricom is the controlling authority for Caribbean airspace.) Howard implied the rules are applied a little more loosely here than at many other destinations along the IOC route. "Most of these countries rely on tourism, so they don't want to turn you down," he said.

Reflecting intense interest throughout the business and leisure communities, the shift in U.S. relations with Cuba and the possibility of loosened travel restrictions received considerable attention. The general advice for those interested seemed to be "cool your jets." Gary Tucker, a pilot with Ball, said, "A lot of companies, including ours, have been evaluating the process" of receiving authorization, but it's "still in formulation. I would wait to see how this does develop, and how OFAC [Office of Foreign Asset Control] puts pen to paper" in setting policy.

Companies seem to want to go to Cuba once the U.S. allows it. Doug Carr, NBAA's v-p of safety, security, operations and regulations, received a sizable show of hands when he asked if any pilots had heard employers express interest in flying to Cuba once permissible. "The FAA has asked us about how many [NBAA] members want to go to Cuba," he explained. "Our government is trying to get a sense of your interest, so that when it's approved they can be prepared, and the FAA can negotiate for us in meetings" about air traffic between the two countries.


Regulations in Mexico are stiffer than they have been in the past. Having the the right documentation on hand goes a long way to smoothing the process.

Europe

After leading attendees back across the Atlantic–Nassau (MYNN), Paris (LFPB), London Luton (EGGW)–on a flight coordinated by AvPlan, Chris Duffek, a G550/650 captain with JP Morgan Chase Aviation and co-lead of the IOC European Region, noted that business aircraft "level busts went way up" in UK airspace last year, to almost 130 from just over 80 in 2013. U.S.-registered aircraft showed the largest reversal of fortune, after declining to the mid-teens in 2013, to committing more than 30 busts last year. At London Luton, where a preponderance of the incidents occurred, pilots also often stray outside the approved departure corridors, as depicted on navigation charts Duffek presented. "Pilots aren't getting the message," he said, urging attendees to ensure proper preparation and execution of procedures.

Terry Yeomans, program director IS-BAH (International Standard for Business Aircraft Handling) at the International Business Aviation Council (IBAC), reported progress on its efforts to exempt all business aircraft from import duties when traveling to Europe on business. IBAC presented the European Commission (EC) Tax Department with several scenarios it deemed fit the "private use" exemption, a view the EC has now endorsed. IBAC plans to use the EC's findings to help achieve universal compliance with World Customs Organization private-use rules.

EU-ETS, the program for levying fees on aircraft for carbon emissions, received little attention in contrast to last year. Kurt Edwards of IBAC said "It still applies for flights just within Europe; Europe is waiting to see what ICAO does in 2016," when the organization's next Assembly takes place.

The changes in Europe's operating environment have accelerated in the last two to three years, Joel Hencks of AeroEx said during his update on the EASA, exemplified by third-country operator (TCO) authorizations and Safety Assessment of Foreign Aircraft (SAFA) ramp checks. TCO authorization is a "risk-based approach" to ensuring commercial aircraft registered outside but operating within Europe meet ICAO standards, and SAFA ramp checks are the monitoring mechanism. Currently only scheduled carrier aircraft require a TCO in Europe, but it will apply to all aircraft operated on an AOC as of November 26 next year. (TCOs aren't necessary for overflights but required for technical stops.) "Send in the application as soon as possible," he advised, "because when it becomes necessary next year, there will be a backlog."

When it comes to the 54-item SAFA check, "Train crews how to behave in the first five minutes of the inspections. [Inspectors] will look far more deeply if you don't have the right answers right away," Hencks said. Representatives of the individual national aviation authorities will be conducting the SAFA checks, possibly leading to more confusion. "You will face ramp inspectors that do not have the knowledge they should have, and problems with ramp checks," Hencks said, bemoaning the lack of standard rules in Europe.

In an address to the IOC, Ed Bolen, NBAA president and CEO, cited another challenge to business aviation in Europe and elsewhere around the world: the privatization of aviation services and infrastructure, threatening bizav's access to airports and airspace. "That's one reason the current FAA reauthorization debate is so important," he said. "The United States can be a model for others. How we operate can become kind of an international standard."

Continues on page 38

AN ICON JUST GOT LARGER

THE NEW NAVITIMER 46 mm

▶ Continued from page 36

Security

Security plays a prominent role in safe international operations, a concern well represented in the IOC's agenda as well as attendees' SOPs. A show of hands during the presentation on security threat assessment by Matt Burdette, chief of intelligence for UnitedHealthcare Global Risk (UHGR), revealed the majority of attendees have security departments within their organizations, and more than half have a formal process to integrate security into international flight planning.

Threats to security come in many forms, including epidemics, political upheaval, natural disasters, corporate and government espionage and crime. Burdette stressed the need for accurate threat assessment, and advised distinguishing between high-level/low-volume threats (for example, violent demonstrations that are relatively confined and avoidable) and low-level/high-volume threats (such as endemic street crime). Continued monitoring is essential, as threats can escalate quickly, Burdette said.

Burdette's colleague, Tom Sloan, UHGR's director of security consulting, warned against overreaction, pointing to the past year's Ebola outbreak. "The media hype caused problems for planners, caused politicians to say stupid things, and caused the WHO and CDC to give out mercurial, often contradictory information" about the disease "and caused us in the U.S. to imagine something that's not there."

Maintaining privacy and keeping a low profile are key components of good security, as Gregory Kulis, pilot and security coordinator for L Brands, said in his update on data privacy and flight tracking. While the Blocked Aircraft Registration Request (Barr) program allows operators to shield an aircraft's identity, Kulis noted ADS-B signals are unencrypted. "Anyone with a scanner can capture that signal," he said, and no viable solution to blocking this data appears near at hand. Other publicly available sources of information can also blow one's cover. Kulis recounted how two days before the company was scheduled to fly to the Netherlands, an executive received a catering solicitation from a Dutch company. The information on aircraft movements was available, if not easily found, through European aviation agencies when flight plans or requests related to planned flights are filed.

The threats operators encounter are varied, and Charlie LeBlanc, chairman of NBAA's Security Council, v-p of security services for FrontierMedex and moderator of the security session, offered as an example one incident that happened to him. After landing in Beijing, he was selected for "an enhanced level of screening," during which time "my electronic devices were confiscated and out of my possession for a brief period," he said. Upon returning to the U.S., he noticed his iPad was experiencing operating delays. "I took it to the security department, and as it turned out, every time I was connecting to the company network through the data plan, that data was being routed to China first. So during that time out of my possession, something was inserted in it."

His security recommendation: "Consider a policy where any time you return from certain regions, your electronic devices that connect directly to the company networks are inspected and analyzed by a professional."

Asked if any scrubbing products are available, LeBlanc said, "The market is flooded with $29.99 ones. I haven't seen any that worked, especially when you're talking about government-level intrusions. That's why some companies say, 'Burn the laptop or cellphone' [when coming back from a location] where we know intrusion is done regularly." ❑

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EASA set for 2016 release of rule on single-engine IMC ops

by Kerry Lynch

The European Aviation Safety Agency (EASA) is expected to brief member states next month on its rulemaking permitting commercial single-engine turbine operations in instrument meteorological conditions (SET-IMC), keeping the rule on pace for release next year. The EASA anticipates releasing an opinion on the rulemaking in September, clearing it for European Commission consideration. Finalization is anticipated in next year's first half, if all goes as planned, said Jens Hennig, vice president of operations for the General Aviation Manufacturers Association and a participant on the commercial SET-IMC rulemaking committee.

Developed in concert with the government-industry rulemaking committee, the NPA drew on more than two decades of debate about and research into the use of single-engine aircraft in commercial operations, beginning with a study by the Joint Aviation Authorities in 1991. The EASA released the commercial SET-IMC proposal in July last year, and the rulemaking committee finished its review of 150 comments on the proposal in March.

An EASA rulemaking committee completed its review of comments on a proposal to permit commercial single-engine turbine operations in IMC, keeping the rulemaking on track for release next year. If enacted, aircraft such as the Pilatus PC-12 could be flown commercially under IFR conditions in Europe.

Industry Concerns Addressed

While most of the comments were in favor of proceeding with the rulemaking, German authorities, long wary of SET-IMC operations, remain opposed. Also expressing concerns were officials from the UK and the Netherlands. Like Germany, the UK has had long-standing concerns about SET-IMC. But in recent years, the officials moved away from philosophical opposition to more technical questions. Questions from the Netherlands, like those from the UK, were technical in nature, said Hennig, who stood in as chairman at the final rulemaking review.

Commercial single-engine operations have been authorized for decades in the U.S. and are in place in other countries, Canada and Australia among them. A handful of European nations have approved special exemptions for commercial SET-IMC operations, and currently 12 aircraft are flying under those exemptions.

The EASA proposal would standardize the requirements, although operators would still need special authorization. The EASA proposal limits the commercial operations to turbine aircraft; in the U.S. single-engine piston aircraft are permitted to fly commercially in IFR.

The European rule imposes equipment requirements that match standards released by the International Civil Aviation Organization in the mid-2000s. Since the U.S. "SEIFR" (single-engine [commercial] IFR) rule predated those standards, no such equipment requirements apply.

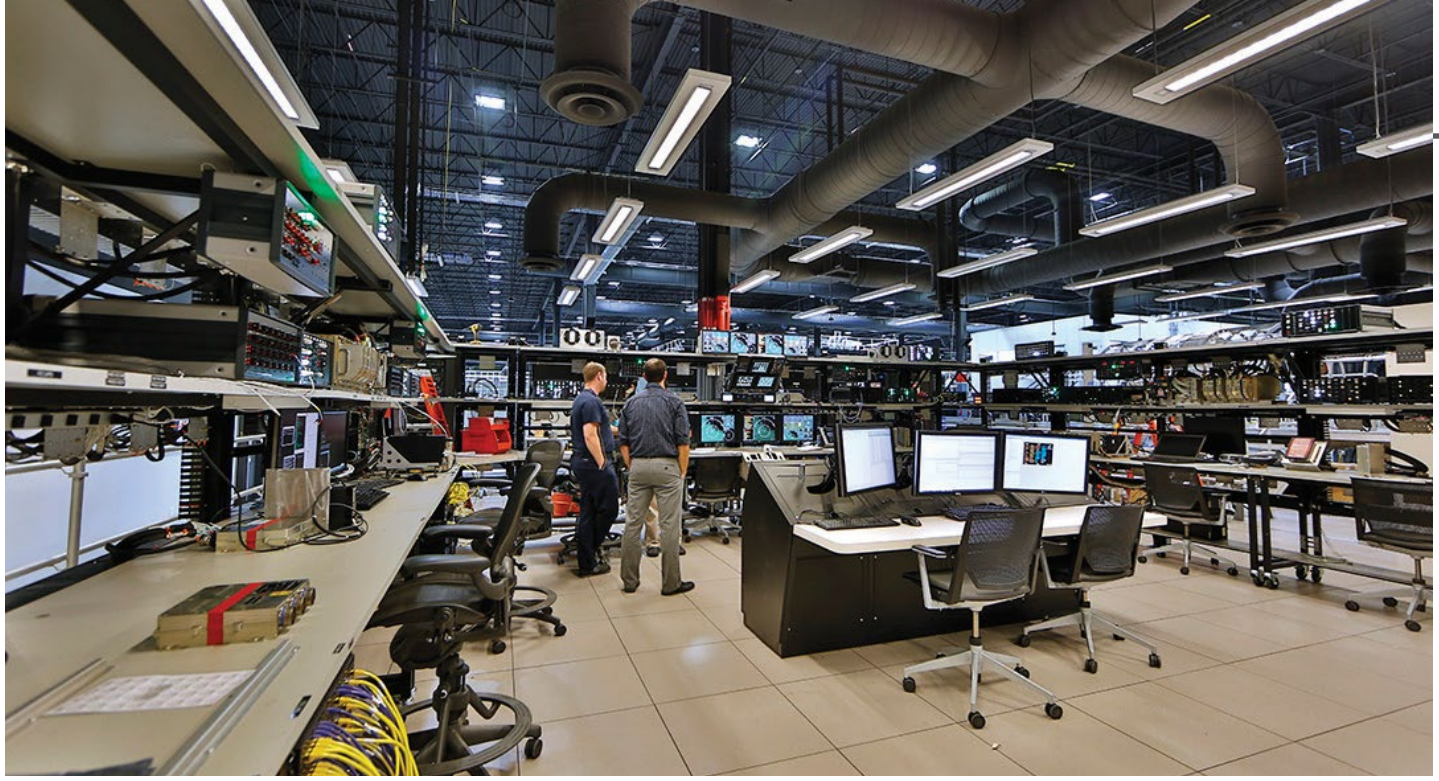
The rulemaking committee also hoped to address key concerns by building into the proposal a risk-based approach, requiring substantial flight planning for SET-IMC operations to ensure that "at every step along the route the aircraft can safely glide to the ground in the event of loss of engine power," Hennig said.

During its final review of the comments, the committee debated a number of other issues, including whether two pilots should be mandated for commercial SET-IMC operations. Proponents believe such a requirement would provide another layer of safety, but committee members argued that all the aircraft involved have been certified for single-pilot operation.

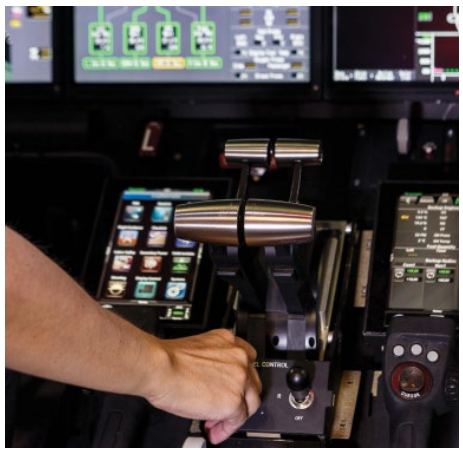
Another issue under discussion surrounded a requirement for full-flight simulator training. Committee members, however, recognized that sim training is not available in all locations and instead recommended that pilots be encouraged to receive simulator training when possible. That issue, Hennig added, was recognized as a larger debate for all operations.

The committee further discussed which data to use for the underlying safety basis. Some committee members preferred the use of European-specific data, but others noted SET-IMC operations are so limited in Europe that there hasn't been enough data developed and pushed for use of global data. The committee reviewed a handful of other issues ranging from takeoff minimums to equipment requirements. Pratt & Whitney Canada, which participated in the rulemaking committee, had furnished data based on millions of hours of its turboprop engines commonly used in single-engine operations.

In the U.S., approximately 670 single-engine aircraft are used in commercial SEIFR operations. While 12 of the aircraft are currently in operation in Europe, single-turbine manufacturers have long eyed the potential for a commercial market there. In Europe officials see a benefit particularly for cargo carriage, enabling access to remote regions that otherwise could not be served in a timely fashion, noted Hennig. ❑



The new G500/G600 cockpit (below) includes active control sidesticks and touchscreen avionics controllers and eliminates a huge number of switches, knobs and controls. The systems integrations bench lab (left) allows engineers to wring out the airplane's digital network.



Stealthy development: the G500/G600

by Matt Thurber

Last October's simultaneous announcement and rollout of the G500 was a memorable milestone in a program that began many years earlier as the germ of an idea in the fertile minds of a group of forward-looking Gulfstream designers. Clearly there would be a hole in the Gulfstream lineup between the then-gestating G650 flagship and the mature G450 and G550. Various concepts winnowed through the process, and what became the G500 and G600 grew from a conceptual drawing to a new jet line that could be presented to potential buyers. Behind the scenes, it became a full-blown program that spread into almost every sector of Gulfstream's far-flung operations, from company leadership and designers and engineers to production planners, test pilots, maintainers, marketers and suppliers–everyone involved in bringing a new airplane to life.

With the G500/G600, Gulfstream is expanding its reach in the large-cabin, long-range market. The new jets aren't just upgrades of existing models but are entirely new designs, with a new type certificate, Honeywell touchscreen-controlled Gulfstream Symmetry flight deck, GE Aviation digital data network, Pratt & Whitney Canada engines and electronically interconnected BAE sidesticks.

Compared with the G450's 4,350-nm and G550's 6,750-nm range at Mach 0.80, the G500 promises 5,000 nm and the G600 6,200 nm at Mach 0.85. Interior cabin dimensions for the new jets, at 91 inches wide and 74 inches high, fit between those of the G450/G550 (84 and 72 inches) and G650 (98 and 75 inches). Maximum speed of the G500/G600 matches the Mach 0.925 of the G650, and at a relatively high-speed cruise of Mach 0.90, the G500 can fly 3,800 nm and the G600 4,800 nm.

"This is an evolution of design versus what was available during the development of the G650," said Lor Izzard, Gulfstream director of sales support and technical marketing. "Yet few things are exactly the same. It would have been easier, quicker and likely less expensive to have adopted things as they were."

The G500 and G600 share manufacturing technology with the G650, such as more use of chemically milled aluminum skins and bonding of structural components, which makes construction more efficient; and the two model lines' fly-by-wire flight control systems are essentially the same. As is typical with Gulfstream programs, the new jets incorporate what years of research and consulting with members of the company's advanced-technology customer advisory team (Atcat) revealed as desirable characteristics.

Touchscreen controls are no longer new in business aviation; Learjet, Cessna and Honda Aircraft have adopted these in Garmin-equipped jet cockpits, and Rockwell Collins has fielded the first touchscreen panel displays in a turboprop business aircraft, with its Pro Line Fusion King Air flight deck retrofit (also in the AW609 tiltrotor).

Fly-by-wire is also established technology in business jets, not only in the G650 but also in Embraer's Legacy 500/450 and Dassault's Falcon 7X (the first fly-by-wire business jet) and upcoming 8X and 5X. The G650 retained the traditional yoke controls, however, while the Legacys and the Falcons employ sidesticks.

When it came to designing the G500/G600 flight controls, Gulfstream engineers worked closely with BAE Systems, which had already fielded its active control sidesticks (ACS) in military aircraft. In the G650 and also Boeing fly-by-wire designs, the yokes move together just as in a non-fly-by-wire design, and they are "yoked" together by electromechanical machinery that adds weight and complexity but allows both pilots to perceive control movement not only visually but by feel too. Boeing has long held that this is why it has retained yokes, even in its most modern design, the 787.

ACS works similarly but eliminates the complexity of yokes, which not only saves weight and allows pilots to see and feel control movement but also opens up the flight deck, as pilots of sidestick-controlled aircraft can attest.

The new jets are powered by Pratt & Whitney Canada PW800s. The engine features a one-piece integrally bladed fan, which eliminates the traditional "clinking and clanking of the blades as the fans windmill," Izzard said. The new fans are more damage tolerant and easier to repair, he added, and the PW800s have no mid-life major inspection interval and a 10,000-hour TBO. The engine manufacturer isn't a new vendor for Gulfstream, which began a relationship with Pratt & Whitney Canada after Gulfstream acquired Galaxy Aerospace and the

Continues on next page ▶

Developing the G500/G600

▶ *Continued from preceding page*

PWC-powered Galaxy became the G200.

Also new is the jets' GE Aviation data concentration & network (DCN), which consists of 14 routers communicating via an Ethernet-based network. Systems data runs on the DCN, and that data can be used anywhere it is needed–for example, synoptics information on cockpit displays, or data for systems controls, health and trend monitoring and so on. The big difference from previous designs is replacement of many boxes on the radio rack by 14 routers distributed throughout the airplane. This eliminates 200 to 300 pounds of components and wiring and adds valuable cabin volume. GE is also providing the jets' advanced power management and advanced health management systems.

The new jets are equipped with a Rockwell Collins head-up display for the left-seater, underscoring Gulfstream's HUD-centric philosophy. The Kollsman EVS III has four times the resolution of the previous enhanced-vision system, basically moving the technology from standard to high-definition resolution. The EVS camera is now a single LRU mounted on top of the airplane, more in line with the pilots' field of view. The sapphire lens of the single LRU version is what is looking outside; the EVS II camera on previous jets is mounted inside a housing with a window that the camera looks through, which means the camera is looking through two pieces of glass (the camera lens and the sapphire window on the EVS housing).

All Starts with Atcat

The Atcat is a subset of Gulfstream's customer advisory board and gets involved fairly early in the design process. The internal program that became the new jets was launched in 2009, according to Andy Slater, chief engineer for advanced aircraft programs. "It was designed with the voice of the customer," he said. Part of embracing that voice was to invite Atcat members to visit the four operational systems labs used to develop the new jets. In the labs, more than 22,500 hours of testing have been logged since program inception.

Before the new design's particulars were fleshed out in the labs, Gulfstream designers put sophisticated aerodynamic tools to work. The aerodynamic analyses included extensive development testing at Boeing's transonic wind tunnel. This was followed by placement of the final configuration into the cryogenic European Transonic Windtunnel in Köln, Germany, where liquid nitrogen injected into the airflow makes for more accurate simulation of high-lift and high-speed flight. Another model equipped with landing gear and flaps flew in an Onera wind tunnel in France, and this testing validated close-to-the-ground operations, including ground effect, according to Slater. Some airborne flight-test correlation was also done in a G650. "We invested heavily in high-performance computing clusters," he said, "and a high degree of wind tunnel and flight correlation to make sure the computational fluid dynamics methods correlated." This also forms the basis for the aerodynamics used in the lab models.

The G500 integration test facility features a flyable cockpit (above) where pilots can test all the new features such as touchscreen-controlled avionics and the new active control sidesticks. Engineers can see exactly what pilots are doing on large-screen monitors that replicate cockpit displays (right).

Labs and More Labs

During a visit to Gulfstream's Savannah, Ga. campus in February, this **AIN** writer toured the four labs during a briefing on the G500/G600 program. I also entered Gulfstream's 3-D Cave virtual environment while wearing stereoscopic glasses that allowed me to interact with some G500 innards. The virtual environment is used for design reviews and replaces wooden mockups, which can take weeks of work just to model one particular area.

The G500/G600 integration test facility (ITF) and iron bird started running in 2013. The iron bird, as is typical for most aircraft programs, allows testing of major mechanical systems, flight controls and hydraulics integration. It is where physical hardware is installed in the same relative position as the real airplane and gets worked out extensively to find and fix any problems well ahead of first flight.

The ITF for the G500/G600 replicates the cockpit and the cabin. Although these aren't physically mated as they would be in the real airplane, they are near each other and connected electronically. "They are integrated the same as the airplane," said Scott Evans, project pilot for advanced aircraft programs. Behind the cockpit portion of the ITF, the cockpit displays are replicated on large monitors so engineers can see exactly what pilots are viewing.

The cockpit ITF is an excellent venue for testing functionality of the new features of the G500/G600, especially the touchscreen-controlled avionics and ergonomics of the sidestick controls and the repositioned cursor control devices. The CCDs were moved from the pilots' side ledges to the center console to accommodate the sidesticks. The three Esterline Korry touchscreen-controlled overhead panels eliminated 45 percent of the circuit breakers, according to Evans. The replacement of 70 percent of the switches, circuit breakers and controls by the 11 touchscreen panels in the G500/G600 cockpit is helping Gulfstream achieve the target of about 10 minutes for cockpit preflight preparation activities, down from 17 minutes on legacy models.

Evans demonstrated, by planning a flight in both the G650 ITF and G500 ITF, the differences between traditional CCD, knob and switch controls and the touchscreen-controlled Symmetry flight deck. In the G650, pilots have to interact with pages of information in the FMS and punch up to 12 line-select keys on the FMS CDU to build the flight plan. In the G500, the menu structure is built around the phase of flight, and the user can swipe between each phase with a simple left or right gesture on the touchscreen controller. Pilots can still, however, make the same inputs using the CCD by manipulating elements on the panel displays, if preferred. Using the touchscreen controllers, he added, "We can present the data in a flow manner and not have as many pages because there's more area to present the information."

The Gulfstream touchscreens are resistive, which requires more finger pressure (at least 100 grams or three ounces) than typical consumer tablets or phones that have capacitive touchscreens. Actuation of the selected element occurs when the pilot lifts a finger off the screen. Engineers, including Evans, spent hours testing touchscreens while driving in a van on bumpy roads and airborne in turbulence to make sure the controllers were ergonomically as good as they could be in a variety of conditions.

A handy notes page, accessed by swiping down to up, lets pilots write down clearances or other information. After touching any waypoint on a flight plan, the screen shows what the pilot can do with that waypoint–for example, building a hold on that waypoint, either published or custom.

Error-free Cabin

The G500 cabin ITF is "a predecessor to the cabin mockup," said Naveed Aziz, director of final-phase engineering. "The structure represents the airplane. And we are focused on making sure the final designs are error-free. We had a cabin ITF before but never a full cabin with a full shell. We couldn't do gasper air checks or oxygen-mask drops before."

Gulfstream now designs and builds its own seats, and they are each trimmed differently for testing purposes. One test seat, for example, has a longer bottom cushion. "It feels good at first," he said, "but there's not as much lumbar support. We want it to be perfect." Gulfstream employees participate in testing, which

Continues on page 44 ▶

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Developing the G500/G600

▶ *Continued from page 42*

includes simulated flights of four to six hours in the ITF. Customers also visit to test cabin ITF features, such as the fold-down 32-inch monitor in the credenza or the single-pedestal club-seat table with one-hand operation and an infinite number of stops (instead of the typical three).

The galley design owes much to influence from Atcat members, too. The coffee maker can be swapped out with a kettle. A 4-cu-ft real fridge is installed, as well as a microwave and convection oven and a large sink that can accommodate the plates that customers typically choose. A steam oven will be optional. The oval shape of the G500/G600 fuselage also allows for deeper cabinets and drawers.

The Case for Case III

For medium- and high-risk testing, Gulfstream's third-generation Conceptual Advanced Simulation Environment (Case III) is used for human-factors evaluations, fly-by-wire control law development and integration of the ACS. The Case III is equipped with FlightSafety International's Vital 1100 visual display and real active sidesticks, touchscreen controllers and throttle quadrant.

Members of Gulfstream's advanced-technology customer advisory team influenced the elegant design of the G500/G600's spacious cabin.

The systems integration bench lab represents the aircraft's digital network and allows engineers to test data flows and also validate new software loads, before software is moved to the other labs. "This helps advance the DCN to the level of maturity needed for flight-test and entry into service," said Evans.

By February this year, seven Gulfstream test pilots were involved in the G500/G600 program, and the labs allowed them to become familiar with the new jets' systems and practice flying in preparation for the flight-test program. The first G500 (T1) rolled out last October. Next in line is T2, which was in final assembly earlier this year, while T4 was undergoing wing-to-fuselage joining and systems integration.

The G600 is slated to fly in 2017, with certification following in 2018 and entry into service in 2019. Critical design review on the G600 was completed in the fourth quarter last year.

G500 T1 is at the flight-test center and has completed ground vibration and structural mode interactive testing and had all final upgrades installed; it should fly shortly, if it hasn't already done so by the time this is published. Meanwhile a G500 structural test airframe (S72) and components are undergoing more testing. The first production G500 (P1) is under construction, preparing for certification in 2017 and entry into service in 2018.

"We've done major investments in our labs," said Evans, "and accelerated [their development] more quickly than in the past. The ultimate goal is quality entry into service." ❑

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Pilot Report:

Citation Latitude

by Matt Thurber

Cessna introduces first new Citation fuselage cross section in four decades

A hallmark of the Citation brand has been the willingness of Cessna leadership to bring out new products that compete not only with other manufacturers' airplanes but also with the prolific Citation lineup itself. After "building a career" on two cabin cross sections conceived in the 1970s, the company acknowledged the shifting landscape of the jet market and launched the Latitude, which introduces the first new Citation cabin cross section in more than four decades.

AIN flew the Latitude on March 30 with Textron Aviation flight-test manager and chief pilot Aaron Tobias. With a spacious flat-floor cabin, efficient performance, excellent handling and a price that might poach sales from some other Citation models, the $16.25 million Latitude adds a tough choice for the buyer of a midsize Citation.

The new jet, which should receive FAA type approval shortly if it hasn't by the time this is published, is being certified as an amendment to the Model 680 type certificate, the latest model being the Sovereign+, and it shares enough features and characteristics with the Sovereign that a Sovereign+ type-rated pilot will require just differences training to fly the Latitude.

With the addition of the Latitude the Citation lineup includes three equipped with the Garmin G5000 touchscreen-controlled Intrinzic flight deck as well as the M2 and CJ3+ with the G3000-based Intrinzic cockpit. These avionics systems are easier to operate than Garmin's first integrated system, G1000, which populates most Cessna singles, and is more like the touchscreen-controlled G2000 system in Cessna's speedy TTx piston single. Moving up into many of the Citation models, including the company's largest jets, is made much simpler by the familiarity that pilots gain transitioning from the G1000/G2000 to G3000/G5000 systems.

"What we set out to do was create a new midsize airplane," said Michael Pierce, Textron Aviation manager of technical marketing, "something unique that fits in between the XLS+ and Sovereign+. And we wanted a stand-up cabin and a flat floor."

During the walkaround, Tobias pointed out improvements to the Latitude airframe. The cabin door is now electrically operated, and the doorframe is fitted with a single passive compression seal, which improves dispatch reliability by eliminating the inflatable seal. The door can be opened and closed manually, and when opening is back-driven against the motor so it doesn't drop too quickly.

There is no more "door spade" fairing, and oxygen bottles were moved from the fuselage fairing to the nose compartment and flight controls rerouted to allow for a thinner finger fairing on the belly. Baggage and nose compartment latches are a new monolithic machined style that can be closed easily with just one finger.

The Latitude wing is "essentially the same as the Sovereign+'s," Tobias said, with the same 16.3-degree leading-edge sweep, 543-sq-ft area and smoothly upswept winglets. Wing treatments facilitate docile stall characteristics, which Tobias fully explored during more than 1,000 stall tests. "It's a pussycat," he said. Fowler-type flaps, in three sections, are electrically actuated. Five sections of hydraulically powered spoilers provide lift, drag and roll control, supplementing the ailerons at the outer section of the wings.

The empennage also shares Sovereign+ heritage, with a zero-dihedral, trimmable horizontal stabilizer and anti-float tabs on the elevator, interconnected to the stabilizer. A rudder bias system enables feet-on-the-floor engine-out operation. The rudder is equipped with a single yaw damper.

The flight controls are mechanical, and this (in addition to the adoption of major components from the Sovereign+) helped speed the Latitude toward certification.

Two compartments, on either side of the fuselage aft of the wings, each house a nicad battery. Four easily operated latches replace Dzus fasteners found on older airframes. The maintenance access space in the tailcone can't be described as a typical hellhole because the area is clean and extra spacious, which technicians will appreciate.

The large baggage compartment is fitted with the same simple latches as the nose compartment doors and can hold up to 1,000 pounds. A 50-pound-capacity coat rod is installed, too. The door has an integral step, although the 4.5-foot sill height is low enough for most people to lift luggage into the compartment with ease.

On top of the aft fuselage, a pitot-style inlet at the base of the vertical stabilizer helps improve the efficiency of the air-cycle machine.

Flight Deck Features

The cockpit of the Latitude felt familiar to me since I have flown the Intrinzic-equipped Citation X+ and Sovereign+. And as it is in those jets, the cockpit is roomy and uncluttered, with far fewer switches, knobs and controls and a slimmed-down center console than in older Citations. Small touches add to the cockpit's comfort, such as side pocket

The flight deck is the same Garmin G5000 touchscreen-controlled Intrinzic system used in several other Citation models. Pilots can expect a roomy and uncluttered front office, with the center console trimmed and switches moved to the sidewall for a clean, modern feel and many fewer switches, knobs and controls for a clean, modern feel.

areas that are ideal for tablet computers and other portable items, leather-wrapped yokes and console, push-to-talk switches on the sidewalls and in general a modern look and feel.

The Latitude fuselage diameter is 12 inches larger than the 72 inches of the XLS+, Sovereign+ and X+, and thus the Latitude's interior cabin width expands to 77 inches compared to 66 inches in the other jets. This adds about four inches of cockpit width for each pilot, making more space for the pilot seat armrests as well as the side pockets, which also include USB chargers. Pilot seat travel is three inches longer and the windshields are larger. Because the right-seater usually sits back from the instrument panel, the right outboard touchscreen controller was moved slightly aft to match that typical seating position.

The big benefit of touchscreen controllers is elimination of the FMS control display units that usually take up space in the console. An FMS is still part of the G5000 avionics, but it is buried in the circuit cards and software behind the scenes, and all pilots have to do is push more intuitive touchscreen iconography to make the airplane go where and how they want.

The four GTC 570 touchscreen controllers in the Latitude use infrared technology instead of the capacitive touch we are all familiar with on our smart devices or the resistive touch used for some products, which requires a more hefty push to activate. The infrared touchscreens make it easy for designers to build in features such as not allowing anything to happen when more than one finger pushes on the screen or preventing an electronic button push if the finger misses the target. This version of the G5000 now has full systems synoptics pages. Checklists and performance calculations will be added shortly.

Standard on the Latitude is Garmin's SafeTaxi airport charts. SurfaceWatch is optional and provides aural and display warnings for maneuvers such as accelerating on a taxiway, crossing an active runway, getting too close to the end of the runway while decelerating after landing and so on. SurfaceWatch will eventually be integrated with ADS-B IN. The Latitude is equipped with ADS-B OUT as well as Sirius XM weather and radio. Datacom features for European Link 2000+ and controller-pilot datalink communications will be an option.

Flight planning is intuitively simple, just a matter of typing in waypoints and destination, plus anticipated arrival procedures, and it's easy to make changes to a flight plan. Once the destination is in the system, the automatic pressurization system sets the arrival field elevation then automatically schedules cabin altitude and rate of change. At the maximum altitude of 45,000 feet, the 9.66-psi pressure differential produces a cabin altitude of 5,950 feet. Two-zone temperature control is available, and the VIP seated passenger can set cabin temperature; the pilots have control of their comfort using a page on the touchscreen controller. The adjustment is done on a visual gauge, which also shows the desired temperature. I found the adjustment to be precise, with a few degrees either up or down making a perceptible difference in the cockpit environment. Ten air vents, including one behind each pilot, help distribute air in the cockpit. The Latitude is the first Citation equipped with a cabin Hepa filter, which captures small particles.

Typical for large Citations, the Latitude has a hydraulically powered rack-and-pinion nosewheel steering system, which is sensitive. The rudder pedals allow up to 7 degrees of left or right travel, while the handwheel (tiller) in the cockpit moves the nosewheel 81 degrees either side.

Latitude Flying

We took off from Burbank's Runway 15 with a slight left crosswind, and once I pushed the power levers forward, the Garmin autothrottles took over and smoothly brought the Pratt & Whitney Canada PW306D1 turbofans to maximum power. The engines are the same as those in the Sovereign+ and have a 6,000-hour TBO and 3,000-hour hot-section interval, or can be placed in on-condition service when participating in P&WC's flight data acquisition and transmission program.

We quickly accelerated through V1 of 99 kcas and rotated at 102 kcas. We were relatively light, carrying just one other crewmember and 5,490 pounds of fuel. With a basic operating weight of 19,076 pounds, the Latitude weighed nearly 6,000 pounds short of the 30,800-pound mtow. Fuel capacity is 11,394 pounds, and typical payload with maximum fuel is 1,040 pounds. Burbank's weather was normal clear southern California conditions, but slightly cooler at ISA standard, and our balanced field length was just 3,000 feet.

The autothrottles helped keep us shy of 250 ktas below 10,000 feet, although that setting can be adjusted depending on the airspace requirements of a particular country. During the climb to FL430, the autothrottles automatically set power for the Mach 0.64 climb speed and then, when required to level off, transitioned to the target cruise speed of Mach 0.80. Even with a few

Continues on next page ▶

Cessna Citation Latitude Specifications and Performance

Price (typically completed and equipped, 2015 $)	$16.25 million
Engines (2)	Pratt & Whitney Canada PW306D1, 5,907 lbs thrust each
Passengers (typical)	2 crew + 9 pax
Range (w/NBAA reserves, 200-nm alternate, max payload)	2,650 nm at 379 ktas
High-speed cruise	453 ktas
Long-range cruise speed	379 ktas
Fuel capacity	11,394 lbs
Max payload w/full fuel	1,040 lbs
Ceiling (certified)	45,000 ft
Cabin altitude at ceiling	5,950 ft
Max takeoff weight	30,800 lbs
Takeoff field length at mtow (sea level, standard)	3,668 ft
Landing distance	2,681 ft
Length	62.25 ft
Wingspan	72.33 ft
Height	20.92 ft
Cabin	Volume: 620 cu ft
	Width: 6.42 ft
	Height: 6.0 ft
	Length (seating area): 21.75 ft
Baggage capacity	126 cu ft/1,000+ lbs
FAA certification	FAR Part 25
Number built	N/A

Continued from preceding page

level-offs, it took only 10 minutes to reach FL270 and at our medium weight we leveled off at FL430 twenty minutes after takeoff. At mtow, the Latitude can climb unrestricted to FL410 in 21 minutes and reach FL430 in 26 minutes. At that altitude and ISA -1, the Latitude settled at Mach 0.76 and 436 ktas, burning about 740 pph per side.

When leveling off, the autothrottles are designed to maintain maximum continuous thrust for about 10 minutes then reset to the high-speed cruise setting. Or I could just tap the autothrottles off before the 10 minutes are up then tap again to go right to the cruise setting. For a longer-range cruise–the AFM recommends Mach 0.74–I could switch the SPD control on the mode controller panel to manual and dial in Mach 0.74 and the autothrottles automatically reset to maintain that speed. At Mach 0.74 and 423 ktas, the fuel flow dropped to just below 700 pph per engine.

We spent a few minutes at FL430 and by this time we had nearly made it to Salinas. The Garmin automatic flight control system, driven by low-maintenance clutchless servos, smoothly kept the Latitude on track. Turning back south, we descended at Mach 0.79 to FL380, where the cabin altitude was 4,500 feet and the true airspeed 445 knots.

At 39,000 feet, the performance charts show 437 ktas burning a total of 1,749 pph at high-speed cruise. At long-range cruise, the speed would drop to 344 ktas and fuel consumption to 1,124 pph. At our weight at high-speed cruise, we would have been able to fly for about five hours, and the total range with NBAA IFR reserves (200-nm alternate) would be nearly 2,400 nm. At long-range cruise, that distance should extend to about 2,800 nm. "[The Latitude] is pretty happy at 38,000 to 43,000 feet," Tobias said.

The autothrottles maintain the same speed schedule when descending, including the level-off protocol. The G5000 was set to reduce speed to 200 ktas below 3,000 feet within 10 nm of the airport. The autothrottles begin the power reduction during the descent at 12,000 feet to capture 250 ktas transitioning below 10,000 feet. In our case, airspeed reached 250 knots in plenty of time, at 10,800 feet.

On the way down, Tobias demonstrated the envelope-protection features of the Intrinzic/G5000 avionics. For high-speed protection, the autothrottles pull the power back to maintain speed below the Mach 0.80 MMO, but they release after a safe flying speed is achieved. On the other end of the speed spectrum, the autothrottles advanced power as we slowed the Latitude in level flight. This is helpful for occasions when pilots might forget to advance the power after leveling off. The envelope protection kicks in even if the autothrottles are not engaged.

For any kind of high-altitude depressurization, above 30,000 feet the autopilot automatically engages the emergency descent mode and brings the Latitude down to 15,000 feet. The new digital pressurization system, with a Honeywell electronic pressurization controller, will output an amber caution message if some aspect of the system is causing a problem. This could include an outflow valve fully closed in flight, for example, allowing the caution to illuminate even before reaching a higher altitude.

We were planning a VFR approach and landing at Camarillo Airport, but the coast was socked in and we didn't have time to file a new IFR flight plan, so we abandoned that approach and flew back to Burbank for the ILS Runway 8 approach, which I flew by hand to get a better feel for the Latitude's low-speed handling. Back closer to the ground, the G5000's synthetic vision display was a welcome sight, clearly highlighting the tall mountains east of Burbank.

The G5000 system's split-screen capability was also helpful, allowing me to set up the display just how I like, with engine instruments and the map on the MFD and the approach plate side-by-side with synthetic vision on the PFD. Full flaps (35 degrees) VREF was 97 ktas, and the Latitude sailed smoothly down to the runway, with the autothrottles automatically pulling power as we crossed the threshold for a firm but satisfying touchdown on the Latitude's forgiving dual-wheel trailing-beam landing gear. I popped the speed brakes and stepped smartly on the pedals and the Latitude's anti-skid carbon brakes brought us to a quick stop without any reverse thrust.

Tobias asked if I wanted to taxi back for another takeoff, this time with a V1 cut, and I couldn't refuse. I got some more practice trying to avoid jerking the nose around while taxiing with the handwheel, then lined up for takeoff on Runway 15. At V1, Tobias pulled the right engine, and I could feel the rudder bias system kick in because when I automatically tried to push the left rudder pedal I found it was already where it needed to be. The Latitude climbed out easily at 2,000 to 2,500 fpm. I circled around to Runway 8 for a single-engine landing at flaps 15 and a VREF of 104 ktas. I came in a little fast this time, but there was plenty of runway, and after another decent touchdown I got on the brakes after deploying the speed brakes then used a little reverse thrust.

Fleet Fit

The Latitude occupies its own niche in the Citation lineup, but in my opinion it also competes strongly with both the XLS+ and Sovereign+, although it costs a few million more than the smaller XLS+ and a couple of million less than the Sovereign+. Both the Sovereign+ and Latitude share the same 620-cu-ft cabin volume, but the Latitude's flat-floor cabin is a powerful bonus that might be attractive enough to offset the Sovereign's greater range and speed.

"We worked hard on the [Latitude's cabin] environment," said Pierce. The windows are 25 percent larger than those of the XLS+, Sovereign+ and X+ and placed to optimize the passenger's view. Dual-mode manually operated shades are installed, so passengers can choose between fully dark or opaque settings.

The seats, designed and built by Textron Aviation, draw on many hours of attention by human-factors engineers working with people sitting in place then trimming foam until the right shape is found. "Then we built the frame," he explained. The seats fold back fully and lay flat, and they are equipped with armrests that tuck into the upright when not being used. The bottoms of the seats are left open to add to the cabin's spacious feel.

For passengers, the Heads Up Technologies fiber-optic wireless Clairity cabin-management system controls the environment, entertainment features and lighting. Each seat has its own lighting switches, USB port and a small recess that is ideal for a smartphone, wallet or book. Clairity can be controlled using a mobile device app or also from the VIP seat and using a master control in the forward refreshment center. Audio content on mobile devices can be played on the Clairity system's excellent speaker system.

The typical Latitude cabin layout is nine seats, with a two-place couch forward, then a club seating area, two forward-facing seats and an extra takeoff/landing-approved belted seat in the lavatory opposite the toilet. That seat converts to extra cargo space by folding down, but there is also a closet for hanging storage. Or buyers can opt to eliminate the lavatory seat and make that area into a larger closet. The main cabin seats are toed out by 4 degrees for more comfortable legroom, and both sides of the seats have armrests. "We worked on making sure the floor is as low as possible," Pierce said, "so shoulders are at the widest part of the cabin. The head and shoulder distance between the fuselage is big, so you don't feel like you're against the wall."

I found that the Latitude flies a lot like the Sovereign+: no fuss and no surprises, excellent performance, intuitive avionics and systems and a super-quiet cockpit. Add to that a roomy and comfortable cabin and plenty of range and payload capability, and the Latitude should prove a popular addition to the Citation line. ❑

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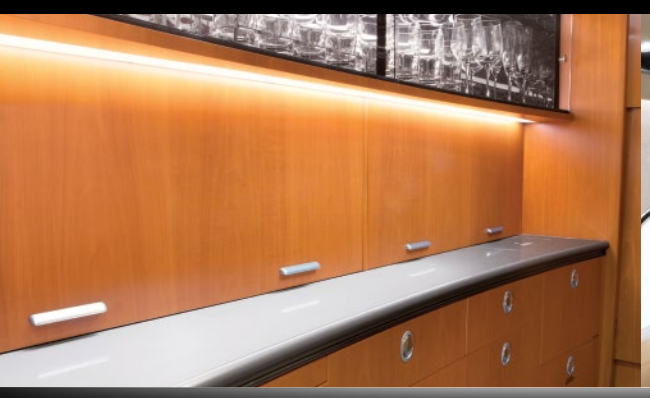

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First quarter bizav safety stats

▶ *Continued from page 6*

flight controls did not respond. He reported that the controls had no "noticeable pressure resistance." The pilot subsequently rejected the takeoff. An NTSB post-incident examination did not reveal any anomalies with the flight control system.

The Safety Board added, "At present, there is no indication that the circumstances of this incident are related to any previous GIV takeoff accidents or incidents," an apparent reference to the GIV crash on May 31 last year at Hanscom Field, Bedford, Mass. That airplane was on its takeoff roll but never left the pavement before it ran off the end of the runway and crashed, killing all seven people aboard. *(See page 14.)*

Runaway Runway Excursions

Accident investigation reports released in the first quarter of this year show that U.S. runway excursion accidents and incidents surged 157 percent compared with the same period last year. Nineteen U.S.-registered turbine airplanes (10 jets and nine turboprops) went off the side or end of runways in the recent quarter versus just three in the period a year ago (all turboprops). Thus, runway excursions accounted for more than 50 percent of all U.S. accidents or incidents in the most recent quarter.

Typically, excursions account for less than a third of all mishaps in the U.S. When noting the locations of these events in the previous quarter, it's clear that one of the leading causal factors early this year was the harsh winter in the Midwest and Northeast, which frequently contaminated many runways with ice or snow.

One non-N-numbered jet and three turboprops also experienced runway excursions in the first quarter of this year versus one jet and two turboprops in the preceding first quarter. Most excursions happened during landing attempts and caused little or minor damage. The others were aborted landings followed by attempted takeoffs, resulting in far more damage to the aircraft. Although none of the excursions resulted in fatalities in these two comparable quarters, fatalities from excursions do happen.

The FAA recently took special aim at curbing accidents resulting from attempted takeoffs after landings, but the effort was short-lived. On March 3 the agency issued an information letter (InFo 15003) advising pilots to "establish a point, during landing, where a go-around or aborted landing procedures will not be initiated and the only option will be bringing the aircraft to a stop"–agency speak for the old adage: it's better to roll off the runway slowing down than it is to crash after accelerating while trying to take off.

A couple of days later, however, the FAA withdrew InFo 15003 with no public explanation as to why. In response to a query by **AIN**, an agency spokesperson said, "We did post that InFO prematurely. It's being further refined. I do not know when it will be finalized and posted." A revised version had not been issued at press time.

Our statistics do not include the Jan. 1, 2015 fatal crash of a Challenger 601, reportedly shot down by Venezuelan fighter jets, into the sea near Aruba. Venezuelan authorities said the business jet (showing registration N214FW) had taken off from an airport in Venezuela. Three bodies and 400 packets of drugs, mostly cocaine, were found. ❑

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In the Works

by Matt Thurber

There has never been a shortage of innovators in aviation, champing at the bit to come up with new aircraft. The urge to fly higher, faster and farther lives on. Here are some of the new designs in development–from those still on computer screens to those deep into their flight-test programs.

Dassault Falcon 8X

The second Falcon 8X joined the flight-test fleet on March 30, with test pilots Hervé Laverne and Etienne Faurdessus at the controls. Falcon 8X S/N 02 lifted off from Dassault Aviation's Bordeaux-Mérignac facility at 3:24 p.m. local time. The flight plan was similar to that of the maiden flight for S/N 01 on February 6. After initial checks of the fly-by-wire controls and digital engine control system, the pilots took the aircraft to 43,000 feet and Mach 0.80 for performance tests. Following this routine, the aircraft then ran through more checks before touching down after a two-hour, 45-minute flight.

"We are pleased with the way the aircraft responded and flew," said Laverne. "It demonstrated the same flawless handling qualities as S/N 01, a positive development at this early stage of the flight-test campaign."

The 8X shares the 7X's fuselage cross-section but with 3.6 feet more cabin length, which raises cabin volume to 1,695 cu ft, up from the 7X's 1,552 cu ft. Range is 6,450 nm, 500 nm more than the 7X. Dassault expects EASA and FAA certification of the 8X in the middle of next year.


Dassault Falcon 8X

Epic Aircraft E1000

The first conforming Epic E1000 turboprop single is in final assembly, in preparation for launch of the formal certification flight-test program in June. Flight Test 1 (FT1) will be joined by FT2 in October, and FT2 will be equipped with a production E1000 interior. Both E1000s will be flown for the full flight-test campaign, and the target for FAA certification of the all-composite turboprop is still the fourth quarter this year.

The $2.95 million E1000 is powered by a 1,200-shp Pratt & Whitney Canada PT6A-67A (derated from 1,800 shp). Capable of carrying five passengers and one pilot, the E1000 will offer high-speed cruise of 325 to 330 ktas, 1,600-nm range, maximum altitude of 34,000 feet and time-to-climb of 13.5 minutes to FL280. Payload with full fuel (288 gallons) is 1,200 pounds. Avionics are a Garmin G1000 panel with an S-Tec 2100 autopilot. Garmin's GWX 70 digital radar will be an option.

Epic has orders for 60 E1000s, and the order book extends through mid-2017. Deliveries should begin early next year.

Mahindra Aerospace Airvan 10

The Airvan 10 turboprop single is slated to receive Australian CASA certification later this year, following submission of certification documents in the third quarter, according to Mahindra Aerospace. "We look forward to working with and receiving support from CASA during this process," said Jon Dauplaise, v-p of global sales and marketing. "With their timely review and approval, FAA certification should follow within two months." The 10-seat Airvan 10 has a longer fuselage than the piston-engine Airvan 8 and is powered by a 450-shp Rolls-Royce 250-B17F. Range at typical cruise speed of 150 ktas is 750 nm. ❑

BUSINESS & UTILITY TURBOPROPS

Aviation Alliance – Excalibur 421 (7/14 p. 6)	Re-engining Cessna 421 with P&WC PT6A-135As plus aerodynamic and other improvements. Price $2.6 million. Cert. timeline pending.
Diamond - DA50-JP7 (3/15 p. 10)	Two versions: Tundra for unpaved runways, takeoff distance 650 feet; and training/private owner model, high-speed cruise 230 knots. Seven seats. Powered by 465-shp Motor Sich AI450S. First flight 1/19/15. Cert. est. second half 2016.
Epic Aircraft – E1000 (3/14 p. 38)	Single-engine all-composite turboprop, based on the Epic LT kit-built airplane. P&WC PT6-67 engine, Garmin G1000 avionics, $2.75 million. Cert. est. fourth quarter 2015, deliveries early 2016.
Evektor – EV-55 (8/14 p. 44)	Nine- to 14-passenger twin turboprop. CMC SmartDeck avionics. First flight 6/24/11. Program has received new Malaysian funding. Cert. est. 2017.
Kestrel Aircraft – Kestrel K-350 (11/13 p. 37)	Six- to eight-seat composite single, powered by Honeywell TPE331-14GR. Garmin G3000 avionics. Earliest delivery est. 2016. Program led by Alan Klapmeier.
Mahindra – Airvan 10 (11/13 p. 37)	10-seat single-engine turboprop, powered by RR250. First flight 5/1/12. Cert. late 2015, first in Australia, followed by FAA.
Mahindra – Airvan 18 (11/13 p. 38)	Resurrection of the Australian twin-turboprop Nomad program. Entry into service in 2015.
Mallard Aircraft – Turbine Mallard (6/14 p. 52)	Twin-turboprop amphibian, conventional all-metal construction, Rockwell Collins avionics, P&WC PT6 engines. Entry into service targeted for second quarter 2015.
Nextant – G90XT (2/14 p. 4)	Remanufactured King Air C90A with new 750-shp GE H75 engines, Garmin G1000 flight deck with single-lever power controls, and remanufactured airframe. First flight 1/13/15. Certification 2Q/15.
Privateer Industries – Privateer (6/14 p. 52)	Single-engine composite amphibian with dual sponsons, GE M601 pusher powerplant. Now under construction in partnership with Comp Air. First flight estimated 2015.

Numbers in parentheses in left column indicate issue and page of previous reference in **AIN**.

BUSINESS & PERSONAL JETS

Aerion – AS2 (10/14 pg. 1)	Supersonic three-engine business jet; Mach 1.6 max speed; 5,300 nm max range. 9/22/14 alliance with Airbus projects service entry 2Q/22.
Beechcraft – 400XPR (3/14 p. 12)	Hawker 400A/400XP re-engined with Williams FJ44-4A-32, choice of Garmin G5000 or Rockwell Collins Pro Line 21 avionics and new winglets. First delivery mid-2015.
Bombardier – Challenger 650 (11/14 p. 1)	Improved version of the Challenger 600 series, powered by 9,220-pound-thrust GE CF34-3B MTO, with 4,000-nm range and Rockwell Collins Pro Line Fusion flight deck. EIS 2H/15.
Bombardier – Global 7000 (8/14 p. 44)	7,300-nm range, 59.6-ft-long cabin, GE Passport engines, Rockwell Collins Pro Line Fusion-based Global Vision avionics. Service entry 2016.
Bombardier – Global 8000 (8/14 p. 44)	7,900-nm range, 50.6-ft-long cabin, GE Passport engines, Rockwell Collins Pro Line Fusion-based Global Vision avionics. Service entry 2017.
Bombardier – Learjet 85 (2/15 p. 1)	Mach 0.82 midsize jet, 3,000-nm range, eight-passenger stand-up cabin. All-composite construction. First flight 4/9/14, since then 100-plus hours in more than 60 flights logged. Program "paused" 1/15/15.
Cessna – Citation Latitude (3/15 p. 16)	Midsize, Garmin G5000 avionics, autothrottles, powered by P&WC PW306D. Range: 2,500 nm. $14.995 million. First flight 2/18/14. FAA cert. and service entry 2Q/15.
Cessna – Citation Longitude (10/13 p. 36)	Longer than the Latitude, Snecma Silvercrest engines, Garmin G5000 avionics. First flight est. 2016.
Cirrus – Vision SF50 (2/15 p. 42)	All-composite, $1.96 million single-engine jet powered by Williams FJ33-4 turbofan. Cirrus Perspective (Garmin) avionics. First flight 7/3/08. First flight of conforming SF50 3/25/14. Cert. and delivery est. 4Q 2015.
Dassault – Falcon 5X (6/14 p. 52)	Twin-engine fly-by-wire large-cabin jet, powered by Snecma Silvercrest engines, with Honeywell EASy flight deck. First flight est. mid-2015. Cert. est. and service entry first half 2017.
Dassault – Falcon 8X (3/15 p. 4)	Trijet, derivative of 7X with longer fuselage and 6,450-nm range. First flight 2/6/15, cert. mid-2016.
Diamond – D-Jet (4/13 p. 50)	Five-seat, all-composite single-engine jet; first flight 4/18/06; powered by 1,900-pound-thrust Williams FJ33. Program on hold for lack of funding.
Embraer – Legacy 450 (4/14 p. 62)	Seven-seat, all-metal fly-by-wire twinjet, Honeywell HTF7500E engines. High-speed cruise Mach 0.82. First flight 12/28/13. Cert. and service entry 2015.
Flaris – LAR 01 (4/15 p. 50)	Composite single-engine jet, engine choice not yet made, five seats, $1.5 million, 1,400 nm range. Taxi tests begun 02/15. FAA/EASA cert. est. mid-2016.
Gulfstream - G500 (4/15 p. 50)	Pratt & Whitney Canada PW800 engines, Honeywell-based, touchscreen-control Symmetry flight deck, sidestick fly-by-wire, 5,000 nm at long-range cruise (Mach 0.85). Fuselage sized between G550 and G650. First flight 2015, service entry 2018.
Gulfstream - G600 (4/15 p. 50)	Same technology and engines (but higher thrust) as G500, 6,200 nm range at Mach 0.85. First flight 2017, service entry 2019.
Honda – HondaJet (8/14 p. 44)	Twin GE Honda HF120 engines mounted in overwing configuration, composite fuselage, metal wings. Conforming prototype first flight 12/20/10. FAA provisional cert. 03/27/15. Full type certification due "in the next few months."
HyperMach Aerospace – SonicStar (7/11 p. 18)	Mach 3.6, powered by SonicBlue electric-turbine hybrid engines. First flight est. 2021.
Pilatus – PC-24 (9/14 p. 6)	All-metal jet powered by a pair of Williams FJ44-4As designed for short and unimproved runways. Features Honeywell Primus Apex avionics. Rollout 8/1/14. EASA and FAA cert. est. 2017.
Spike Aerospace – S-512 (4/15 p. 50)	Twin-engine, 12- to 18-passenger, 4,000+-nm range, Mach 1.6 supersonic business jet. Service entry five to seven years from program launch, current est. 2020.
Stratos Aircraft – 714 (2/11 p. 6)	Composite fuselage, powered by one Williams FJ44-3AP. Four occupants, 1,500-nm range, 410-knot cruise. Wind-tunnel testing completed. Certification timeline not available.
Supersonic Aerospace – QSST (11/13 p. 36)	Proposed low-boom supersonic (Mach 1.8) business jet; unveiled at NBAA 2004; development plans pending.
SyberJet – SJ30i (6/14 p. 13)	Production to resume in 2015 with new SyberVision cockpit, based on Honeywell Epic 2.0 avionics suite.

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Kestrel, Eclipse now One Aviation

▶ *Continued from page 1*

N.M., though Kestrel's existing facilities in Superior, Wis., and Brunswick, Maine, will be maintained at least for the near future, as will Eclipse's service facility in Chicago. Initially, the new company's bread and butter will come from the Eclipse side of the operation as it continues to manufacture the new-build, six-seat Eclipse 550 VLJ, while also upgrading earlier Eclipse 500s built by the former Eclipse Aviation and providing maintenance for the combined fleet.

One Aviation will also continue development work on the K350, which trades the Eclipse jet's speed advantage for a larger cabin, longer range and the ability to operate from shorter, unimproved runways. "The two aircraft complement each other quite well," Klapmeier said. "There's a compelling market for an airplane like the Kestrel, but I also have a lot of trips without the same payload or runway requirements that can be flown a lot more quickly with an Eclipse."

The new company will initially focus on the Eclipse 550 VLJ, above, as it continues development of the K350

Klapmeier formed Kestrel Aircraft five years ago, and while the company has performed extensive design and engineering modifications to the initial Farnborough Aircraft design since then, Kestrel has struggled to attract funding to build a conforming prototype.

Although the merger brought with it a capital infusion (neither Klapmeier nor Ross would say how much, or from where that money came) that amount "isn't enough to finish the K350, nor was it intended to be," Klapmeier added. "What we do have now with One Aviation is an income stream that we can point to, resolving concerns from potential investors and the financial community about our cash flow."

Range of Aircraft Planned

The company also has plans to expand its product line, with Ross identifying "a short-takeoff aircraft, a product you could put floats or skis on" as one of many possible options in the future.

"Within five years, we expect to have a range of products to offer to customers," Klapmeier added. "All of them will be like the Kestrel and the Eclipse, in that some will call them niche aircraft. I prefer 'differentiated.' It's all about matching the right airplane to the right buyer."

The first order of business in the months ahead, however, will be to introduce the One Aviation philosophy to the market. "We're aiming for a more inclusive, and even holistic, approach to how our customers interface with the product and the company," Ross said, adding that the company will extend that singular theme throughout the aircraft purchase, training and ownership processes.

"We must educate the customer about who we are, which truly is One Aviation, instead of Eclipse and Kestrel," Klapmeier concluded. "We are now one company. Our name encompasses who we are, why we're doing this, and why that should matter to customers and the market." ❑

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EBACE preview

MARK WAGNER

More than 50 aircraft will be on display at this month's EBACE show in Geneva.

Europe's 15th annual event will mark innovations in bizav

by Mark Phelps

On the heels of last month's ABACE, the business aviation industry meets again this month for the European Business Aviation Convention & Exhibition (EBACE) in Geneva, Switzerland. Conducted in cooperation with the European Business Aviation Association and the U.S. National Business Aviation Association, the show kicks off on May 19 and runs for three days.

DAVID McINTOSH

This year marks the 15th annual EBACE show. In addition to exhibit halls filled with more than 500 exhibitors in the Palexpo conference center and a ramp chocked with more than 50 aircraft on the static display at the adjacent Geneva International Airport, a series of education, networking and advocacy meetings are scheduled to mark the milestone. More than 13,000 attendees are expected.

Chris Strong, senior v-p of conventions and membership, oversees the event for NBAA. He said, "The business aviation community has faced significant challenges over the past decade and a half, but we've also experienced great innovation in equipment, safety and management methodology. These innovations will be celebrated at EBACE 2015."

Even before the event officially kicks off, there will be a one-day EBACE Safety Workshop on Monday, May 18. Invited speakers include representatives from EASA, business aviation trade associations and individual company flight departments. "This year's Safety Workshop will focus on both regulatory and operational safety concerns and will give attendees practical guidance for addressing safety issues in their own organizations," said NBAA v-p of regulatory and international affairs Doug Carr.

The global nature of the EBACE show is highlighted with another pre-convention event, also scheduled for May 18. The day-long 2015 EBACE International Aircraft Transaction Seminar will explore the pitfalls of buying aircraft from outside one's national borders. Conducted by experts in aircraft sales, the program flags some of the common misconceptions. Featured speaker Jay Mesinger, president and CEO of Boulder, Colo.-based Mesinger Jet Sales, said, "An international business aircraft transaction is no longer something one should attempt alone."

Among the information sessions on the docket for EBACE 2015 is an overview of the state of the industry, moderated by **AIN** editor-in-chief Charles Alcock. With a panel that includes association leaders, industry analysts, manufacturers' representatives, sales experts and financial advisors, the session will address the first surge in demand in recent memory for business aviation services, and the challenges faced in the wake of unrest in Ukraine and other barriers to advancement of the economy.

For more information on EBACE 2015, visit www.ebace.aero. ❑

Count on AIN for Full Coverage of EBACE 2015

You can count on **AIN** for full coverage of EBACE 2015 in our **EBACE Convention News** daily editions (May 19, 20 and 21) and online at www.ainonline.com. The editorial team at **AIN** is already gathering information for these editions. Exhibiting companies should contact international show editions editor Ian Sheppard at isheppard@ainonline.com as soon as possible with news and interview opportunities. Embargoes will be strictly honored. ❑

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Embraer Legacy 500 makes Chinese debut

by Charles Alcock

Embraer's new Legacy 500 made its debut in China at last month's ABACE show. The midsize jet appeared alongside the first Chinese-built example of the Brazilian airframer's Legacy 650, which was manufactured last year by joint venture Harbin Embraer Aircraft Industry (HEIC). This represented the first large-cabin business jet to be made in China.

HEIC, a partnership with Avic group subsidiary Harbin Aircraft Group, is providing the Tailored Elegance cabin interior package for the Embraer Lineage 1000E. The design features elements developed specifically for Chinese tastes.

Later this year Jackie Chan will take delivery of the first Embraer Legacy 500 to be based in China.

DAVID McINTOSH

The Legacy 500 on show at ABACE is scheduled to be delivered to Embraer brand ambassador Jackie Chan later this year. It will be the first example of the jet to be based in China.

Though the Chinese market is noted for its preponderance of long-range jets, "we do see increasing potential for midsize jets like the Legacy 500 as the market matures and aircraft ownership grows," said Guan Dongyuan, president of Embraer China.

Embraer also expects China's growth in ownership to outpace global trends. According to a new Embraer market forecast, over the next decade China is expected to take delivery of 855 new business jets. That will raise the country's share of the world's business jets, currently at 2.8 percent, to a projected 9 percent of the fleet. "Chinese customers are increasingly aware of the benefits executive jets bring as business tools," said Dongyuan. ❑

News Note

UAS International Trip Support has strengthened its network in China with the appointment of three new station managers at airports in Shanghai (Matthew Zhang), Chengdu (Wayne Zhao) and Guangzhou (Super Zhong). The additional staff will supplement the company's presence in the Asia-Pacific region, which has recently been augmented with the opening of a regional headquarters in Hong Kong and an office in Beijing. Last year UAS supported 65 percent more trips in the region than it had in 2013. The company remains optimistic that general aviation will continue to grow across Greater China.

"With the airport station managers, we now can provide even more immediate assistance to our clients," said UAS cofounder and executive president Mohammed Husary. "Our station managers will not only be hands on with all cases, but will provide firsthand information to clients on site. This experience and knowledge is absolutely invaluable and enables us to deal easily with last-minute situations or changes." ■

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Textron Aviation

▶ *Continued from page 4*

fabrication COE, a move that capitalizes on Textron Aviation's purchase of the Wichita-based aviation interiors manufacturing facility from UTC Aerospace Systems in January. The Wichita company had specialized in Citation and King Air furnishings, and the acquisition enabled Textron Aviation to bring that work in-house. The fabrication COE is slated for completion next year.

In Wichita, facilities and work have shifted, but Rosenberg said the overall footprint is about the same. Textron Aviation is downsizing in Chihuahua, Mexico, with plans to consolidate the Cessna and Beech facilities there. This may involve vacating at least one of the plants and possibly two in the region.

In addition to completing its support expansion and shifting of facilities, Textron Aviation is looking at leveraging technologies. Rosenberg noted that Cessna has been a "product development machine," something that will benefit the Beechcraft product line. Beechcraft brings substantial expertise in special missions, an area where Cessna can grow.

Textron Aviation also has been looking across the product lines to see what might be incorporated in new products or retrofit programs. The company was recently spotted testing a Hawker 4000 with winglets. While that project will not result in the return of the Hawker 4000 to production, the technology could end up on a new aircraft.

One executive likened the process to rummaging through the attic to see what will be of use. But one thing is clear: Textron Aviation has no plans to return any of the Hawkers to production. President and CEO Scott Ernest made that statement shortly after the merger and Rosenberg more recently reinforced it.

The company emphasized that product development is moving forward at full speed, an effort that has strong backing by parent company Textron. As Textron was finalizing its purchase of Beechcraft, Cessna announced plans to bring the Citation CJ3+ to market and accomplished that in September last year. This was in addition to certifying the Citation X+, spooling up on Sovereign+ and M2 deliveries and launching the flight-test program of the Latitude.

"It's exciting. It has been a fast and furious year," Shortt said. ❑

FEC levies fines against NATA

▶ *Continued from page 12*

The FEC praised NATA for voluntarily reporting the issue and bringing "substantial information to the attention of the commission." As a result, the commission said it was not concluding that NATA or its PAC "knowingly and willfully" violated the law.

Hendricks said he first became aware of the funding system before he took the role as president and immediately implemented actions when he came on board. He also noted he worked closely with the board on the initiatives. These included a number of personnel changes, from regulatory and government affairs to a new treasurer. The initiatives also included establishing a new set of articles of organization for the PAC, instituting training for employees and board members and undergoing biannual audits. Hendricks noted that in addition to working with the board, the association also endeavored to protect the employees who were involved but unaware that the funding system was illegal.

The FEC issued letters of caution to those employees. According to the FEC, NATA has been "a party in an ongoing arbitration proceeding against both Coyne and Darrow." ❑

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Surface Pro 3 moving into mostly commercial cockpits

by Matt Thurber

Surface Pro 3 computers mounted in an Austrian Airlines A320.

Microsoft is ramping up efforts to expand into the electronic flight bag (EFB) market with its Surface Pro 3. While at first glance the Surface Pro 3 looks like a large tablet, it is more a powerful but slimmed-down laptop computer that can double as a tablet. And while it is not ideal for every cockpit because it is so large (7.93 x 11.5 x 0.36 inches), Microsoft is gaining adherents in the airline market and offers an alternative for those who prefer something other than the ubiquitous Apple iPad or the less popular (in aviation) Android-based tablets.

For the past few months, I've had the opportunity to try out Microsoft's flagship tablet. Microsoft provided one of its Surface Pro 3s with Jeppesen's FliteDeck Pro pre-installed, a typical configuration for airline pilot users. While FliteDeck Pro for Windows isn't currently available as a standalone product that a pilot can buy directly from Jeppesen, the company said it is considering making it available for users such as corporate pilots.

The Surface Pro 3 provided by Microsoft is not quite the top-of-the line with the Intel Core i7 processor, but has a still-speedy Core i5 with 8 GB of RAM and 256 GB of flash-based storage. The operating system is Windows 8.1 Pro, which offers both the normal mouse and keyboard interface and a touchscreen that can also be accessed using the stylus/pen included.

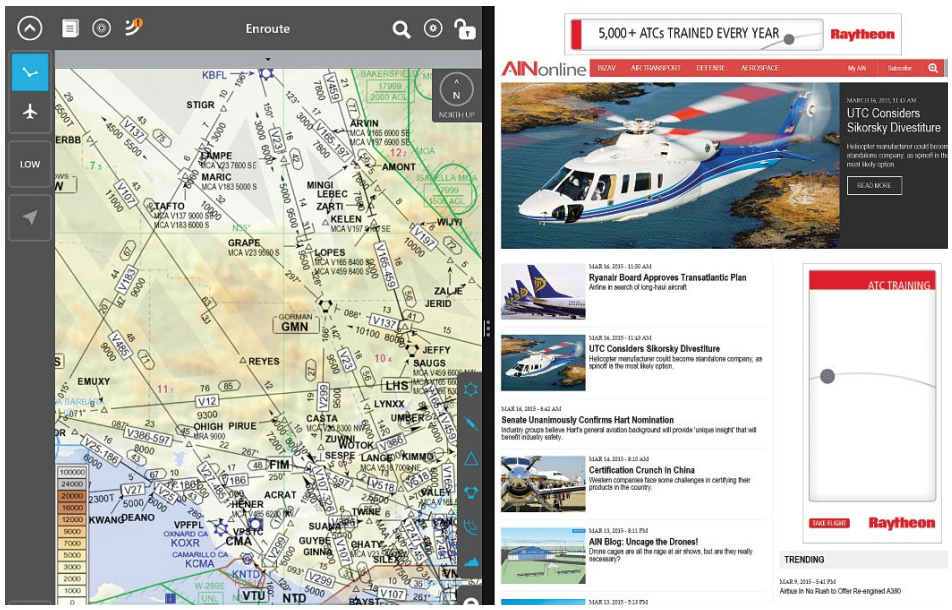
Unlike other tablets, the Surface is a full computer; you can plug a mouse and keyboard into the USB 3.0 port, and the 12-inch display is large enough for normal work using typical Windows programs. The display is excellent, with 2,160 x 1,440 pixel (2K) resolution and a 3:2 aspect ratio. The screen can be split into two windows, so you could run FliteDeck Pro on one side and another program, say a flight manual viewer or Microsoft Word, on the other.

The device weighs 1.76 pounds, and battery life is up to nine hours. Like most tablets, the Surface has front and rear cameras, both 5 megapixels and capable of 1080P video capture. Wi-Fi (802.11ac) and Bluetooth (4.0) are also included. Making the Surface more laptop-like is the optional Type Cover, which snaps into a connector on one of the tablet's long sides. The cover includes a trackpad and typical Windows keyboard, and it folds down to cover and protect the display. On the back of the display, the fold-out kickstand conveniently props up the tablet for even more laptop functionality. Companies such as RAM, navAero and Pivot make mounting systems for the Surface. The navAero mount can include power and an Ethernet connection between two tablets.

FliteDeck Pro

There are differences between Jeppesen FliteDeck Pro on the Surface Pro 3 and the Apple iPad version, but functionally Jeppesen has kept the two versions similar so pilots familiar with one platform will adapt easily to the other. Two features on the iPad that are not on the Surface are weather data and own-ship position on approach charts, although the Surface version does allow own-ship display on airport diagrams. This sort of makes sense because airlines generally aren't allowed to use own-ship display on tablet-based EFBs in the air; for some reason regulators are squeamish about this feature.

En route chart display is also similar, but the own-ship position indicator on the Surface is a magenta circle while on the iPad it is a magenta filled-in arrowhead. The terrain background in FliteDeck Pro takes full advantage of the Surface's large display.



Although the Surface's split screen allows users to interact with two programs at once, reading a magazine in flight is not recommended.

While Jeppesen hasn't targeted the business aviation market for the Surface Windows 8.1 version of FliteDeck Pro, the company plans to add more features such as weather and integration with external data sources. "Over the next several months," a spokesman told **AIN**, "Jeppesen will continue to harmonize capabilities between iOS and Windows 8 and we will also introduce capabilities unique to the Windows platform, such as taking advantage of a USB interface."

Ready for Bizav?

The big question for tablet EFB users is whether the Surface Pro 3 provides a suitable alternative to iPad and Android tablets. While the Surface is a capable computer that can do much more than display Jeppesen FliteDeck Pro, it suffers from a lack of other aviation-oriented applications. The Surface is a Windows computer, not just a tablet, so when looking at available software, one has to consider software that is compatible with Windows 8.1–not just tablet–applications. In any case, tablet-style aviation EFB apps such as ForeFlight, WingX, Garmin Pilot or FlyQ EFB are not available for the Surface.

The Surface is not equipped with GPS, so a GPS source is required for the device to display own-ship position on airport diagrams and en route charts. So far one GPS is designed to work with the Surface, the Bad Elf GPS Pro. I tested the Surface Pro 3 with a new Bad Elf GPS Pro+, and at first I couldn't get the Surface to recognize the GPS data, even though the Bad Elf was paired to the Surface via Bluetooth. I finally realized that the Bad Elf GPS Pro would show position information on FliteDeck Pro only after I restarted the Surface Pro 3 with the Bad Elf GPS already switched on. Once connected, if I turn off the Bad Elf then turn it back on, it stops

Continues on page 66 ▶

FOREFLIGHT FACILITATES SURFACE OPS

Aviation app developer ForeFlight has released features and capabilities focused on enterprise users of its ForeFlight Mobile Apple iOS application. The company also worked with Southwest Airlines to help the airline capture GPS data to support a "system accuracy assessment in pursuit of own-ship authorization under FAA AC 120-76C guidance."

The own-ship authorization under Advisory Circular 120-76C opens the door for commercial operators to use mobile device-based electronic flight bags (EFBs) such as iPads and Android tablets to display own-ship position, but only for ground operations. "These operators are limited to using own-ship depiction during airport surface operations and at less than 80 knots groundspeed," according to ForeFlight. To help operators comply with these limitations, ForeFlight has added a new feature–the Limited mode–in the "Enable Ownship" setting. The Limited mode applies the 80-knot limitation, then automatically removes own-ship display after takeoff, the company explained.

The database accuracy and system quality statement for meeting AC 120-76C guidance is available on ForeFlight's website. According to the company, "The letter includes a statement regarding airport map database accuracy and quality, as well as information about features in ForeFlight Mobile useful for collecting GPS information to support a system accuracy assessment."

ForeFlight is also offering decompression test reports for new iPad models, including the iPad mini 3 Retina. The decompression test was done while the iPad was running ForeFlight Mobile, and ForeFlight is providing the report on its website.

For enterprise users that need to distribute documents to EFB users such as pilots, ForeFlight has added integration with the Box cloud service. Other cloud services available include Amazon S3 and Dropbox.

ForeFlight also announced new features in Version 6.8, with added taxi charts and more than 2,700 FBO locations now mapped on FAA and ForeFlight airport diagrams. This helps pilots see precise FBO locations at unfamiliar airports. *–M.T.*

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Myriad devices on display

by Matt Thurber

The 58th annual Aircraft Electronics Association International Convention & Trade Show, held from April 8 to 11 in Dallas, saw attendance up by 21 percent on last year, to a record 1,897 representing 350 repair shops. The exhibit hall was sold out, with 135 companies displaying products and services. "Naturally, the topic of ADS-B dominated this year's show with the looming mandate just 56 months away," said AEA president Paula Derks.

During the opening session, retired Garmin vice president of marketing Gary Kelley received the AEA's Lifetime Achievement Award. "I want to thank you, the membership, for this wonderful award and allowing me to work in your industry," he said.

Also speaking at the opener, FAA deputy administrator and chief NextGen officer Michael Whitaker urged those involved in avionics equipment installations "to continue to work to meet the 2020 ADS-B deadline by encouraging early equipage. That rate needs to continue to accelerate. Encourage your customers to equip now."

The AEA provided an update of avionics worldwide sales revenues last year, which totaled just over $2.5 billion, up 4 percent year-over-year. The AEA's annual market report shows that the value of sales was split fairly evenly between forward-fit (nearly $1.3 billion) and retrofitted equipment ($1.2 billion). "The report indicates modest year-over-year growth in sales for the second straight year," said Derks.

Next year's AEA convention will take place from April 27 to 30 in Orlando, Fla.

MATT THURBER

Aspen has added to its Evolution displays a software-only upgrade that provides an angle-of-attack indicator.

New Cockpit Options

Aspen Avionics has added an angle-of-attack (AOA) indicator to its Evolution primary flight and multifunction displays, without the need to string new wires or plumbing, install any hardware or physically modify the airplane. The Aspen Evolution AOA is a software-only upgrade that uses Aspen's ADAHRS to provide an algorithm-derived AOA indicator on the Aspen displays. The upgrade is slated to be available in July.

"We're quite excited about this," said Aspen president and CEO John Uczekaj, "because of loss of control and the lack of use of angle-of-attack indicators and lack of understanding [of the benefits]. We really want to push prevention of loss of control through the avionics as an integral part of improving safety. We think it's going to take angle of attack into the general aviation community."

The new **Universal Avionics** InSight Integrated Flight Deck will feature Jeppesen's airport mapping database (AMDB), becoming the first business aviation avionics system to display the Jeppesen maps, the companies announced. The AMDB display is made possible by the InSight synthetic-vision system, which "uses AMDB data to render accurate, high-resolution airport diagrams," according to Universal Avionics. "Runways with actual markings, taxiways, parking areas, buildings and other obstructions, surface roads and construction areas are all shown." InSight is already installed in Universal's Citation VII, and STC certification for this type, as well as some Citation IIIs, is expected in the fourth quarter.

Trig Avionics introduced new aircraft radios–the TY96 and TY97–as well as the TMA44 and TMA45 audio panels. The 10-Watt TY96 and 16-Watt

Continues on facing page ▶

Operators see growing list of Fans STC options

The array of choices for business jet operators flying transatlantic routes and needing to comply with Future Air Navigation System (Fans) mandates is growing, with new certifications and more equipment options. Fans requires a compatible flight management system (FMS), a datalink (satcom) and a cockpit voice recorder capable of storing data messaging. Fans is currently required for North Atlantic operations between FL350 and FL390, though eventually it will be expanded to cover more altitudes. The equipment also supports future implementation of data messaging in the U.S. as part of the FAA's NextGen efforts, although there is currently no mandate for so-called DataComm.

Companies that have received Fans supplemental type certificates (STCs) include Chicago Jet, Clay Lacy Aviation, Comlux America and Kaiser Air. While some installations can use existing Inmarsat satcoms, most Fans STCs include installation of an Iridium satcom to provide the datalink capability. Iridium systems from Gogo Business Aviation, International Communications Group (ICG) and TrueNorth Avionics have proved popular. Another company offering a product for the satcom side of Fans solutions is Latitude Technologies, which recently introduced the DL150 satellite data unit, which offers data-only capability (no voice service). Most Fans STCs are installing a Universal Avionics FMS, either as a third FMS or replacing existing equipment, plus Universal's UL-800/801 UniLink communications management unit and CVR-120 cockpit voice recorder. Comlux's STC employs an L-3 Aviation Recorders cockpit voice recorder. TrueNorth's Simphonē Fans-1/A+ Data Link Unitplus is also data-only. The data-only Iridium systems offer a simpler option for aircraft that already have a voice satcom. Garmin's GSR 56 Iridium datalink transceiver received FAA TSO-C159a approval last year and is the Fans datalink for forward-fit Garmin G5000 flight decks.

Four companies celebrated Comlux's new STC at the AEA convention in Dallas. Posing with the STC are (left to right) Adam Tsakanos, ICG; Kim Stephenson, senior manager of aftermarket sales at L-3; Cory Kolman, West Coast regional sales manager for Comlux; Vic Hagner, Comlux avionics manager; Tim Rayl, senior v-p sales and marketing at ICG; and Bruce Benevich, Great Lakes regional sales manager for Universal Avionics.

Chicago Jet was the first to STC a business jet Fans package in September 2013, for the Falcon 50. The Falcon 900 STC was approved in August 2014. Since then, Chicago Jet has added Fans STCs for the G100, Astra and Astra SPX and is in the process of receiving or has begun developing STCs for the GIV/GIV-SP and GV, GII/GIII, Falcon 2000, Challenger 601 and 604, Falcon 900EX, Hawker 4000 and BBJ.

Kaiser Air received a Fans STC for the GIV/GIV-SP in March and expects to add the GV in May. The company operates Boeing 737s and is planning on a Fans STC for the 737-700, which would enable Kaiser Air to offer the STC to the BBJ market, according to Rick Brainard, director of maintenance marketing and business development. "Quite a number of [operators] have inquired about the GIII," he added. "If we have enough inquiries and if we can get two or three [operators] to commit, we would do that."

In March, Clay Lacy Aviation announced approval of its Fans STC for the GIV/GIV-SP. This STC offers the option of retaining an existing Honeywell MCS-6000 or -7000 Aero H satcom, instead of installing an Iridium system. The GV should be added to this STC shortly. Clay Lacy is also working on a Challenger 601-3A/R Fans STC, which will use True North's Iridium satcom.

Comlux America announced in early April that it received an STC for the first Fans installation on a Challenger 601. This is Comlux's second Fans STC for the Challenger 600 series; the first was issued in March. A second 601 is in the installation process at Comlux's Indianapolis headquarters, and it will be delivered this year.

In other Fans news, Rockwell Collins announced that buyers of Fans upgrades for the Rockwell Collins-equipped Challenger 604 and Falcon 50EX, 2000 and 2000EX will receive one year of Arinc Direct flight support services. The upgrade is available from Rockwell Collins dealers, and the Challenger 604 upgrade will be available this summer, followed by the Falcon 50EX, 2000 and 2000EX "toward the end of the year."

For operators, once Fans equipment is installed, their airplanes have a position source that meets the accuracy requirements of ADS-B OUT. Most Fans STCs offer the option of a relatively low-cost ADS-B OUT upgrade, which basically involves a transponder upgrade, installation of annunciators and some wiring modifications. *–M.T.*

▶ *Continued from preceding page*

TY97 offer dual 25 KHz and 8.33 KHz capability and measure 1.3 inches high. Both feature "Say Again" technology, which can instantly replay the last ATC transmission. The audio panels provide dual com, dual nav and built-in intercom and marker beacon receiver. The TMA45 adds entertainment features and Bluetooth support.

Avidyne has added to the functionality of its IFD540 FMS/GPS/navcom with the new 10.1 software release. New features, according to Avidyne, include "support for display of ADS-B weather, scrollable data blocks, expanded checklists, rubber-banding of the active flightplan leg and multiple-user customization of checklists, user settings, user-defined waypoints, routes and more." The software also enables control of Avidyne's new remote-mount AXP322 transponder and MK10 Bluetooth wireless Mini Keyboard for the IFD540 and IFD440. Certification of the IFD440 is expected this month.

Universal's InSight will display Jeppesen maps.

The **TKM Avionics** line of plug-and-play replacement navcoms is still available, and new company owner Ken Beckemeyer is breathing fresh life into the product line, which offers a relatively inexpensive means of replacing old radios with modern technology and no wiring changes or installation hassles. TKM navcoms are a direct replacement for the Narco Comm11 series, King KX-170/175 and the Cessna/ARC RT385-series navcoms, including the 328, 508 and 528. The replacement radios are built with all-new components and include digital flip-flop displays. The MX170 and 300/385 series navcoms are priced at $2,650, and the Narco Comm11 replacement MX-11 costs $1,450. Plans call for adding Bluetooth connectivity and EASA-compliant 8.33-MHz frequency spacing.

SmartSky Networks, which is fielding a new air-to-ground telecom network for the aviation market, announced a partnership with cabin Wi-Fi access point (CWAP) manufacturer Kontron. The SmartSky 4G service promises to provide more than 10 times the typical speed and capacity of networks currently on the market by using 60 MHz of spectrum for its air-to-ground data communications, according to the Melbourne, Fla.-based company. Kontron CWAP hardware has been installed in business jets and Airbus A330s and Boeing 767s. SmartSky is planning to begin beta testing its 4G network later this year and expects to begin

Continues on next page ▶

AEA Exhibitors Tout New ADS-B Equipment

New equipment and certifications to meet the FAA's automatic dependent surveillance-broadcast (ADS-B) OUT mandate are hitting the market, offering more choices for aircraft owners and operators needing to meet the mandate by midnight on Dec. 31, 2019. While not all aircraft are required to be equipped to meet the mandate, those that fly near major metropolitan airports and in areas where transponders are required will need equipment that is certified to the standards in the ADS-B OUT regulations.

Two types of ADS-B system are available: the 978-MHz Universal Access Transceiver (UAT) frequency, which is available only in the U.S. and for aircraft that fly below 18,000 feet, certified to DO-282B standards; and the 1090-MHz Extended Squitter (ES) frequency for aircraft that fly above 18,000 feet certified to DO-260B. Note that 978 UAT offers both ADS-B OUT and IN capabilities; in features include reception of free weather, flight data (such as notams, TFRs and so on) and traffic information. The 1090ES frequency works at all altitudes but does not currently offer any ADS-B IN features.

At the Aircraft Electronics Association (AEA) convention in April, avionics manufacturers highlighted the latest in ADS-B developments. The number of ADS-B installations in the U.S. reached the 10,000 mark in March, but many more remain, with a total of up to 160,000 aircraft expected to need the upgrade by 2020.

Appareo Systems

The Stratus ESG transponder is Appareo's first panel-mount ADS-B product, and it solves the mandate challenge with an all-in-one 1090ES ADS-B OUT system that can be interfaced with a Stratus ADS-B IN receiver to deliver free weather and flight information to an iPad running the ForeFlight Mobile app. Stratus ESG also contains a rule-compliant GPS sensor. According to Appareo, for typical piston aircraft Stratus ESG will require about half the installation time of a remote-mounted 978UAT receiver. The panel-mounted Stratus ESG package, including the transponder, GPS antenna and installation kit, will cost $3,490. FAA certification is expected later this year.

Aspen Avionics

Aspen Avionics received FAA certification in March for its ATX100G ADS-B transceiver, which is compatible with the company's Aspen Evolution PFDs and MFDs. The ATX100G transmits and receives on 978UAT and thus can receive free weather and flight information, and it is also equipped with a rule-compliant Waas GPS sensor. The ATX100G is available now.

Avidyne

Avidyne introduced two new 978UAT transceivers at the AEA convention, the MLX200 and MLX210. The MLX200 provides 978 MHz ADS-B IN and OUT capability, which can be displayed on Avidyne's IFD540 and IFD440 GPS/nav/com systems and also on the company's EX500, EX600 and EX5000 MFDs. The MLX210 is the same except that it has a rule-compliant Waas GPS sensor built in. Avidyne also unveiled the new AXP322 remote-mounted mode-S 1090ES transponder with ADS-B OUT. This can by controlled via the IFD540 or IFD440 units, which also provide an approved GPS position source to the AXP322.

BendixKing

The BendixKing division of Honeywell offers the KGX 150/130 ADS-B solutions, designed for 978UAT (below 18,000 feet) operations. An optional Wi-Fi module provides weather and traffic display on mobile devices. The KGX 150 includes a rule-compliant Waas GPS sensor.

FreeFlight Systems

FreeFlight Systems released version 2.0 of its ADS-B View iPad app, which works with FreeFlight's Rangr ADS-B receivers to deliver ADS-B IN weather, traffic and flight data via Wi-Fi to the iPad. The View app includes a map, with overlays of graphical weather and traffic, as well as own-ship position of the aircraft provided by the Rangr's internal Waas GPS. Another new View feature is the ability to support connection of multiple tablets to the Rangr.

At the AEA convention, FreeFlight also announced that it has received EASA TSO-C145c certification for its 1203C SBAS/GNSS sensor, which is already certified by the FAA to TSO-C145c. The 15-channel 1203C can be used as the rule-compliant position source for ADS-B OUT installations for all types of aircraft, including airliners, business turboprops and jets and rotorcraft.

To help owners meet the ADS-B OUT mandate, FreeFlight launched the Equip-It 2020 program, low-cost solutions for light general aviation aircraft. The program includes two configurations of Rangr Lite systems, the FDL-978-TXL ADS-B OUT system for $1,995, and the $3,695 FDL-978-XVRL ADS-B IN/OUT system. Both include a rule-compliant Waas GPS sensor, ADS-B and GPS antennas, install kit, control head and for the FDL-978-XVRL a Wi-Fi module to send ADS-B IN data to a tablet computer. The FDL-978-TXL can be upgraded later to -XVRL configuration.

Garmin

Garmin's Vantage line of ADS-B solutions covers general aviation aircraft from experimental airplanes to helicopters to business turboprops and jets. For the latter, Garmin is offering the GTX 3000 transponder paired with a Waas GPS position source provided by the GDL 88 ADS-B datalink. This enables position information to be broadcast on both ADS-B OUT frequencies (978 and 1090 MHz). This solution is STC'd in the Gulfstream G150 and G200. STCs are under way for other business jets, including the Beechjet 400A/Hawker 400XP and Hawker 750/800A/800XP/850XP/900XP (Elliott Aviation); Citation V (Executive Aircraft Maintenance); and Learjet 60 and Learjet 35A (Butler National). With the Vantage business jet solution, the FMS and cockpit displays do not have to be upgraded.

For aircraft equipped with Garmin integrated flight decks, Garmin is developing a software update to support ADS-B solutions, which will pair the existing transponder with the GDL 88 ADS-B datalink. Aircraft without a glass display in the cockpit can be fitted with the GDL 84, which can wirelessly send traffic and flight data to a mobile device. The GDL 84 is a 978UAT system and includes a built-in Waas GPS sensor.

JetTech

For older Cessna Citations, JetTech has developed Garmin GTN upgrades, which include ADS-B IN and OUT. JetTech is amending its FAA STC for installing the Garmin GTN GPS/nav/com/MFD to include all Citation Bravos, Ultras, Encores and Excels with the Honeywell Primus 1000 cockpit suite. The flight deck retrofit specialist will soon be providing installation data packages for the STC through Garmin-authorized dealers. The Garmin GTN package includes a touchscreen display, autopilot-coupled LPV Waas approach capability, voice-activated intercom and ADS-B OUT and IN.

L-3 Aviation Products

The FAA recently issued technical standard order (TSO) authorization for the L-3 Aviation Products Lynx NGT-9000 Multilink Surveillance System ADS-B transceivers. The NGT-9000 is a single-box mode-S transponder and ADS-B OUT/IN transceiver with a built-in Waas GPS position source.

An unusual feature of the NGT-9000 is touchscreen control via the unit's display. The NGT-9000's ADS-B capability is dual-band, operating on both 978UAT and 1090ES. The NGT-9000 can also receive free weather and flight information on 978UAT. L-3's NextGen Active Traffic is also an option for the NGT-9000, and the unit's high-resolution touchscreen display features a moving map displaying notams and TFRs in addition to traffic and weather. A Wi-Fi module is available to deliver weather and flight data to mobile devices.

At the AEA convention, L-3 announced it is including free installation products with the first 1,000 Lynx units sold, including the NGT-9000 series as well as the NGT-1000, -2000 and -2500 remote-mount models. The free products include antennas, installation kit and configuration module.

Trig Avionics

The Trig Avionics TT31 transponder is plug-and-play compatible with the BendixKing KT76A and KT78A, so no new tray is required. To help owners meet the ADS-B OUT mandate, Trig offers a free STC covering 650 aircraft models, using the TT31 and Trig's TN70, which includes a Waas GPS and antenna. The TT31 can also interface with Garmin 400- and 500-series GPS navigators.

Universal Avionics

Universal Avionics has teamed with Rockwell Collins on an integrated ADS-B OUT solution for business aircraft. The solution pairs the Collins TDR-94(D) mode-S transponder with Universal's SBAS-FMS, providing DO-260B-compliant ADS-B and pathways for controller-pilot datalink communications and localizer performance with vertical guidance (LPV).

Customers with legacy Universal FMSs might be able to keep their control display unit and install an SBAS navigation computer unit with antenna and the Collins TDR-94(D), Universal said. For non-Universal Avionics customers, the company is offering an upgrade incentive program this year that gives trade-in credit for Garmin GNS 430/530 GPS navcoms and Honeywell GNS-X/XES/XLS, KNS 660 and NZ-2000 FMSs. ■

▶ Continued from preceding page

offering commercial service next year.

Astronics AeroSat announced its new FliteStream VIP package, which offers customizable satcom connectivity solutions for business and VIP aircraft. FliteStream can include the Astronics F-Series fuselage-mounted or T-Series tail-mounted satcom antennas as well as satellite network service, certification assistance and 24/7 AOG product support, according to Astronics.

TrueNorth Avionics announced that it has received FAA technical standard order (TSO) approval for a Fans-compliant Iridium-based satellite datalink unit (DLU). The company's Simphonē Fans 1/A+ datalink Unitplus is already approved under multiple supplemental type certificates, but the TSO "will streamline the process of obtaining additional STCs," according to the company. The TrueNorth DLU is lightweight and includes a built-in Iridium transceiver.

Satcom Direct launched a new service that allows travelers in business aircraft to use their cellphones seamlessly. The new technology consists of what is effectively an on-board mobile phone cell. All that is required to access the "Global VT" service is a Satcom Direct Router (SDR) in the aircraft, with the latest software update, and a smart phone. As of mid-February, some 75 aircraft had SDRs installed. A small group of customers had already been beta testing Global VT on their aircraft, starting late last year, but now it will start rolling out to a larger fleet, fueled by a large number of orders, reported the company. In the cabin, it works through an app, using the cabin Wi-Fi provided by the SDR.

Flight Display Systems (FDS) and **International Communications Group** (ICG) have joined to create a new in-flight entertainment system, a combination of ICG's eRouter and FDS's JetJukebox wireless media streaming device. In addition to connecting to the eRouter, the JetJukebox can stream movies, music and other electronic files to up to eight tablets, smart phones or computers and also features a high-resolution worldwide moving map. The JetJukebox stores files on a solid-state drive. The eRouter adds connectivity in the cabin for passenger devices as well as data transfer using acceleration and compression, access for multiple local area network clients and wide-area network connectivity to GSM, Inmarsat, Iridium and other networks, according to ICG.

Gogo Business Aviation introduced the ATG 1000 air-to-ground telecom system for light business jets, turboprops and owner-flown aircraft. Shipments of the $35,000 (plus installation) systems are expected to begin this summer. Using the Gogo Biz air-to-ground network, the ATG 1000 enables email with attachments and calling and texting with passengers' own smart phones and mobile numbers. Gogo Biz provides service coverage above 10,000 feet in the continental U.S., portions of Alaska and Canada. The ATG 1000 is software-upgradable, allowing customers to add connectivity features, such as web browsing, by purchasing a software key. The datacom system can support as many as five Wi-Fi devices. In the future, the ATG 1000 is also expected to support select cockpit and operational applications.

Thomas Global Systems launched its new LCD TFD-8601 cockpit retrofit CRT replacement for regional and corporate aircraft. The plug-in LCD device replaces Rockwell Collins EFD-86 CRT units installed in aircraft such as the Saab 340 and EMB-120 Brasilia and some King Airs, Falcons, Gulfstreams, Hawkers and Learjets. First customer deliveries are expected to start next month. The TFD-8601 LCD retrofit addresses concerns about the lack of upgrade alternatives for legacy CRTs and component obsolescence, although Thomas Global still offers repairs for CRTs. Another advantage of the LCD retrofit is that it can accommodate NextGen capabilities and evolving technologies.

Aerospace Optics, manufacturer of the ViviSun line of push-button illuminated switches, announced a new product line, the Nexsys avionics interface, which facilitates avionics system-to-system communications. The product line includes the Nexsys logic module and Nexsys signal converters. "The Nexsys product line is a natural extension for our company," said Aerospace Optics president and CEO Loren Jensen. "In fact, our customers' rapid adoption of Logic components for behind-the-panel solutions was the catalyst for the Nexsys product line and the new Nexsys Arinc 429-to-discrete signal converter. Our engineers identified a real customer need and an opportunity to address everyday electrical challenges with high-performance systems solutions."

Accord Technology introduced a tiny new GPS receiver, the NexNav Micro-i. The GPS Sbas Micro-i is compliant with TSO-C199 and TSO-C145c for application in "commercial" aircraft avionics installations. TSO C199 is a standard for the "Traffic Awareness Beacon System (Tabs) for light aircraft without electrical systems, exempted from ADS-B out, such as gliders, balloons and other aircraft with non-certified electrical systems," according to Accord. "The Micro-i, when combined with a Tabs low-power mode-S, enables Tabs Class B aircraft to be visible to other aircraft with TAS [traffic awareness system], Tcas I/II [and] ADS-B IN." ❑

Surface Pro 3 tablet

▶ Continued from page 62

providing position information to the Surface and will not do so until the Surface is restarted. However, even this procedure was not 100-percent effective, and sometimes the Surface simply will not show the GPS position, even though it says it is paired with the Bad Elf GPS. Most of the time restarting will fix this problem.

"We understand there may be an interest in [non-commercial] aviation for an alternative for the iPad," said Brian Eskridge, Microsoft Surface senior manager. "What we've worked with customers [to do] is to test and define what is a great experience in commercial aviation."

Commercial Customers

Companies that have adopted Surface devices generally are using FliteDeck Pro, although Lufthansa has selected its own Lido software for an EFB application. Austrian Airlines is also using Lido's eRouteManual, Airbus's FlySmart (takeoff performance calculator) and Condor's Efras (flight operations) for 950 Surface Pro 3s deployed to flight crews. Air Asia pilots use Surface tablets, although the airline declined to provide any additional information to **AIN**.

Delta Air Lines has begun issuing to its pilots more than 11,000 Surface 2 devices running FliteDeck Pro and expects to finish the FAA validation phase in the middle of this year. The devices are mounted on side windows using extra-strength suction cups. In addition to FliteDeck Pro, the Delta Surfaces include a secure content locker for flight manuals and other documentation. Delta says it chose Microsoft products so that pilots can connect with other enterprise software used at the airline. Plans call for adding electronic dispatch and flight release, real-time weather access, operational information and "dynamic communication with aircraft technicians on the ground," according to Delta.

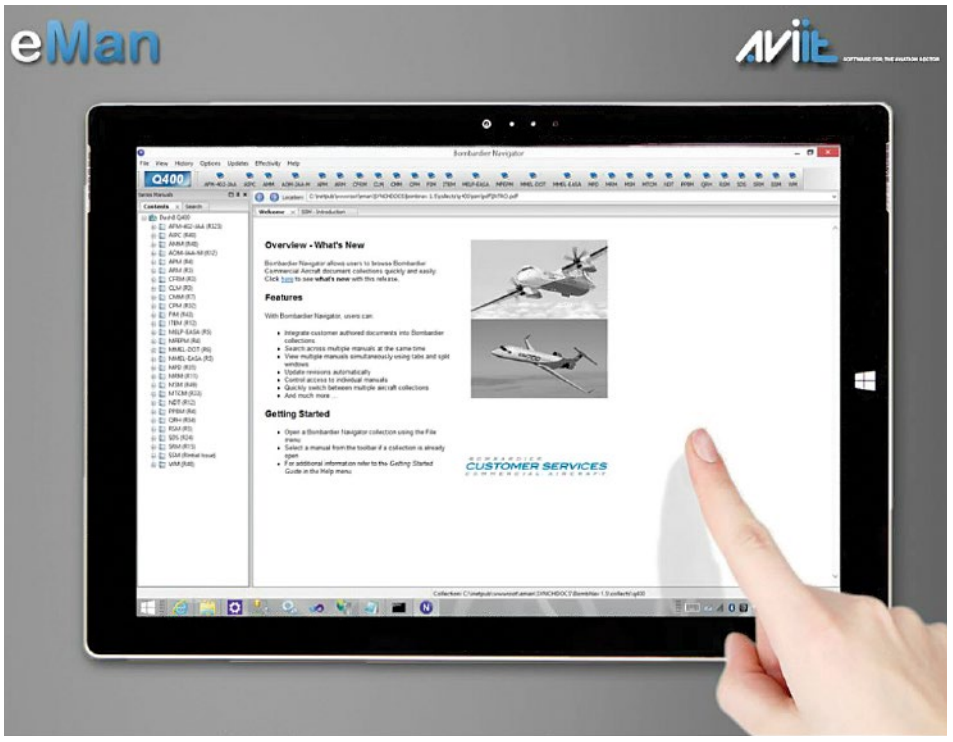
"The design intent was to create the first tablet that would really replace your laptop," said Eskridge. "So far feedback from customers has been great. Pilots are using an EFB solution and replacing heavy binders."

"It's also important to note that when [the Surface] is used as an EFB, it's specific to the applications," said Greg Jones, Microsoft managing director of worldwide hospitality and travel. "Carriers aren't wanting pilots to do Microsoft Office or emails [on the aircraft]. Once they're finished flying, they can go to standard apps to help do their business."

Although software development activity for the Windows 8.1/Surface environment has been limited to the commercial aviation arena, Jones said that there will be further progress as Microsoft releases the upcoming Windows 10 operating system. "Windows 10 is easier to develop once across multiple form factors," he explained. "The Surface is one of the devices everyone wants to go to, with its enhanced Office productivity, which lots of pilots use."

Another application optimized for the Surface Pro 3 is AviIT's eMan mobile technical library. The eMan solution makes an operator's entire technical library or any other documents available online or offline on the Surface. "It allows all PDFs, Excel spreadsheets, Word documents or training videos to be put into a server environment then set up on a user's graphical user interface on a web page," said Dale Alven, AviIT v-p of technical solutions. "The end-users have a file-driven menu system and can click open to anything they need. Our administration tool is built to allow a technical librarian without an IT background to organize data, which relieves the workload of the IT [department]. It improves the performance of the maintenance departments and speeds up that whole process."

For AviIT and its customers, the advantage of the Windows environment is that any Windows-based device can run the eMan software. The Surface adds flexibility with its various interfaces and portability. If a link on the display is too small for easy touchscreen finger access, the user can either pinch-zoom to expand the link or tap the link with the stylus/pen or use the trackpad or a mouse. ❑



AviIT has optimized its eMan document library software for the Surface Pro 3.

EASA changes position on cockpit occupancy

by Gregory Polek

Reacting to the March 24 crash of Germanwings Flight 9525, the European Aviation Safety Agency on March 27 issued a temporary recommendation for airlines to ensure that at least two crewmembers, including at least one qualified pilot, remain in the cockpit at all times during flight operations. The EASA added that airlines should "re-assess" the safety and security risks associated with a flight crewmember leaving the cockpit to attend to operational or physiological needs.

"The agency makes this recommendation based on the information currently available following the dramatic accident of the Germanwings flight 4U9525, and pending the outcome of the technical investigation conducted by the French Bureau d'Enquetes et d'Analyses (BEA)," it said in a statement. "This recommendation may be reviewed in the light of any new information concerning the accident."

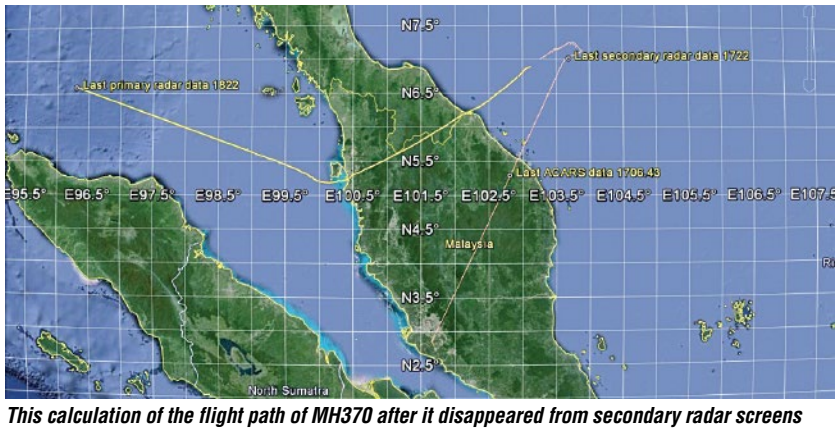
An EASA spokesman told **AIN** that European rules require both pilots to stay in their respective seats unless one develops a physiological need to leave the cockpit or wants to get up to fix or tidy something on the flight deck. "There is no such thing as a requirement like 'always have two people in the cockpit,'" he said. He asserted, however, that the European rule does not differ from that in force in the U.S., a point that seemed far from clear to European airlines, several of which in late March moved to change their own procedures.

Monitoring Access

Indeed, both European and U.S. rules require operators to follow a procedure to monitor cockpit access. In Europe, however, one measure could involve use of a closed-circuit TV display visible from the pilots' seats, said the spokesman. If an airline deems CCTV too expensive, for example, it can opt for an alternate means of compliance, he added. He specifically cited Ryanair's procedure, which requires a cabin crewmember to enter the cockpit when one pilot leaves it. The flight attendant would then monitor admittance via the door's spyhole.

Now, the EASA appears intent to fall in line with U.S. regulations, under which airlines must develop FAA-approved procedures that include a requirement that, when one of the pilots exits the cockpit for any reason, another "qualified" crewmember must lock the door and remain on the flight deck until the pilot returns to his or her station.

Just before the EASA issued its recommendation on March 27, Germanwings parent Lufthansa Group, which also includes Swiss and Austrian airlines, said it would follow the procedure already required by U.S. regulators. The move reverses the statement by Lufthansa CEO Carsten Spohr at a March 26 press conference, when he said the company saw no reason to change its policy of allowing a pilot to remain alone in the cockpit. On the same day, Air France also introduced the requirement for two crewmembers in the cockpit. On March 26, Norwegian Air Shuttle, Virgin Atlantic, Monarch, EasyJet, Air Berlin and Emirates all announced plans to adopt the requirement for a second crewmember (such as a flight attendant) to enter the cockpit in the event that a pilot needs to leave it during a flight. Austrian and Canadian civil aviation authorities said they would make this a requirement for all their countries' operators, and UK officials also urged airlines to review their policies. ❑



This calculation of the flight path of MH370 after it disappeared from secondary radar screens derives from an analysis of recorded traces of primary radar returns.

New MH370 report reveals radar, procedural failings

by Chris Pocock

One year after the disappearance of the 777 operating Malaysia Airlines Flight 370, a factual document issued by the Malaysian Ministry of Transport to fulfill its obligations under ICAO Annex 13 has shed new light on the partial primary radar traces obtained after MH370's secondary surveillance radar mode ceased to function. It also exposed failings in communications and procedures at Kuala Lumpur (KUL) Area Control Centre (ACC) and Malaysia Airlines (MAS) Operations Control Center (OCC). The director-general of the country's Department of Civil Aviation (DCA), Dato Azharuddin Abdul Rahman, elaborated on the findings during a presentation at the recent Langkawi International Maritime and Aerospace Exhibition (LIMA).

The contention that MH370 "turned back" over the South China Sea, crossed the Malaysian peninsula, turned again over Penang and headed over the Andaman Sea stems from the analysis of primary radar recordings from the ATC radars at the KUL ACC and at Kota Bahru on the east coast of Malaysia, as well as apparently the air defense radars operated by the Royal Malaysian Air Force (RMAF) south of Kota Bahru at Jerteh and on Penang Island off the west coast. However, the Annex 13 report does not identify the military radars, continuing a pattern of withholding sensitive defense information made evident during government briefings at the time of the disappearance. Four days after MH370 disappeared, it became evident that the RMAF air defense system had failed to identify and track MH370 in real time, causing authorities to limit the search to the South China Sea until then.

Selex and predecessor company Alenia Marconi Systems supplied the radars. They have supplied five of the six RMAF air defense radars, and most of Malaysia's ATC radars, radios and control centers. To supply the ATC equipment, Selex Systemi Integrati has participated in a joint venture with Malaysian company Advanced Air Traffic Systems (AAT) since 1994.

The crucial last radar traces of what is said to be MH370 were recorded by the relatively modern RAT-31DL radar on Penang, controlled by RMAF personnel at nearby Butterworth airbase on the mainland. From replayed recordings, investigators have concluded that MH370 headed northwest toward waypoints

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NEWS UPDATE

Heavyweight A330 Wins EASA Nod

The European Aviation Safety Agency granted certification to Airbus on April 1 for a new version of the A330-300 with a higher max takeoff weight, offering greater range or payload than the original. The new model has a maximum takeoff weight of 242 metric tons (533,510 pounds), seven metric tons (15,432 pounds) more than the original A330-300.

"The latest A330's maximum takeoff weight of 242 metric tons, combined with various aerodynamic refinements and increased fuel capacity, means that soon operators will benefit from a range extension of up to 500 nautical miles or [the ability to] carry greater payload," explained A330 program head Eric Zanin. "Moreover, they will do so with a fuel-consumption reduction of up to two percent."

For now, a pair of GE Aviation CF6-80E1s powers the A330-300 242 t, and Airbus continues work on certification for models equipped with the alternative Pratt & Whitney PW4000 and Rolls-Royce Trent 700.

Swiss Approve Etihad's Darwin Stake

Regulators in Switzerland have approved the purchase by Etihad Airways of a one-third stake in Swiss regional carrier Darwin Airline. The Lugano-based company, which has 14 Saab 2000 and ATR 72 turboprops, has operated since January 2014 as Etihad Regional under a brand and partnership agreement with the Abu Dhabi-based carrier.

Etihad president and CEO James Hogan expressed disappointment about the 16 months it took regulators to approve the transaction. "Because of the time taken to approve this partnership, and intense competition during this period, Etihad Regional has been forced to reduce or withdraw services on a number of routes that were launched on the expectation they would be supported by traffic flowing between the Etihad Airways global network and the Etihad Regional network in Europe," said Hogan.

In January, Darwin announced that it would cease scheduled flights on several routes as it combated what it described in a formal complaint to Switzerland's competition authority as "abusive and anticompetitive" behavior by Lufthansa and its Swiss International subsidiary, aimed at driving it from the Swiss market.

Thai Carriers Subject to Checks

The Civil Aviation Authority of Singapore (CAAS) has stepped up surveillance and ramp checks on aircraft operated by Thai airlines in response to a recent safety audit by the International Civil Aviation Organization (ICAO) that identified shortcomings in Thailand's oversight of safety. The April 2 move followed decisions over the previous week by China, Japan and South Korea to ban new flights by Thai carriers, resulting in cancellations of numerous charter flights. The FAA and the European Aviation Safety Agency have yet to indicate whether they will impose new restrictions on Thai airlines.

The ICAO audit of Thailand's Civil Aviation Authority occurred from January 19 to 30 and revealed "some concerns relating to flight operation certification procedures."

The CAAS conducts ramp checks as part of its foreign operators surveillance program. Singapore bans carriers that do not address major safety deficiencies identified by the authority from operating in its territory. *–Gregory Polek*

Russian lessor IFC eyeing alternatives to Bombardier

by Vladimir Karnozov and Gregory Polek

VLADIMIR KARNOZOV

Bombardier chairman Pierre Beaudoin (left) meets with IFC director general Alexander Roubtsov at the 2013 Paris Air Show.

Repeated delays to industrial programs and a change in the attitude of Canada's financial institutions toward funding sales of Canadian high-tech products to Russian clients rank among the main reasons Russia's biggest aircraft lessor, Ilyushin Finance, has begun reconsidering its commercial commitments to the Bombardier CSeries and Q400 turboprop, according to IFC general director and co-owner Alexander Roubtsov.

"We have some better programs for us to focus on, including the MC-21 and the Superjet," said Roubtsov in an interview with **AIN**. He said that, after the Kremlin's recent decisions on additional financial aid to Russian aerospace conglomerate United Aircraft (UAC) and with the leasing companies ready to place the Sukhoi Superjet and the upcoming Irkut MC-21 with airlines, IFC's business looks secure. "Today, there is more understanding for us as a leasing company on the MC-21 and SSJ100 than the Canadian projects," he said. Such "understanding" involves sources of funds available, readiness for quantity production, delivery slots and airlines willing to accept the product.

According to a Bombardier spokeswoman, the reasons for the financing difficulties center not on a change in attitude, but rather official sanctions placed on the Kremlin by Canada in response to Russia's annexation of Crimea and alleged backing of separatists in Ukraine.

"IFC is a valued customer and it remains in our backlog," said the spokeswoman. "So, yes, we are working together to overcome any concerns. But there is a challenge ahead of us and, yes, this deal could be impacted by the sanctions that Canada has imposed. Of course, we're abiding by those sanctions."

She added that because the deal involves CS300s–the larger of the two CSeries jets slated for first delivery at least six months later than the CS100–Bombardier has some time to look for alternative financing options. She said, "From our perspective, because they are CS300s, we do have some time to work with the airlines to source third-party solutions…Ultimately it is IFC's responsibility to get financing for its own aircraft, but we will, of course, work with them where we can."

Q400 Project Frozen

Meanwhile, after a bold start with the signing of a memorandum of understanding between Bombardier and Russian state-owned manufacturer Rostec at the 2011 Moscow airshow, negotiations on establishing a second Q400 assembly line in Russia slowed. Financial terms were the first obstacle that proved difficult to overcome. Then came the Canadian trade restrictions on Russian companies. "Today, this project appears to be frozen," Roubtsov told **AIN**.

A number of alternative solutions on equipping Russian carriers with modern regional turboprops have now come under consideration. In addition to the re-start of the Ilyushin Il-114, a new Chinese design called the MA 700 has also surfaced as a possibility for purchase. "This is pictured as a modern machine now in development," said Roubtsov. "We are waiting for the Chinese industry to brief us on this aircraft. If it proves up to our requirements, we will consider procurement. The Chinese solutions look attractive because, unlike Canadian institutions, big national banks have expressed readiness to provide funding on good terms.

"We continue looking for sources of affordable funding for our projects, including those in China," Roubtsov said. "The recent governmental decisions on funding UAC and its programs, and the SSJ100 in the first place, ensure long-term funding for both the manufacturer and the leasing companies," he emphasized.

Roubtsov would not commit one way or the other on the chances that IFC would eventually agree to take the CSeries. "We need to look for mutually agreeable solutions, mostly on sources of funding, that would provide viability of the respective project," he said.

"Right now we are trying to determine the red line we should never cross," he added. "If the CS300 procurement appears to be on the other side of that line, we will have to give it up." Replacing the funding promised by Export Development Canada in 2013 and early 2014 with other funding threatens to add to the ultimate burden on IFC and render the CS300 procurement unprofitable. Roubtsov said IFC would decide on the CS300 before next month's Paris Air Show. "We need to face the reality," he concluded.

Facing that reality appears tougher now, after IFC and Bombardier held a scheduled meeting on the CSeries in late March. The manufacturer hinted at the possibility of yet another delay of CS300 shipments, with the first four aircraft now available to IFC no earlier than late 2017. The latest estimate contrasts with the 2013 promise to begin deliveries in 2015 and the "correction" at the 2014 Farnborough airshow to do so in the second quarter of 2016. Now, it appears the Russian lessor's airline can get the entirety of the 32 CS300s on order no earlier than 2020. According to Roubtsov, the lessor finds that schedule unaffordable in view of its rising financial burden; IFC had to use borrowed funds to pay for its delivery slots. In terms of technical performance, the CS300 has met most of its specifications, despite a slightly higher structural weight than earlier promised. ❑

New MH370 report

▶ *Continued from preceding page*

VAMPI and MEKAR, which lie at the limit of the Penang radar's range. Azharuddin said at LIMA that neighboring nations "have confirmed from their radar that MH370 did not fly over their airspace." When queried by **AIN** how he could assert that with any certainty, given the poor performance of Malaysia's own radar operators, the DCA director-general declined to comment.

The new report also reveals that MAS OCC misled KUL ACC by suggesting that the aircraft was still flying, until admitting two hours after it disappeared that they were relying on the Flight Explorer application that was not providing real-time tracking. A source close to MAS told **AIN** that the OCC did its best to contact MH370 via the satcom systems on other company aircraft during that time. The report notes that the battery powering the underwater locator beacon (ULB) of the flight data recorder (FDR) had expired. MAS admitted that it did not replace the device because of "a maintenance scheduling oversight," but noted that the FDR was co-located on the aircraft with the cockpit voice recorder (CVR), whose ULB battery had not time-expired.

Not until four hours after the disappearance did KUL ACC alert the KUL Aeronautical Rescue Coordination Centre (ARCC). Another hour passed before the ARCC issued the distress message that launched the search for MH370. The report also reveals that the watch supervisor at KUL ACC was asleep at 0523L, even though his staff had been dealing with a missing airliner for the preceding three hours.

Azharuddin told the LIMA conference that the search of the priority area in the southern Indian Ocean specified after analysis of MH370's satcom "handshakes" is 50 percent complete and could conclude this month. He described the difficulties of the underwater search in some detail and did not express optimism. He listed seven needs the investigation into the disappearance has identified: real-time global tracking of commercial aircraft; a review of ATC procedures for handing over aircraft between flight information regions; improved civil/military airspace coordination; extending the recording time of CVRs beyond 120 minutes; extending the transmission life of the ULBs in FDRs and CVRs; a review of emergency response plans; and improvements in the handling of media and next-of-kin. ❑

CHEAP OIL BARELY AFFECTING AIRLINER DELIVERIES, RETIREMENTS

Commercial aircraft deliveries continue to rise at an unprecedented pace and the patterns of retirements have not materially changed since 2012, a pair of trends that appears to challenge theories that the falling price of jet fuel would prompt operators to rethink their buying and retirement strategies.

A report released by UK-based aerospace trade organization ADS Group shows a 10-percent rise in year-to-date deliveries compared with the same period last year and a 20-percent gain over January and February 2013. Meanwhile, a white paper published in late March by Dublin-based leasing company Avolon indicates the average retirement age has remained stable at roughly 25 years since its last report, published in September 2012.

The value of year-to-date deliveries for 2015 is £3 billion ($4.47 billion) for the UK's aerospace industry alone, as deliveries of widebodies rose nearly a quarter compared with last year's figures, according to ADS. The group reported a further rise of 13 percent in order backlogs from February 2014 levels. The UK aerospace industry carries a nine-year backlog of what ADS calls work-in-hand, worth up to £175 billion ($261 billion) in orders, it added.

"Aerospace is a UK success story and the significant increase in deliveries this month [March] is good news for companies across the country," said ADS chief executive Paul Evertitt. "Industry expects to see a sustained increase in deliveries promoting new opportunities and growth at all levels of the supply chain."

At the same time, Avolon sees a "low impact" on OEM deliveries from extended use of older aircraft attributable to cheaper oil, although updated analysis confirms the average retirement age of most fleets continues to rise. The report concludes that operators will re-activate fewer than 200 incremental stored airliners (less than 1 percent of the global active fleet) in response to sustained lower fuel prices, and that the potential for deferred retirements linked to cheaper oil falls between 150 and 200 aircraft per year. The resulting effect on new deliveries equates to no more than 5 to 10 percent of production, which, it concluded, "OEMs are well placed to manage."

Other major findings that appear in the Avolon report include an estimate that, overall, almost 40 percent of the current stored fleet of 800 commercial jets will return to active service. It also cited estimates that nearly 85 percent of stored in-production aircraft will return to active flying, compared with only 30 percent of out-of-production types and less than 25 percent of stored aircraft more than 15 years old. *–G.P.*

KKR plans to acquire Air Medical Group

by Mark Huber

A New York investment bank has signed an agreement to acquire the second-largest U.S. helicopter EMS company. Funds managed by KKR have acquired Air Medical Group Holdings (AMGH) of Lewisville, Texas. Terms of the deal were not disclosed, but sources reported the value of the deal at close to $2 billion. The transaction, which KKR is funding primarily from its North America XI Fund, is expected to close in the second quarter of this year and is subject to customary regulatory approvals. KKR has more than $96 billion under management.

AMGH and its affiliates, including Air Evac Lifeteam, operate 222 helicopters and 25 fixed-wing aircraft from 231 bases in 27 states. It is the second-largest U.S. helicopter EMS company, behind Air Methods. Last year AMGH-affiliated aircraft transported more than 75,000 patients and its ground ambulances transported 120,000. KKR has a diversified portfolio of investments in health care and aviation companies, including Panasonic Healthcare and Hospital Corporation of America (HCA) Holdings, and has invested in helicopter-related companies such as OGP service company Westar Aviation in Malaysia and Avincis. KKR led the $31.6 billion acquisition of HCA in 2006, at the time the largest leveraged buyout on record of an American company.

Since 2010, AMGH has been owned by Bain Capital of Boston and Brockway Moran & Partners. Bain was a minority partner with KKR in the HCA acquisition. KKR executive Jim Momtazee left no doubt that the investment bank plans to build AMGH, referring to it as "Air Medical" in a prepared statement that accompanied the acquisition announcement. "Air Medical provides a vital service in the healthcare market," he said. "Having followed Air Medical for several years, we believe that the company is poised for service expansion, and we look forward to partnering with management on this next phase of its evolution."

AMGH companies include Air Evac Lifeteam, Med-Trans and EagleMed. Air Evac operates from 95 bases in 14 states and flies more than 100 Bell 206L LongRangers. The company is based in West Plains, Mo. Dallas-based Med-Trans partners with hospital systems, medical centers and EMS agencies through 20 programs, representing 36 bases across 15 states. Med-Trans' service models include alternative delivery/shared resource, community-based or traditional hospital-based. Med-Trans operates more than 40 helicopters, mostly Bell 407s. EagleMed, headquartered in Wichita, operates from 16 community-based locations across three states, using more than 20 Airbus helicopters and Hawker Beechcraft turboprops. ❑

More layoffs at Bell

Citing declining production of the Bell-Boeing V-22 military tiltrotor and a softer commercial helicopter market, Bell Helicopter announced March 23 it is laying off 315 more management and non-management employees and suspending all new external hiring. Bell CEO John Garrison said the move is necessary in the face of "significantly lower V-22 production, reduced demand across the global commercial rotorcraft industry and our customers' continued demand for cost concessions."

"Our continued success depends on our ability to re-establish our cost structure into one that is competitive in today's market, a market that is not only softer on both the military and commercial fronts, but where the military continues to challenge every element of our cost and where every commercial dollar counts," Garrison wrote in a memo to Bell employees.

Bell expects deliveries of the V-22, its largest program, to decline to 21 this year from 37 last year. Without more orders, production of the V-22 will end altogether in 2019. The majority of the most recent layoffs will be confined to the Fort Worth, Texas area, where Bell continues to employ 4,750. Bell has announced several rounds of layoffs over the last year, including 320 in October. As part of a local tax incentives package Bell received in connection with building its new headquarters building in Fort Worth, the company agreed to maintain a payroll of 4,500 employees in the area through 2023.

In March, Garrison said that Bell is "bullish" about a "return to growth this year." The company posted revenue of $4.2 billion last year, 62 percent of it from government programs. Bell delivered 178 civil helicopters last year, down from 213 in 2013. While Bell has made significant headcount reductions over the last 36 months, the company has tripled its global sales and marketing force. *–M.H.*

EAST HAMPTON EXPECTED TO ADOPT CURFEWS AT KHTO

Hampton Town Board in New York is expected to meet on May 7 to consider proposed new curfews and other operating restrictions at East Hampton Airport (KHTO). The proposal, which is expected to be adopted, would impose a year-round curfew on landings and takeoffs between 11 p.m. and 8 a.m. for all aircraft. It also includes a more restrictive 8 p.m. to 9 a.m. curfew for aircraft classified as noisy (at or above 91 EPNdB on approach–most single- and twin-engine helicopters flown in the New York market fall into the "noisy" category), and a further limit on noisy aircraft. They would be restricted to one airport visit per week between May and September. Fines for violations range from $1,000 to $10,000 per incident, and repeat violators could be banned from the airport altogether. The Board had discussed a complete Thursday-to-Monday summer helicopter ban but dropped that idea.

Local, regional and national aviation groups operating under the umbrella of "Friends of East Hampton Airport" have lined up against the new restrictions, which likely would face court challenge if enacted. *–M.H.*

FORMER PATRIARCH EXECUTIVE PLEADS GUILTY TO FELONY ETHICS CHARGES

A retired Army colonel who headed the service's "non-standard" rotorcraft program until December 2012 and went to work in March 2013 for Patriarch Partners, the parent company of MD Helicopters, pleaded guilty on April 7 to a variety of charges that he failed to disclose gifts from suppliers, including a $4,000 ladies Rolex watch, and other payments. Norbert Vergez could receive up to 15 years in prison. During Vergez's tenure running the non-standard program, MD delivered a variety of helicopters to it for use by foreign militaries. The program also purchased Russian Mi-17 helicopters. MD and Patriarch were not charged in the probe.

Separately, Patriarch and MD CEO Lynn Tilton vowed that civil fraud charges leveled against the company by the Securities and Exchange Commission (SEC) on March 30 would not affect Patriarch companies, including MD. Tilton denies the charges and is challenging the SEC action in a counter-suit. *–M.H.*

NEWS UPDATE

Helicopter Breaks the Ice

A Coast Guard HH-65 crew from Air Station Traverse City, Mich., used their helicopter's rotor downwash to clear and break up ice shelves stranding a small fishing boat on Lake Michigan on April 11. The 16-foot boat became stranded in ice floes that pushed it away from shore. It took the HH-65, hovering at 50 feet, about 45 minutes to clear a path back to shore for the boaters.

Australian Pilots Warned about Autumn

The Australian Helicopter Industry Association (AHIA) is warning pilots about the dangers of shortening days in autumn. During this period, the cattle mustering industry gets requests for flights at night, the AHIA said, and numerous mustering pilots have died trying their luck in the dark. "It is easy to miscalculate the available daylight and yield to the temptation to fly back to base after dark," the association pointed out.

Russian Helicopters Trained More than 1,000 in 2014

Last year more than 1,000 pilots and aircraft engineers (both Russian and non-Russian) were trained at Russian Helicopters' training centers, the helicopter manufacturer said. Among the countries represented were the Republic of Korea, Peru, Kazakhstan and Mongolia. The Ulan-Ude Aviation Plant trained more than 200 pilots and engineers for Mi-8AMTs and Mi-171s. Kazan Helicopters trained 577 specialists for the Mi-8MTV, Mi-17-1V, Mi-17V-5, Mi-172 and Ansat. At Rostvertol (Rostov on Don), some 300 people, including representatives of customers who have bought Mi-26(T)s and military Mi-35M and Mi-28NE Night Hunters, underwent training.

Web-based Noise-reporting System Goes Live in L.A.

Industry and airport partners along with the FAA launched an online automated complaint system WebTrak application (http://heli-noise-la.com/webtrak/) that allows Los Angeles Basin residents to review and identify helicopter operations and file a noise complaint about them. The FAA will use the data to raise community understanding and to formulate helicopter noise-abatement solutions. The system is part of the Los Angeles Helicopter Noise Initiative the agency launched in 2012.

Bond Wins North Sea SAR Contract

North Sea oil-and-gas firms have committed to fund a search-and-rescue (SAR) helicopter service, supplementing national SAR cover for parts of the Central North Sea. The SAR helicopter and the dedicated back-up aircraft will be operated by Bond Offshore Helicopters at Aberdeen International Airport and cover a radius of approximately 160 nm. The participating companies have awarded Bond Offshore Helicopters a five-year contract valued at £60 million ($88 million). "The industry will ensure we can respond within our two-hour criteria," said Robert Paterson, health, safety and employment issues director at Oil & Gas UK. The launch of a new UK-wide SAR service by the Department for Transport in April coincides with decommissioning plans for the BP Miller platform, where another SAR helicopter was based. *–T.D., M.H.*

French helo EMS industry looks for crew staffing fix

by Thierry Dubois

The requirement for a second crewmember aboard an EMS helicopter could prove so costly it would put operators out of business, say opponents of the rule.

Confronted with a requirement for a second crewmember, the helicopter EMS industry in France continues to search for a solution. The national civil aviation authority (the DGAC) is willing to be flexible, but the prospects of the EASA granting exemptions are uncertain. Meanwhile, an innovative technical solution for safer flight paths is emerging.

The final deadline for the addition of a second crewmember was October 8 last year, and for the two years before that France had opted out of compliance. A number of operators remain reluctant to add a so-called technical crewmember, noted Maxime Coffin, head of the DGAC's general aviation and helicopter mission. Operators cited cost as the main impediment, and the road to compliance was made rockier, according to Coffin, by pilot unions, which advocated that the second crewmember be a pilot.

"Last summer, the situation was at a complete standstill. It was clearly impossible to comply with the rule in October and we could not even request a postponement, as we could not suggest an alternative date," Coffin said. The DGAC proceeded with a temporary exemption for five operators. EASA rules allow such an exemption for operational, urgent reasons, Coffin explained. He expressed relative confidence that the EASA would approve it through December 31.

Justifying the temporary exemption, the DGAC claims operators would be put out of business if they had to hire more crewmembers now. It asserts the industry's safety record and use of proven alternative means of compliance ensure an equivalent level of safety. For example, some operators have performed extensive reconnaissance flights to neighboring soccer playing fields and all the places from which they are likely to embark a patient. Others, Coffin said, enlist the help of firemen to identify obstacles.

Asserting a National Prerogative

However, observers say these alternatives are unlikely to be accepted for a permanent exemption. The DGAC is therefore considering following the Swiss example. Switzerland's national authority, the OFAC, determined that flying a victim from the mountains to a hospital is part of search-and-rescue (a Swiss state prerogative); as a result, Swiss operators can use single-engine helicopters in some cases where European rules call for twins.

Although the European Commission might reject such a tactic, France could declare that HEMS flights are a state prerogative and thus eliminate the requirement for the second crewmember. Coffin deems this approach–albeit radical–the most likely to succeed. "The Commission has not challenged Switzerland's stance," he added.

The association that represents physicians who use EMS helicopters (AFHSH) recently floated an idea: use medical personnel with proper training as the second crewmembers. The DGAC confirmed this would abide by EASA rules, and some operators endorsed the approach. But the AFHSH fell short of persuading all operators, and a pilot union cried foul.

A major counter-argument against those who criticize the new rule is NHV's successful operation. That Belgium-based company has been operating for years in France (at several hospitals in the north of the country), with a second HEMS crewmember. A source familiar with various operator structures told **AIN** that NHV invested heavily in crew training and hiring. The goal was to be able to operate in different European countries, including those that enforce the second-crewmember rule. The source acknowledged that NHV is perhaps a more diversified company, with deeper pockets than most French operators. NHV declined to comment.

Could French operators learn lessons from other countries? Airbus Helicopters marketing v-p Régis Magnac reminded that business models vary from country to country. For example, a U.S. operator will receive different payments for picking up a victim, depending on whether and how the patient is insured (Medicare, Medicaid and so on). In the UK, charity organizations fund a large part of HEMS operations. In fact, 14 percent of the helicopters are operated by charities holding their own air operator certificate.

Airbus Helicopters has compiled its own global statistics about EMS helicopter equipment per million inhabitants. Although France is one of the wealthiest countries on the planet, it–like most Western European countries–falls only in the "medium" category, defined as between 0.5 and 2.9 helicopters per million inhabitants. In France, HEMS pilots fly much less per year than pilots in other countries.

Nicolas Letellier, AFHSH president, complained about red tape in general. A hospital helipad is under threat of closure, he said, because a street lamp is "piercing" the published glideslope. "Yet everybody can see EMS helicopters flying every day at 150 feet above the obstacle," he objected. Meanwhile, those patients who live far from well equipped medical centers are too often driven there (as opposed to flown) because the French administration is impeding the development of HEMS, he added.

Finding Safer Flight Paths

Inaer France, one of the country's major HEMS operators, is involved in the P4F (path for flight) project, aiming to develop a tablet app for safer, up-to-date flight paths. The idea is to download real-time information from various sources, providing the pilot with an optimized route. Specialist CGX Aero is leading the effort, which is financially supported by investment fund BPI France and local authorities.

The app will merge data from servers specializing in terrain, obstacles, aeronautical information (airspace, notams and so on) and weather. The software program will suggest the fastest route from A to B, in safe conditions, Loïc Giroud, the head of the project, told **AIN**. The pilot may use the app on the ground to plan the mission. When flying back to the base, updated information may enable a diversion to pick up a patient not on the original plan. At the least, the hospital will be quickly aware that for some reason the helicopter can't do the job.

For communications, P4F will use a combination of Wi-Fi, cellphone networks and satellite.

CGX Aero is planning full-scale flight-tests next year after gradual trials. Participants see P4F as a proof of concept and have no plan for developing a product yet, Giroud said. ❑

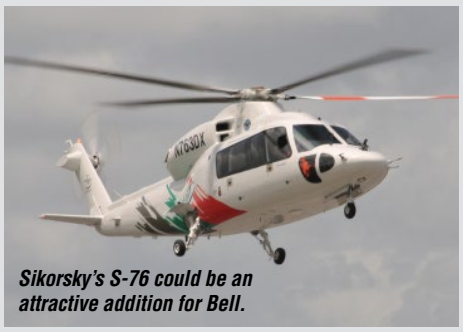
NEWS ANALYSIS

Will Sikorsky be sold whole?

AIN *rotorcraft specialist Mark Huber shares his opinion about the crossroads at which Sikorsky finds itself.*

United Technologies (UTC) backed away from Sikorsky long before new CEO Greg Hayes began dropping hints earlier this year that the technology conglomerate wanted to shed its underperforming rotorcraft subsidiary. The handwriting has been on the wall for the better part of a decade: the torturous nine-year trek to develop, certify and deliver the S-76D; the slow pace of product improvement on the S-92A; and the virtual orphaning of its acquired Schweizer small helicopter division were all clues that UTC's romance with rotors was over, despite the high-profile, experimental X2 and its military prototype S-97 descendant.

When the latter was unveiled in 2010 it should have been a joyous occasion for Sikorsky. Instead, then-president Jeff Pino lamented, "At this point in the development cycle, it appears that our biggest customer [the U.S. Department of Defense] is unwilling to invest major dollars in future technology. That is the real message that is being sent to us." His pledge to develop the S-97 alone with industry partners rang hollow; U.S. rotorcraft innovation–both military and civil–ultimately requires DoD funding. Almost every significant U.S. civil helicopter program since the late 1950s was spawned from a military requirement and Defense Department dollars. Last summer the Pentagon did direct some new technology funding that could be applied to the S-97 Sikorsky's way, in the form of selecting it as a finalist in the Joint Multi-Role Technology Demonstrator Project (JMR-TD); but the amount is not enough to cover costs.



Sikorsky's S-76 could be an attractive addition for Bell.

So what happens now? Sikorsky still has a respectable, albeit stale, military business with the time-tested UH-60 Black Hawks and CH-53 Stallions, with the former still winning the occasional foreign military sale. Speculation has abounded that the entire enterprise may be acquired by a solitary buyer from the industry, but that seems unlikely given what will probably be an asking price of nearly $8 billion and the anti-trust phalanx any existing OEM would need to run to get the deal done.

Spinning off Sikorsky as a separate entity also has been mentioned as a possibility, but that likely would produce a tepid response on Wall Street. And Sikorsky will need a steady infusion of funds, either from additional equity or by floating debt, if it wants to remain a player with relevant products in both the military and civil sectors. No, Sikorsky is more likely a "parts and pieces" sale, either indirectly by selling the whole to investment bankers, who would carve it up, or by directly conducting an a la carte bidding war for its separate product lines.

On the civil front Bell seems the logical choice to pick up the S-76 and S-92 lines. Doing so would give the Textron unit a larger and more lucrative installed customer base and a complete twin-engine product line that could compete with AgustaWestland and Airbus Helicopters, especially for the offshore energy market. Potential suitors for Schweizer seem less apparent, but do not be surprised if the new owners speak Mandarin.

The military side of the house would likely appeal to Boeing, by expanding its offerings beyond the current CH-47 Chinook heavy transport and AH-64 Apache gunship. That is, of course, unless the likes of a Lockheed-Martin gets in the game. For the moment, that appears unlikely, as LMCo seems content with its role as a systems integrator.

Whatever fate awaits Sikorsky, UTC's signaled divestiture is a reminder of just how difficult the helicopter market has become, even for participants whose parents have deep pockets. *–M.H.*

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AIRBUS
HELICOPTERS

AgustaWestland, Bristow chase U.S. Navy training business

by Mark Huber

AgustaWestland North America has joined with Bristow Group, Doss Aviation and Rockwell Collins to offer a turnkey system using the AW119Kx single to address the rotary-wing pilot training needs of U.S. military and government customers. The AW119 is built at AgustaWestland's Philadelphia plant. The consortium has already pitched the plan to the U.S. Navy and formally announced it April 14 at the U.S. Navy League's Sea, Air, Space exposition in Washington, D.C. The Navy is expected to issue a tender to replace its fleet of Bell TH-57 Sea Ranger training helicopters in the near future.

The services-based support proposal would provide for total life-cycle support and management and include provision of training helicopters, simulators, ground instruction, fleet management and maintenance of the aircraft. The consortium asserts that the main advantage of this training model is that it frees government customers of the costs associated with acquiring this new-technology fleet and the infrastructure to support it. "This will lift the financial burden of buying and ease the task of supporting commercial aircraft for government and military customers with pilot training needs," said Robert LaBelle, CEO of AgustaWestland North America. "It will allow them to focus their vital resources on core military missions instead of investing unnecessarily to recapitalize a total end-to-end pilot training system."

With the Navy likely looking to replace its Bell TH-57s trainers soon, a consortium is pitching the AgustaWestland AW119Kx for the role.

Bristow Group CEO Jonathan Baliff emphasized his company's expertise in satisfying government mission needs, in particular its recent takeover of search-and-rescue missions from the Royal Air Force in the UK. Bristow, a leading global OGP services company, also operates one of the largest private helicopter flight training businesses in the world, the Bristow Academy, in Titusville, Fla. "At a time when governments face greater pressure for efficiency and risk management, we can provide outstanding, world-class service that delivers value for money," Baliff said.

Founded in 1970 and based in Colorado Springs, Doss Aviation has provided fixed- and rotary-wing flight training for the U.S. Army and Air Force, including initial flight training for the USAF and advanced instructor pilot training for the U.S. Army. The company operates 55 aircraft and 80 refueling vehicles. It provides flight training, aircraft maintenance and maintenance training, aircraft bulk fuel operations and transient aircraft support, ATC, and airfield management and logistics. U.S. Government customers have included the Department of Defense, Defense Logistics Agency, NASA, FBI, FAA and the Department of Homeland Security. Doss currently employs 500. It is owned by J.F. Lehman.

Rockwell Collins is the current avionics provider to AgustaWestland for its line of medium-twin helicopters. The company also builds flight simulation systems. ❑

GOTHAM AIR SPEEDS NYC AIRPORT COMMUTE

A new crowdsourcing helicopter service is being launched that will enable travelers to purchase single seats on helicopter flights among Manhattan's three heliports and JFK International or Newark Liberty airports for an introductory fare as low as $99 one way. Regular fares will be priced at $199 to $219. Gotham Air is an electronic booking service that is aligning with New York's Helicopter Flight Services and will use the latter's fleet of seven Bell 407s to whisk travelers from heliport to airport in as little as six minutes. Using an app downloadable from the Apple iTunes store, Gotham Air promises "a helicopter in your hand."

Regularly scheduled flights are expected to begin later this spring. Travelers who book through Gotham Air will be treated to a variety of amenities, including complimentary hors d'oeuvres provided by Chef Thomas Keller's Bouchon Bakery, beverage service on afternoon flights, private lounges and ground support concierge, helicopter interiors featuring Hermes leather and door-to-airport service in new Tesla S electric sedans in the rare event weather grounds a helicopter flight.

Gotham Air is the brainchild of entertainment producer Tim Hayes and travel industry veteran Colleen Cowan. More information is available at GothamAir.com. *–M.H.*

Rega's AgustaWestland AW109SPs specialize in mountain rescue.

Rega moves to all-IFR fleet

by Thierry Dubois

Switzerland's air rescue organization, Rega, has taken a step toward its goal of all-weather capability for mountain operations by 2025 by outfitting its fleet of 11 AgustaWestland AW109SPs with IFR equipment.

"Every year, poor visibility forces Rega to deny approximately 600 patients urgently needed medical assistance," a spokesman said. Rega helicopters thus far have generally operated under visual flight rules, meaning that fog, snow or low clouds can cancel missions. This should start to change, with all helicopters now IFR-capable and all the crews expected to have completed training by year-end.

For the AW109SP, Rega has selected avionics from Genesys Aerosystems, enabling RNP 0.3 (meaning the aircraft navigation system must be able to calculate its position to within a circle with a radius of 0.3 nm), SBAS/LPV satellite-guided approaches. The modification work was performed in-house, drawing on a service bulletin devised by AgustaWestland, chief pilot Heinz Leibundgut told **AIN**. The improved performance is worth the additional 33 pounds or so, he pointed out.

For the six Airbus Helicopters EC145s, which were already equipped for IFR, the two CMC Electronics CMA-3000 flight management systems were modified with CMA 5024 SBAS-capable receivers. The upgrades on the two types will make it easier–but not always possible yet–to fly to hospitals in poor weather.

Rega operates the AW109SP on flights in the mountains and the EC145 on lowland flights.

Both are now certified for single-pilot IFR operations. The EC145 is also certified for dual-pilot IFR operations, for training purposes, Leibundgut said. EC145 pilots use a simulator owned by German operator ADAC, located at Cologne-Bonn Airport. At Zurich Airport, AW109SP crews use a Rega-owned Level B simulator that can recreate a mountain environment–such as white-out–and is compatible with night-vision goggles.

Looking to 2025

The next step for the organization, in Leibundgut's view, is establishing a network of low-level routes covering Switzerland. It would be based on RNP 0.3 precision, avoid higher altitudes–where icing is more likely–and connect hospitals, all of which would have satellite-guided point-in-space procedures. It would involve flying IFR in non-controlled airspace. Progress, paced by air navigation providers and national authorities, is slow, Leibundgut noted.

Future technologies are eagerly awaited, too. In Rega's view, these are RNP 0.1, anti-icing for light twins and a navigation database that meets Swisstopo's high-precision height model of 0.5-meter accuracy. Synthetic vision of the terrain would be projected on the windshield. Leibundgut also seeks obstacle detection that would create a "safe sphere," 1,600 feet in diameter, around the helicopter. ❑

EAGLE 407HP CERTIFIED

After several years of starts and stops, Eagle Copters of Calgary, Alberta, has received FAA certification for its Eagle 407HP re-engine STC for the Bell 407, replacing the stock 813-shp Rolls-Royce 250-C47 with the 1,021-shp Honeywell HTS900-2-1D. Now the company wants Bell to adopt the program as an optional offering for the 407GX and for foreign military sales. Eagle Copters is a Bell Platinum Customer Service provider.

In the 407HP the Honeywell engine, which has dual-channel Fadec, provides up to 22 percent more takeoff power and significantly stronger hot-and-high performance as well as greater payload and speed and lower fuel consumption. Payload capacity goes up by 40 percent at 12,000 feet, and fuel consumption is cut by 8 percent at takeoff power and by 10 percent at cruise power.

Eagle Copters estimates that initial installations will require 1,000 to 1,200 labor hours and take four to six weeks. The company has designed a special fixture for use during the conversion when the engine mounts, fittings and shims are replaced.

Conversions will be installed at Eagle, but customers may also opt to have conversion kits shipped to qualified maintenance shops of their choosing. The conversion requires minor changes in engine monitoring instruments. *–M.H.*

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Maintenance News

AGUSTAWESTLAND OPENS ABERDEEN PARTS SUPPLY CENTER

To meet the growing demand for support by the offshore and search-and-rescue (SAR) helicopter fleets in Northern Europe, Finmeccanica-AgustaWestland opened a new regional supply center in Aberdeen, Scotland. Located near Aberdeen Airport, the new facility has been operational 24 hours a day since January delivering parts to operators. The supply center supports a range of customers using the AW139 and the AW189 for offshore transportation in the North Sea.

The facility has some 2,000 different lines of spares, and AgustaWestland expects to triple that number by the fourth quarter. Its supply center, which supports almost 80 aircraft in Northern Europe, will act as the parts hub for the UK SAR program.

KEY AIR REINSTATES MX DEPARTMENT CAPABILITIES

Key Air, an aircraft management and charter firm, is reinstating a maintenance department to expand service capabilities and support for its managed aircraft fleet. It will also offer maintenance services to tenant aircraft based at its Waterbury-Oxford (Conn.) Airport location. The MRO is performing on-site maintenance and repairs, in addition to its continued oversight, planning, scheduling and coordination of maintenance events and repairs. Key Air's alliance with Pentastar Aviation to service its managed aircraft fleet will be phased out as Pentastar closes its Connecticut repair station to concentrate maintenance services at its Michigan-headquartered facilities.

LOTUS AVIATION GROUP EXPANDS COMPLETIONS FACILITY

Fort Lauderdale, Fla.-based Lotus Aviation Group has opened a new hangar and added 2,400 sq ft of office space. The new 12,600-sq-ft hangar will be a dedicated interior removal and reinstall facility; the old hangar is being repurposed into an upholstery shop. These additions expand the company's footprint at Fort Lauderdale Executive Airport to 40,000 sq ft, encompassing two hangars, a separate upholstery shop and executive offices with a conference room and product display area.

Lotus Aviation has added a 12,600-sq-ft hangar that it will use for interior removal and reinstallation.

Eddie Ima, interior shop manager, told **AIN**, "The hangar space will accelerate our aircraft throughput by 30 percent and will shorten our client downtime significantly as well. Our expanded hangar and office space will allow us to create a more interactive design center for our clients and highlight the wide range of our interior offerings." The facility provides interior refurbishing, exterior painting and in-flight entertainment services for corporate aircraft.

"We are excited to open our second hangar space and be able to provide our clients with customized interior refurbishing and exterior paint services," said Rajeev Singh, president of Lotus Aviation Group. "This expansion represents one of the first steps in our plan to expand operations to meet the growing needs of our clients."

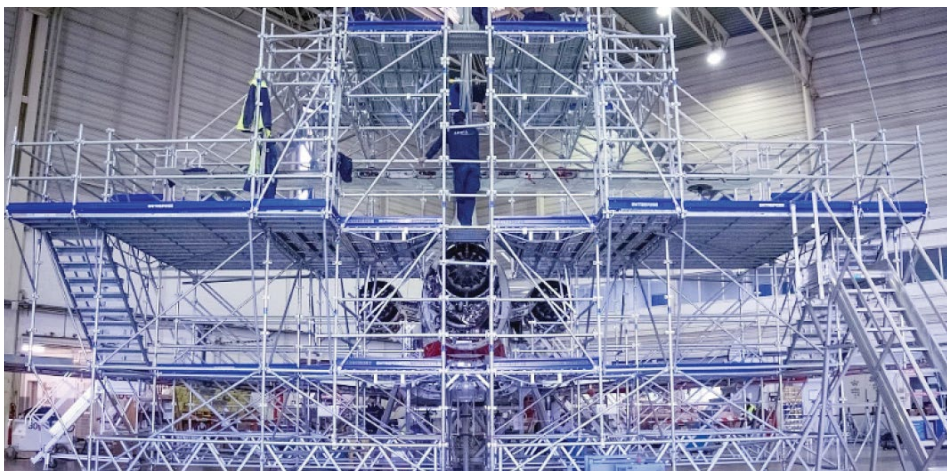
YOU CAN'T FLY WITHOUT US: ARSA MAKES CASE TO CONGRESS

The Aeronautical Repair Station Association (ARSA) unveiled "You Can't Fly Without Us–The World of Aviation Maintenance" on March 18 on Capitol Hill with the help of Rep. Carlos Curbelo (R-Fla.). The seven-minute documentary was developed as part of a series of informational public-television features and is intended to provide a foundational introduction to the work of the men and women who keep the world safely in flight.

Brett Levanto, ARSA operations director, told **AIN**, "Working on this project has been an absolute joy. Now that the final scene has been shot and the work is unveiled, we get to do the even more important work of making use of this story. You can't fly without the hard work of the men and women of the aviation maintenance industry, and I hope this video will help that fact become plain to the hundreds of thousands of travelers who land safely every day."

After the screening, ARSA released the 2015 Global Fleet and MRO Economic Assessment, prepared by CavOK, a division of Oliver Wyman. David Marcontell, CavOK's vice president, presented an overview of the report's findings, noting that the total worldwide market for commercial aviation maintenance activity will surpass $100 billion by 2025. On American soil, Marcontell noted that the industry employs nearly 300,000 men and women and generates more than $43 billion in economic activity, while producing more than $5 billion in federal corporate and individual income taxes.

"The message here is pretty simple," said Christian Klein, ARSA's executive vice president. "Every single time you land safely, or pick up a loved one at the airport, or have a package arrive on your doorstep, there's a maintenance provider somewhere for you to thank. These repair stations, maintenance facilities and component shops–the businesses that ARSA represents every day–are part of a complex global network of services that are vital to our national and global economy."



Dassault Falcon Service (DFS) recently completed the first scheduled C-check on a Falcon 7X. The aircraft involved in the initial C-check is seven years old and has 1,340 cycles.

AMERICAN PROPELLER OK'D FOR HARTZELL SERVICE

Hartzell Propeller appointed American Propeller Service a recommended service facility. Redding, Calif.-based American Propeller covers a large area of the Western U.S. with its fleet of transport vehicles that offer propeller pickup and delivery services.

To achieve Hartzell's recommended service facility designation, American Propeller met a number of stringent requirements, including on-site quality systems and process audits and use of factory-trained propeller experts. In addition, the shop is required to maintain Hartzell-approved specialized propeller tools and equipment, along with meeting the company's special process approvals. American Propeller is the 22nd Hartzell Propeller-recommended service facility.

FIRST 7X UNDERGOES MAJOR INSPECTION AT DFS

Dassault Falcon Service (DFS) recently completed the first scheduled C-check on a Falcon 7X, preparing the way for the start of routine overhauls on the fly-by-wire trijet. C-checks are the largest scheduled maintenance events on the Falcon 7X and are due every eight years or 4,000 cycles, whichever comes first. The 7X entered service in 2007.

Although Falcon 7X fleet leaders have not quite reached this limit, DFS moved up the first inspection timeline slightly "to demonstrate and optimize the quality of the Falcon 7X overhaul process." A second DFS 7X C-check–including a full cabin renovation, installation of an enhanced vision system and overhaul work–is under way, with others scheduled to follow by midyear.

According to DFS, the aircraft involved in the initial C-check is seven years old and has 1,340 cycles. The inspection, carried out at the company's Paris Le Bourget facility, also included renovating the interior, repainting the exterior and installing a satcom unit and onboard Wi-Fi system.

"All the expertise needed for C-checks–maintenance, engineering, customer support, parts, cabin refurbishment–is available right here at Le Bourget or at the nearby Dassault Aviation design office in Paris, permitting the quick reactivity operators demand in the overhaul process," said DFS general manager Jean Kayanakis.

The company has invested in preparing the 7X C-check program, including two dedicated hangars at Le Bourget that are staffed in double shifts. A second facility in Bordeaux-Mérignac that is set to open next year will be equipped to handle six aircraft simultaneously. It will also include a paint hangar.

STANDARDAERO BOLSTERS R-R ENGINE RENTAL POOL

Engine overhauler StandardAero reached an agreement with Rolls-Royce to purchase more helicopter engines to bolster its current rental pool to more than $10 million in assets with 25 engines and more than 70 modules. The rental engines provide operators with instantly available powerplants to minimize aircraft downtime. Over the past year, StandardAero has purchased Rolls-Royce 250-C47B and RR300 engines from Rolls-Royce to service Bell 407s and Robinson R66s.

"These continuing investments will help us to serve our customers' rental and leasing requirements more effectively," said Brian Hughes, sales director for StandardAero's helicopter division.

KING AEROSPACE APPROVED FOR BBJ EXTERIOR PAINT

Ardmore, Okla.-based King Aerospace delivered its first green BBJ exterior paint project and is now included in the Boeing Business Jets directory. According to company executive vice president Keith Weaver, the BBJ1 was delivered on time and on budget. The project was part of the Addison, Texas MRO's planned expansion of its capabilities for single-

aisle cabin completion and refurbishment, as well as maintenance, overhaul and repair.

"The mica pearl paint scheme came out perfect, the people from Sherwin-Williams were ecstatic, and the customer wrote a letter of reference to Boeing recommending us," said Randy Johnson, director of corporate aircraft services and paint shop manager. "And the goal is to leverage the success in exterior paint to validate our expertise and encourage customers also to use King Aerospace's completion and refurbishment and MRO services."

King Aerospace has two standalone paint hangars capable of accommodating aircraft as large as the G550, in addition to the recent hangar renovation that resulted in a 25,000-sq-ft paint shop capable of accommodating bizliners as large as the BBJ3 and the Boeing 757. The renovation includes a new ceiling and air handling, lighting, fire suppression and heat systems.

GULFSTREAM NAMES DUNCAN AN AUTHORIZED WARRANTY FACILITY

Duncan Aviation is now authorized by Gulfstream to provide maintenance service and repairs within its regulatory approvals on the G100, G150 and G200. Gulfstream's authorization applies to Duncan Aviation's three maintenance, repair and overhaul locations, in Lincoln, Neb.; Battle Creek, Mich.; and Provo, Utah.

"Our relationship with Duncan Aviation dates back to 2001 when the G100 was outfitted at its Lincoln, Nebraska facility," said Mark Burns, president of Gulfstream Product Support. "We are pleased to collaborate with a first-class service and support company to provide operators in the Midwest and West with an additional option for warranty work."

CONSTANT AVIATION ADDS TO MOBILE TEAMS

Cleveland, Ohio-based Constant Aviation expanded its mobile AOG team coverage. "We recently raised the number of dedicated technicians on our mobile AOG Team. Our focus is to provide customers with immediate response and deployment of our team members to anywhere in the world. When a customer is AOG, time is of the essence. Our technicians are strategically stationed across the country to provide shorter travel time to any location," said Brian Whiteaker, manager for AOG operations.

Each Constant Aviation location has a dedicated mobile AOG team outfitted with general servicing, tooling and consumable items.

In addition to its facility at Cleveland Hopkins International Airport, Constant Aviation has locations on Birmingham International Airport and Las Vegas International Airport, and a dedicated mobile AOG team is tied to each location so they have access to all the tooling and equipment they need for each job. "Our vehicles are outfitted to carry general servicing, tooling and consumable items. In some instances, it is less expensive to send technicians to the aircraft than to transport the aircraft to a service center," said Constant president Stephen Maiden. ❑

TORQUED by John Goglia

NASA safety reports reveal intimidation of airline mechanics

I have been concerned about recent reports by mechanics at major airlines of intimidation and pressure by supervisors to violate FAA safety rules. One situation I discussed last month resulted in a federal lawsuit by mechanics and their union against the airline and the other involved a settlement of a whistleblower complaint by a mechanic at a different airline. These situations got me interested in finding out what NASA's aviation safety reporting system (ASRS) data would show: whether any mechanics were reporting intimidation or fear of reprisal in conjunction with their maintenance employment. NASA maintains the ASRS database to encourage airmen to submit voluntary reports of safety information without fear of the FAA learning about them and using them improperly.

After going through the 76 separate reports that date back to 1999, I have focused on the 40 reports from the last five years. While the information is de-identified–you can't tell who wrote the report, the airline involved or even the airport–the reports do indicate if the mechanic worked for an airline (distinguishing between Parts 121 and 135) and the make and model of aircraft. Of those 40 reports, 36 involved Part 121 airlines. Twenty-five of the reports involved large aircraft, including the 717, 737, 757, 767, 777, A320 and A321. Eleven of the Part 121 reports involved smaller aircraft, including the CRJ700, ERJ135, Q400 and ATR 72. Three of the reports were from mechanics at Part 135 operators flying a Beech 400, a Shorts SD3-30 and a JetRanger. One report involved a Part 91 mechanic working on a Cessna 337B.

NASA analysts reviewed, categorized and summarized all these reports. In many cases, mechanics were contacted for additional information and this was included in the reports. While many of the reports mention that stress and pressure to adhere to a schedule affect the quality of maintenance, some specifically mention intimidation and threats by management. These are a sampling of those reports:

Synopsis. A line aircraft maintenance technician (AMT) describes a hostile work environment where an aggressive and irate line maintenance supervisor attempted to intimidate him into working around FAA rules and regulations. Technician had found a damaged "wing to body" panel during an overnight maintenance visit on a 737-800.

The detailed write-up further explains what occurred when a mechanic requested a line engineering order (LEO) to allow deferral of the damaged panel found during a walk-around. "At shift turnover (with the LEO not accomplished by our local technical support), maintenance supervisor X became irate and aggressive and tried to attempt to intimidate me by getting in my face and yelling that an LEO was not necessary and I needed to go out and finish the aircraft." After the mechanic told him that the only alternative according to the manual involved non-destructive testing, the supervisor told him "Go home then, right now." According to the report, the supervisor later calmed down and the mechanic was not sent home.

Synopsis. A line aircraft maintenance technician (AMT) reports that, fearing for his continued employment, he did not document or inform his air carrier management personnel about loose "smoking" rivets on the left and right engine exhaust nozzles on their MD-83.

The narrative indicates that the mechanic had previously written up similar maintenance items "only to be sternly counseled and threatened with further harm to my employment with my air carrier if I continue to report maintenance defects." He further stated: "My attempts to use internal remedies, such as the company internal confidential business ethics hotline, the grievance process within the union/company bargaining agreement, and filing of previous reports regarding my findings and company actions, have placed me in harm's way regarding my employment."

Synopsis. A line aircraft maintenance technician reports that he and another technician were threatened with "public humiliation and termination" if they did not reuse the mounting hardware that was damaged during a difficult removal of number 1 pack flow control valve on an A321.

The write-up in this case indicates that the mechanics involved were ordered by the manager on duty to reuse the damaged hardware. The manager threatened to parade them "around the gate area to inform the passengers why they can't go on vacation on time" and to "walk us to the gates" if the damaged hardware was not reinstalled.

Synopsis. An aircraft maintenance technician reports that numerous towbars are broken daily during aircraft pushbacks by ramp personnel and are seldom reported to maintenance. As a result, nosegear inspections are not being carried out on the affected aircraft. Ramp personnel cite concerns about "getting in trouble if they report" or "tell their supervisor after aircraft has left," or "it's OK unless the pilot has a problem."

The report details an investigation that followed damage to a 767 on pushback. Ramp personnel exceeded the turning limits of the nosegear, breaking the towbar. This was not reported until the crew discovered on taxi that they had no steering. Reports by mechanics of concerns with broken towbars led to the discovery that 364 towbars had been broken in an eight-month period but that many fewer had been called in to maintenance for an aircraft nosegear inspection. Ramp personnel reported being afraid to report broken towbars or being specifically instructed to wait until the aircraft left or the pilot reported a problem.

Synopsis. An aircraft maintenance technician reports about improper maintenance practices he was directed to follow under threat of losing his job, after a 767-300 arrived with a SLAT ASYM Eicas message and LEADING EDGE light illuminated.

According to the mechanic, "I did so knowing at the time that not doing so would cost me my job. I did it, sleep deprived and under extreme duress, knowing that not doing so would be at the expense of my job."

Synopsis. A line mechanic reports he noticed lightning-strike damage on the lower fuselage body fairing of a 777 before departure schedule. He documented the discrepancy, but was threatened with an investigation by his maintenance supervisor after he refused to alter his logbook write-up to indicate chipped paint.

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The narrative states: "Based on my judgment and experience, it was lightning damage and I refused to alter the [logbook] item. At that time, Supervisor X ordered me to get a union shop steward because he wanted to convene a hearing…. Management and a lead mechanic felt it was not lightning damage, but refused to sign the item off."

Synopsis. An aircraft maintenance technician describes a maintenance work environment where overhauls are not accomplished, engine failures not reported, incorrect fuel used, aircraft discrepancies not written up; all combined with a fear of retribution.

This mechanic works at a Part 135 operation. According to the NASA write-up, the mechanic "stated nobody puts anything in writing. Many senior maintenance management personnel have left…He thought this would be a wake-up call for their oversight federal regulators, but so far, an overall element of fear continues and quality assurance exists only in name."

Synopsis. Two aircraft maintenance technicians report about the harassment they were subjected to by their maintenance management for following maintenance manual (M/M) procedures on a field trip. They were troubleshooting a pilot report that spoilers had deployed during taxi-out on an EMB-135.

Interviews by NASA of the mechanics involved included the following statements: "…we were asked by the line maintenance group Mr. X in an intimidating way, why did we replace a brake control unit for a spoiler problem. We explained to him once again that those tests were part of the [airline M/M]…" The mechanics further stated: "We felt harassed and pushed to take shortcuts from the [airline M/M] to have the aircraft back in service. We believe this kind of pressure can lead to a mistake that can compromise the safety of our aircraft, employees and customers."

Synopsis. A line mechanic reports he continues to be harassed by maintenance management for discovery of obvious defects and moisture ingress at the L-3 (left) and R-3 (right) cockpit side windows on their 757-200.

A mechanic reports multiple instances of disciplinary charges brought because he documented moisture ingress in cockpit windows "while checking logbook." He states that he "was charged with violating company rules. The charges were eventually dropped. Now I'm again being brought in for another investigation" for again documenting moisture ingress. The mechanic stated that management "expects him to ignore obvious defects to avoid a delay." The mechanic reports that the maintenance manual does not allow moisture ingress because it can lead to electrical arcing.

Synopsis. A line mechanic reports about the intimidating behavior and job termination threats by his manager if he did not sign off a write-up for a cloudy film streak in a fuel sample from a 757-200. Mechanic noted a required micro-biological test had not been completed that would certify the airworthiness of the aircraft's fuel.

The analysis stated, "The intimidating behavior from his manager and supervisor was very upsetting. He was told… he must sign off the fuel contamination write-up or be terminated, even though everyone knew the required lab report for the micro-biological test would not be available to determine a maintenance plan for dealing with that type of possible contamination."

According to the mechanic, when he expressed concerns about performing an inspection previously performed by quality assurance inspectors, the manager "threatened to pull my [company employee] badge and remove me from service if the job card was not completed by the end of the shift."

Synopsis. A line mechanic reports he inadvertently performed a more involved overnight-2 service check instead of the scheduled overnight-1 check on a company ATR 72-200. The mechanic was disciplined for not following the scheduled overnight-1 check even though he found positive chip indications from both engine chip detectors, which delayed the aircraft for three hours.

The mechanic reports he "was given first step [discipline] for finding the discrepancy."

Synopsis. A shop mechanic attempted to stop the robbing of parts from damaged A320 reverser halves that were painted SCRAPPED in red lettering. The reverser halves were not quarantined, the lead would not stop and the supervisor said there was nothing he could do. Mechanic was later harshly questioned by two supervisors about his role in alerting shop mechanics about the illegal practice.

According to the report, a lead mechanic directed other mechanics to "strip parts from the scrapped reverser and use acetone to remove the SCRAPPED red lettering....When the mechanic told his supervisor, he was told there was nothing the supervisor could do and that he should report it to the safety department. After the mechanic reported it to the safety department, "he was brought into a room and harassed by two other supervisors who harshly questioned him about his role and another mechanic's role in alerting shop mechanics about the improper maintenance." The mechanic stated that this experience left him "very concerned about his management's attitude toward those who bring forward any safety issue."

Synopsis. An inspector reports finding five out of 10 wing center-section front spar fittings cracked on a 737-700. The fittings are located on the center fuel tank with fasteners going through the tank. Inspector also describes environment where he was pressured to "not" make inspection write-ups on the tank fittings.

The mechanic described a "very irate quality control (QC) manager [who] called me up and told me not to generate the [non-routine] cards and if I did he was going to be forced to create a [disciplinary] investigation or some other form of punishment." Thereafter, even though cracks were found under five of the 10 fittings, the mechanic was handed a letter informing him "of a disciplinary investigation regarding those same fittings."

Synopsis. A line lead mechanic describes the events surrounding his manager's efforts to get him to sign off the aircraft release of a 757-200, even though a maintenance NoGo item had not been completed.

In reviewing the data, it's important to remember the caveats made by NASA in the letter transmitting the information to me. Since the information is reported voluntarily, there is no way of determining trend data or doing any kind of statistical analysis. NASA, however, does state that "one thing that can be known [about] ASRS data is that the number of reports received concerning specific event types represents the **lower** measure [emphasis in original] of the number of such events that are occurring." NASA further states that the real power of these reports is in the "qualitative data," the detailed information that reports what occurred and, more important, why it occurred.

It is disturbing to think that there are even this many incidents of mechanics being threatened and intimidated when trying to perform maintenance, but to think that there are likely even more is indeed dismaying. And to think this is happening on airlines flying large aircraft carrying hundreds and hundreds of passengers is particularly disturbing.

Mechanics who feel intimidated or threatened should file hotline complaints with the FAA, although that agency's track record on finding and halting these problems is not great. The complaints can be filed anonymously, but filing anonymously might affect the FAA's ability to take enforcement action. Another alternative is to file a hotline complaint with the DOT IG. I have found IG agents to be more aggressive than FAA inspectors in trying to track down these types of complaint.

A final note to any airline management reading this: Could this be your airline described in any of these reports? ❑

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


South Korea's first purpose-built FBO, the Gimpo Business Aviation Center, is expected to be completed by year-end, and the operator anticipates it will begin serving customers next year.

KOREA'S FIRST FBO IS UNDER CONSTRUCTION

Korea Airport and partner Avjet Asia expect to complete construction of an FBO at Seoul's Gimpo International Airport by year-end, and to open the new facility next April. The Gimpo Business Aviation Center, which will effectively be the first purpose-built FBO in South Korea, will have a passenger terminal with customs and immigration controls and a hangar that can accommodate up to eight large jets simultaneously.

Avjet Asia will manage the FBO under an agreement made with KAC in December 2013, providing all standard ground-handling services. In the future, the Seoul-based subsidiary of U.S. private aviation group Avjet might consider partnerships to expand the services the facility offers to include aircraft maintenance.

Avjet chairman and CEO Marc Foulkrod believes that in addition to attracting traffic specifically operating in and out of South Korea the new FBO will become a popular transit stop for business aviation traffic in northeast Asia. Gimpo International Airport is just nine miles west of Seoul's downtown district. The South Korean capital's main gateway, Incheon International Airport, is 30 miles from the city center.

LANDMARK ADDS LOCATION…

Landmark Aviation added an FBO to its North American network when it agreed last month to purchase the Million Air facility at Alaska's Ted Stevens Anchorage International Airport. The franchise location is owned by helicopter operator Era Group. Under the terms of the agreement, which had not closed as of press time, Landmark would acquire 100 percent equity of Era subsidiary Era FBO.

For Landmark, which extended its reach into Hawaii last year when it acquired the former Bradley Pacific chain as part of its Ross Aviation purchase, this marks its first FBO in Alaska and its 69th location overall. "Landmark presented a compelling offer, and we believe Era's shareholders will benefit from alternative deployment of this capital," noted Chris Bradshaw, CEO of the publicly traded Era Group.

One of three FBOs at Anchorage, the location offers four heated hangars, including one modern structure large enough to shelter a 737, while its terminal offers onsite customs and immigration clearance, passenger and crew lounges, shower facilities, car rental and crew courtesy SUVs.

…AND CONSOLIDATES AT ANOTHER

Landmark has reached a deal to purchase the Hawthorne Global Aviation FBO at New Orleans Lakefront Airport and added it to its facility there, a move that will reduce the number of service providers at the Big Easy's business airport to just itself and Flightline First. According to one source at the airport, those two providers had of late split the lion's share of fuel sales at Lakefront. Once complete, the deal will nearly double Landmark's hangar space at the dedicated business airport to nearly 110,000 sq ft. The aviation committee of the New Orleans Levy Board approved the sale and the transfer of the lease on April 9. The value of the deal was not disclosed.

UNIVERSAL GAINS FOOTHOLD IN PHILIPPINES

Universal Weather & Aviation has formed Universal Aviation Philippines, a joint venture with Asian Aerospace, to manage the company's FBO at Manila International Airport. Under the agreement, the newly renovated facility was rebranded as a Universal Aviation location starting this month, and staffed by Universal employees, under the same procedures, protocols and training as the company's other locations. It marks the Texas-based company's first foothold in the Philippines and its seventh country in the Asia-Pacific region.

The FBO, which operates 24/7, has a 10,000-sq-ft hangar that can accommodate aircraft up to the size of a G550 and is the only private aviation facility at the airport to offer both direct ramp-side and street-side access. The 54,000-sq-ft facility provides a terminal with four passenger lounges; the Philippine Clipper crew lounge on the second floor offers an airport ramp view along with a pantry and shower. Onsite customs and immigrations clearance is available either planeside or in the terminal, depending on time of day.

While the name on the FBO will change, Asian Aerospace will continue to have a presence at the airport through its aircraft charter and MRO operations. The company also has hangars at Cebu International Airport and Clark International Airport, and the joint venture will deploy Universal ground handling personnel there.

FORT WORTH FBO CONTINUES ON EXPANSION PLAN

American Aero FTW recently completed its second 40,000-sq-ft hangar this year, the second part of a new 100,000-sq-ft Leed-certified structure that can accommodate aircraft up to a G650. When the final 20,000-sq-ft hangar is finished by year-end, the service provider will have approximately 280,000 sq ft of aircraft storage space, including a 32,400-sq-ft 1930s-era hangar. Around the same time, American Aero acquired the lease of four more acres of ramp, tripling its size to six acres. A new Texas DoT-funded taxiway project is set to kick off this month and will connect the new hangar to the runways.

Next year, the Signature Select-affiliated company is slated to move from the 4,000-sq-ft temporary structure it has occupied since it opened in 2012 to an 8,400-sq-ft terminal in the 1968-vintage airport administration building, currently undergoing a $17.5 million renovation. The new FBO will provide 24/7 U.S. Customs service, two separate passenger lounges and a discrete VIP and TSA screening area, a pilot lounge with snooze rooms, shower facilities, an A/V-equipped conference room and flight-planning tools.


American Aero FTW will be moving from its temporary terminal to a new 8,400-sq-ft facility next year.

CHARTER NEWS NOTES

- **TAG Aviation is now one of the largest operators of the G650,** having added a sixth. TAG also managed the acquisition process for the owner. The company's managed fleet numbers more than 120 aircraft, 50 of them available for charter.
- **Sturgis, Mich.-based RAI Jets** added a King Air C90A to its charter fleet. The twin turboprop features an enclosed lavatory, leather seating for five passengers, active noise-canceling headsets and 1,200 nm range.
- **Clay Lacy Aviation** now offers a Learjet 75 for charter at its Van Nuys, Calif. headquarters. "It has been half a century since Clay Lacy Aviation introduced the original Learjet to corporate aviation," said Clay Lacy president and CEO Brian Kirkdoffer.
- **Toronto-based Charter Air Transportation Services** has added a Gogo Business Aviation-equipped G150 to its charter fleet, based at Lester B. Pearson International Airport. The Gogo service was extended into Canada last year.
- **Swiss charter operator Vertis Aviation** has opened a branch at O.R. Tambo International Airport in Johannesburg, South Africa. This is the company's fourth international location, joining offices in London, Zug (Switzerland) and Dubai. Vertis also added three new aircraft: a Global 5000, Learjet 45 and AgustaWestland AW139.
- **Surf Air,** the all-you-can-fly membership charter operator, has expanded to four new destinations in California: Santa Rosa, Monterey, Sacramento and Palm Springs. Membership costs $1,750 per month for unlimited flights in Surf Air's fleet of Pilatus PC-12s. The company also announced it plans to add five new PC-12s this year.
- **New members of the Air Charter Safety Foundation:** charter broker Shy Aviation, London; Bohlke International Airways, a charter operator based in St. Croix, U.S. Virgin Islands; medical devices manufacturer Baxter Healthcare, which is participating in the ACSF's aviation safety action program; and TriState CareFlight, headquartered in Bullhead City, Ariz. The ACSF also announced that charter operators Richmor Aviation of Hudson, N.Y.; Advanced Air in Hawthorne, Calif.; and Worldwide Jet Charter in Phoenix have been added to its Industry Audit Standard registry. ■

FRANCE'S ACA GROUP ACQUIRES LE BOURGET FBO

Aéroports de la Côte d'Azur Group (ACA) has acquired the former Unijet FBO at Paris Le Bourget Airport, through its acquisition of Unijet Handling from the Luxaviation Group. One of seven (soon to be eight) service providers at Europe's busiest business aviation airport, the location will be rebranded as Sky Valet, ACA's ground handling division.

"It is important for ACA's development of business aviation to be present at the key stops, and Paris Le Bourget is Europe's leading airport in the sector," noted ACA chairman Dominique Thillaud. "Business aviation operators, pilots and passengers turning to Sky Valet will benefit from comprehensive handling services and a similar range of high-end services wherever we operate. At Le Bourget we now have an entirely new, dedicated terminal, which makes the perfect platform for solid international growth."

Launched at last year's EBACE, Sky Valet provides ground-handling service at Cannes Mandelieu and Golfe de Saint-Tropez Airports (also owned by ACA), along with Nice Côte d'Azur, Europe's third busiest business aviation gateway and home to three separate FBOs. The new Le Bourget location offers aircraft handling and parking, passenger waiting and work lounges, pilots' lounge and flight preparation areas.

INDIANA FBO CHAIN TO CHANGE HANDS

Indianapolis-based Eagle Creek Aviation, a provider at the city's Eagle Creek Airpark Airport, has agreed to purchase fellow long-time Indiana family-owned FBO operator Montgomery Aviation. The transaction, which is subject to approval by local authorities, includes the Montgomery FBO and maintenance facility at Indianapolis Executive airport, as well as its FBOs at Frankfort Municipal Airport and the Grissom Aeroplex. Montgomery is the sole aviation services provider at all three locations.

UVAIR FBO NETWORK ADDS TO ROSTER

Glacier Jet Center, the lone FBO at Montana's Glacier Park International Airport, is the newest member of the UVair FBO Network. Sponsored by fuel provider Epic and UVair, Universal Weather & Aviation's fueling services division, the network consists of 26 independent FBOs selected to participate based on their facilities, service and safety standards. Located in Kalispell, this newest member, which now accepts the UVair Fueling Card, is near the state's abundant outdoor activities. ❑

Glacier Air, the newest FBO in the UVair network, touts its proximity to the state's abundant outdoor activities. Customers can land, park their aircraft and be in Glacier National Park in 35 minutes, says the company.

PRELIMINARY REPORTS

CARAVAN LOSES POWER DURING CLIMB

Cessna 208B Caravan, Verdigris, Okla., March 24, 2015–About 15 minutes after departing Tulsa International Airport on a Part 91 post-maintenance test flight, the Cessna turboprop single lost power while climbing to 11,000 feet at 2:59 p.m. The owner-pilot attempted to land at a nearby airstrip but, lacking sufficient altitude to reach it, chose a field that was closer. Shortly after touching down, the airplane contacted trees, severing the left wing and partially severing the right one. The pilot received minor injuries and the passenger was uninjured. The pilot told investigators that when he first noticed torque falling off the exhaust gas temperature (EGT) remained steady. But as the torque fell further, the EGT began to drop. A Honeywell TPE331 turboprop had been installed in the airplane about nine flight hours before the accident.

ASTAR TAIL-ROTOR PITCH CONTROL FAILS

Airbus AS350B2, Anchorage, Alaska, March 13, 2015–The helicopter was substantially damaged during a run-on landing at Merrill Field in Anchorage after the tail-rotor pitch control failed. The incident occurred at approximately 7:15 a.m. while the aircraft was cruising in VMC at 1,000 feet agl. The helicopter was being operated under Part 135. Neither the pilot nor the two passengers aboard were injured.

The pilot said he felt a "clunk" in the anti-torque pedals before the helicopter began yawing to the left. When he attempted to counteract the yaw by pushing the right pedal, it traveled to the stop with no effect. Post-flight examination revealed the tail-rotor pitch change spider assembly had fractured into multiple pieces, all with rotational scarring along the fractured surfaces.

HELICOPTER ACCIDENT CLAIMS ALL ABOARD

Airbus EC155B1, Carapicuiba, Brazil, April 2, 2015–All five people on board were killed when the EC155 crashed into a house on a post-maintenance test flight. Reports indicate the flight was the first following a main rotor blade change. Video footage (https://www.youtube.com/watch?v=qLpkL0Zo7cM) appears to show separation of part of the helicopter in flight before impact.

MISFUELING ACCIDENT CLAIMS PILOT

Piper PA-46, Felts Field Airport (SFF), Spokane, Wash., Feb. 22, 2015–The NTSB preliminary report on the crash of the Canadian-registered Piper PA-46 Malibu says the aircraft was incorrectly fueled before departure. The Canadian-certified pilot and sole occupant died in a hospital two days after the accident. An FAA inspector reviewed records at Western Aviation (SFF) that indicated the piston-powered aircraft had been fueled with 52 gallons of jet-A before takeoff. Witnesses said the Malibu departed Runway 22R at 2:05 p.m. in visual conditions on an IFR flight plan for Stockton, Calif. Multiple witnesses saw the aircraft shortly after takeoff with the engine sputtering as the left wing dropped and the nose pitched up, followed by the aircraft rolling to a right-wing-low attitude before disappearing from view. Other witnesses watched the Malibu's right wing strike a railroad track at the top of a hill and the aircraft slide down an embankment, coming to rest inverted near the bottom of a railroad bridge, destroying the aircraft. Both wings separated but they were located near the main wreckage. Investigators noted a strong smell of jet fuel at the accident site.

DAUPHIN ACCIDENT CLAIMS SIX

Airbus SA365N2 Dauphin 2, Semenyih Selangor, Malaysia, April 4, 2015–The privately owned helicopter was en route from Kuantan to Subang at approximately 4:15 p.m. local time when it crashed, killing everyone on board. All the occupants had been guests at a wedding luncheon for the daughter of the prime minister in his hometown of Pekan, Kuantan. The cause of the accident is under investigation.

RUNWAY EXCURSION DAMAGES PREMIER

Beechcraft 390 Premier I, Blackpool Airport, England, March 12, 2015–No one aboard the jet was injured after it left the runway at approximately noon, shortly after touchdown on a flight from Dusseldorf, Germany. The Premier's nosegear collapsed as it entered the grass near the runway edge. The reason for the excursion was not immediately apparent.

CARAVAN STRIKES APPROACH LIGHTS

Cessna 208B, Muskegon, Mich. (MKG), March 10, 2015–The pilot and sole occupant was not injured, but the turboprop single was substantially damaged when it struck approach lights following an IFR approach at MKG. The airplane was registered to Aero Leasing of Incline Village, Nev., and operated under Part 135 by Martinaire Aviation of Addison, Texas. Although precise weather data was not reported, the pilot said he flew the approach to minimums at approximately 7:40 a.m., saw the approach lights and realized he was right of the runway. As he maneuvered to realign the airplane with the runway centerline, he struck the approach lights. After landing, he found the left horizontal stabilizer hanging down. There were also numerous dents on the leading edge of the left wing strut, and the left landing gear was bent.

MISSING LONGRANGER LOCATED IN THE ANDES

Bell 206L-4 LongRanger, Andes Mountains near Llanta, Chile, March 31, 2015–The helicopter, operated by Inversiones Santa Francisca, carried three engineers and the pilot to a mountainous region to assess the severity of damage to a local water system following extensive flooding. The helicopter went missing on March 31 and was not found for an unspecified number of days. All aboard the aircraft were deceased when rescue teams arrived.

ASTAR ACCIDENT FATAL TO FOUR

Airbus AS350B3, San Martin de Torres, Oaxaca, Mexico, March 27, 2015–The pilot and three passengers died when the helicopter crashed and caught fire just after takeoff from San Martin at 3 p.m. The helicopter was reportedly operating in poor weather to support a telephone maintenance crew. ❑

FINAL REPORTS

PILOT LOST CONTROL OF KING AIR

Beechcraft King Air 200, Long Beach, Calif., March 16, 2011–The NTSB cited the pilot's failure to maintain directional control during a momentary engine power loss as the cause of the 2011 accident, which killed four people on board, including the pilot. One other passenger was seriously injured. The NTSB said the left engine experienced the power interruption during the initial takeoff climb likely because of water contamination of the fuel, which the inspector believed was not drained before takeoff per the POH. The airplane, operated by Carde Equipment Sales under Part 91, departed Long Beach at 10:29 a.m. in VMC.

Witnesses reported the aircraft's takeoff appeared normal until shortly after liftoff, when it stopped climbing and yawed left. Several witnesses heard abnormal sounds they attributed to propeller blade angle changes before the aircraft began a left yaw and the airspeed began to fall. The left bank angle increased to between 45 and 90 degrees as the King Air's nose dropped to nearly vertical. Just before impact, the bank angle and pitch began to flatten out. The airplane had turned left approximately 100 degrees by the time it struck the ground some 1,500 feet from the midpoint of the 10,000-foot runway. A post-impact fire consumed the fuselage.

A security camera captured the takeoff and revealed the airplane was near the midpoint of the runway, approximately 140 feet above the ground and at a groundspeed of approximately 130 knots when it began to yaw left. The yaw coincided with the appearance, behind the airplane, of a dark grayish area that appeared to be smoke. An experienced King Air mechanic who witnessed the crash reported hearing two loud "pops" about the time the smoke appeared. He believed the pops were generated by one of the engines intermittently relighting and extinguishing.

It was impossible for the post-accident investigation to identify any contamination in the King Air's nacelle fuel tanks since both were torn open during the crash. Samples from the fuel truck used to service the aircraft before takeoff also tested negative for contamination.

Further investigation revealed that the pilot's previous employer, where he had acquired most of his King Air 200 flight experience, did not ask pilots to drain the fuel tank sumps before every flight. Instead, it relied on maintenance personnel to drain them at some unknown interval. Upon teardown, the engines displayed no indications of any pre-impact anomalies or distress that would have precluded normal engine operation before impact. Investigators were unable to find anyone who had seen the pilot conduct the preflight inspection of the airplane before the accident flight, so it could not be determined whether the pilot had drained the fuel tank sumps. Because the airplane was not on a Part 135 certificate or a continuous maintenance program, investigators deemed it unlikely there was a mechanic assigned to drain the airplane's fuel sumps routinely.

Although the investigation revealed that the King Air took off at approximately 650 pounds over maximum gross takeoff weight, the NTSB did not believe that condition should have precluded the pilot from maintaining directional control.

BEECH 99 GEAR FAILED TO EXTEND

Beech 99, Cedartown, Ga., April 10, 2011–The NTSB cited inadequate lubrication by maintenance personnel as the reason the pilot of the Part 91-operated airliner received an unsafe left main landing gear indication when he configured the airplane for landing. The pilot cycled the gear and attempted a manual extension, both without success, before completing the landing on the nose and right main landing gear. The sole-occupant pilot was not injured in the accident.

Examination of the left main landing gear actuator revealed that the supports for the actuator bearings lacked lubrication and displayed wear as a result of inadequate lubrication. The actuator had accumulated 377.5 hours and 285 cycles since overhaul and was installed about 31 months before the accident. The manufacturer's maintenance manual prescribed lubrication of the retract actuator and actuator support bearings every 1,000 cycles or 30 months (whichever occurs first). It could not be determined if inadequate lubrication was applied at installation, or if a loss of lubrication was not detected in subsequent inspections.

The manufacturer's maintenance manual did caution operators, however, that "when washing the airplane with soap and water, use special care to avoid washing grease away from lubricated area. After washing the wheel-well areas with solvent, lubricate all lubrication points. Premature wear of the lubricated surfaces may result if these precautions are not observed."

PILOT LOST CONTROL TAXIING CARAVAN

Cessna 208B, El Paso, Texas, April 26, 2011–The NTSB said the pilot lost control of the aircraft while taxiing at El Paso in a strong, gusty wind. As the pilot prepared for an evening Part 135 cargo flight, he radioed ATC for his clearance and requested the wind conditions. Since the wind was higher than previously reported, the pilot told the controller he would wait before taxiing. The pilot added that, after he had decided to delay the flight but before he could shut down the engine, a strong gust of wind pushed the airplane's nose left and lifted the left wing. The airplane's propeller and right wing hit the ground, bending the wing in the process. At the time of the accident the airport's automated weather station reported the wind from the west at 36 knots gusting to 48 knots. ■

The material on this page is based on the NTSB's report (preliminary, factual or final) of each accident or, in the case of recent accidents, on information obtained from the FAA or local authorities. It is not intended to judge or evaluate the ability of any person, living or dead, and is presented here for informational purposes.

Pre-Owned Update

by Bryan A. Comstock

Signs point to shrinking inventory in this year's second quarter

After a typical first-quarter breather during which inventory often rises, buyers appear poised to step up the buying in the second quarter. True to form, inventory did tick up last quarter, but it held below its 12-month moving average of 2,300, which itself is within striking distance of a multiyear low, courtesy of a busy year last year. Add to that a fair number of aircraft on the market but under contract and we're likely to see choices move lower in the current quarter.

As is becoming the norm, when you see 30 aircraft for sale in any one market, that tells only part of the story. Take the Challenger 300, which stands at just about 30 for sale. With approximately 350 manufactured, the current choices

Phenom 300

don't make the market top heavy by any means, and when you start to impose certain parameters, choices get downright scarce. Case in point: if you're considering purchasing a 300 with U.S. pedigree, your choices just dropped by two thirds.

This is a trend that crosses all model types from the small-category Premier I, of which 12 of the 125 in operation are for sale; only four are U.S. based. It gets worse (if you're a buyer): one is a share sale and another is listed as "sale pending."

Most have noticed a spike in the number of G550s for sale over the past year to levels never before visited. The first thing to consider is that there are now nearly 500 in operation, so the 35 currently for sale represent just slightly fewer than 8 percent of the total number produced. Few models can claim the distinction of having 500 aircraft in operation, and I don't know any others that are in current production.

Five of the total are under contract. Of the 30 remaining, about half are in the U.S., eight are in Europe, a handful in Asia and a few in South America. Dissecting this further shows Asia with the lowest percent available based on in-continent fleet, the U.S. at 5.5 percent, Europe 12 percent and South America at 21 percent, where three of only 14 are for sale.

Further giving buyers agita is the more than 10-year production run enjoyed by the G550 and Challenger 300. Buyers looking at the market generally are not going to be considering all model years but will target a model year range, often based on budget, again limiting the number of choices.

Prices have not yet aligned with regionally low supplies in some market segments. Price increases have been AWOL for years, prompting questions about why, particularly for models that are perennial favorites. One colleague in the industry offered some observations, which range from there being too many aircraft for the number of buyers to the great number of fractional aircraft that transition into the wholly owned fleet after completing their group ownership roles.

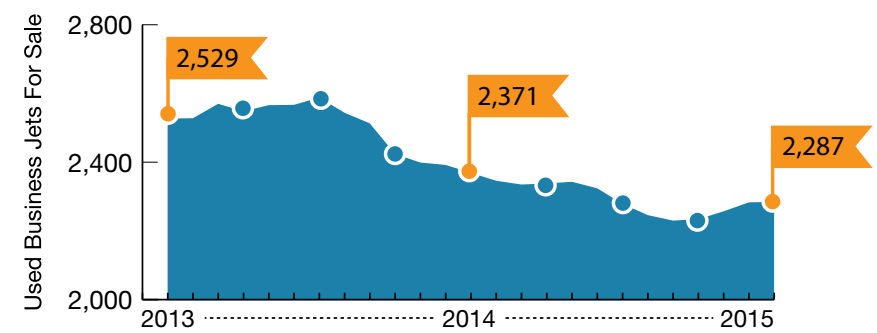
Price compression starts at the top and exerts pressure on the next downstream model and so on. For that reason you see prices on aircraft that would have been implausible just a few years ago. A Global Express priced below $10 million and a GV in hot pursuit, priced just above $10 million. Challenger 300s are available for even less. While each of these examples represents the low price for the model type, all appear to offer potential value for the right buyer. The GIV/SP can be found priced as low as the $5 million mark for an early copy and reaching to just under $11 million for the latest available. The Falcon 2000 posts similar numbers. However, twice as many Falcon 2000s as GIV-SPs sold over the past six months.

The Learjet 60 continues to come back into favor among buyers. Eighteen months ago offerings exceeded 50; today there are 32, or 10 percent of the just over 300 in operation. Another trending model is Embraer's Phenom 300. A year ago there were 17 for sale, and that has since inched down to 11 or just fewer than 5 percent of the roughly 250 in service.

A recent conversation about the GIV market prompted the realization that the earliest models have turned 30. That led me to look at some even older models, and what I learned is that this market currently offers more than 50 different model years of all types of aircraft. This wide range of product can distort the perception of a soft market. Of the 2,287 aircraft for sale worldwide, 1,330 were manufactured before 2000 and 957 have been built since then. ■

Bryan Comstock is a cofounder and managing director of aircraft broker Jeteffect.

Two-year Inventory Trend



Sources: JetNet, AircraftPost

Compliance Countdown by Gordon Gilbert

Within 6 Months

▶ **May 18, 2015** NEW

NTSB Proposes To Amend Certain Rules

The NTSB is proposing to amend provisions within its regulations that govern the Board's procedures for holding investigative hearings, various types of meetings, issuing reports and responding to petitions for reconsideration. This notice also proposes a number of substantive and technical changes. In particular, the NTSB proposes to reorganize parts of its regulations into different subparts to ensure each part is easy to follow. Comments must be received by May 18.

▶ **May 22, 2015** NEW

DOT Proposes eLoran as GPS backup

Comments are sought regarding potential plans by the DOT in coordination with the Department of Homeland Security to implement an enhanced long-range navigation (eLoran) system as a complementary positioning, navigation and timing (PNT) capability to the Global Positioning System (GPS). The plans calls for the two agencies to "develop, acquire, operate and maintain" eLoran to "back up PNT capabilities that can support critical transportation, homeland security and other critical civil and commercial infrastructure applications in the event of a disruption of GPS." Comments are due by May 22.

▶ **May 26, 2015** NEW

Fixed-wing Special VFR Prohibited at IAD

In a direct final rule, Special VFR operations for fixed-wing aircraft at Washington Dulles International Airport (IAD) will be prohibited. The FAA issued the new requirement as a direct final rule because the continued growth in the number of IAD instrument operations and complex airspace has long qualified the airport for this restriction. Although the requirement is scheduled to become effective on May 26, any negative comments the FAA received before April 27 could serve to revoke the rule before it goes into effect and possibly initiate a full NPRM process.

▶ **June 1, 2015** NEW

Pilot CPDLC Recording Policy Updated

A new policy statement, effective June 1, updates how the FAA will determine when datalink communications must be recorded on the CVR. Since 2010, implementation of the controller pilot datalink communications (CPDLC) recording requirement has become more complex, costly and confusing. At issue are more than 2,100 Part 121 and 135 aircraft that were manufactured before the effective date of the rule (Dec. 6, 2010) that require widely varying levels of additional equipment or software for the CPDLC to be fully functional. Under the new policy, the recording requirements are specifically delineated and differentiated between aircraft built before Dec. 6, 2010, and those built after this date.

▶ **June 30, 2015** NEW

EASA To Clarify Private Flight Rules for AOC holders

In a Notice of Proposed Amendment (NPA), the EASA addresses what it calls "safety issues related to the lack of regulatory operational framework for non-commercial operations performed by air operator certificate (AOC) holders, such as when air taxi and charter business aircraft are flown on private missions. The NPA contains a minimum list of elements to be considered in the risk-assessment process when the AOC holders follow operational procedures different from those normally used for their commercial air transportation. Under the new rules, the EASA says "AOC holders will thus have flexibility in establishing operational procedures commensurate with the level of risk of certain types of non-commercial operations." Comments are due by June 30. A final decision on the requirements is scheduled to be made by the third quarter of 2017.

Within 12 Months

▶ **Dec. 1, 2015 and Jan. 1, 2017**

European Union Tcas Version 7.1 Directive

Turbine aircraft that are approved to carry at least 19 passengers, certified before April 1 last year and equipped with Tcas II version 7.0 must be upgraded to the latest version of 7.1 traffic alert and collision avoidance system software by Dec. 1, 2015. ICAO does not require that version 7.1 software be installed for international flights as a retrofit until Jan. 1, 2017. All other applicable airplanes were required to have 7.1 Tcas II software installed by April 1 last year.

▶ **Dec. 31, 2015**

Deadline to Meet Stage 3 Noise Levels

Eight months remain to the Dec. 31, 2015 deadline after which jets up to an mtow of 75,000 pounds may no longer operate in the contiguous U.S. unless they meet Stage 3 noise levels. When the rule was published on July 2, 2013, the FAA said the mandate affected 457 U.S.-registered owners of 599 principally Stage 2 business jets, though several models can now be, or will be able to be, hushkitted or re-engined to meet Stage 3 before the deadline. The rule also applies to non-U.S.-registered aircraft. At least 50 countries have a total of 392 registered airplanes like those banned in the U.S., according to the FAA, with nearly 50 percent of these jets registered in Mexico.

Beyond 12 Months

▶ **June 8, 2016 and June 7, 2020**

Europe ADS-B OUT Mandate

The earliest ADS-B OUT requirement in Europe is June 8, 2016, for new aircraft and June 7, 2020, for retrofit. The date for retrofits is about six months later than the U.S. ADS-B OUT mandate, which requires the equipment to be operational in aircraft that fly under IFR and where transponders are currently required starting Jan. 1, 2020 *(see item below)*.

▶ **Jan. 1, 2020**

ADS-B OUT Avionics

A final FAA rule requires installation of ADS-B OUT equipment by Jan.1, 2020 for aircraft flying in Class A, B and C airspace. The equipment is designed to allow air traffic controllers to know where aircraft are with greater precision and reliability than current ATC radar can provide. ❑

Completion & Refurbishment

by James Wynbrandt

Jet Aviation Basel To Complete Two Boeing 777s

Boeing Business Jets selected Jet Aviation Basel to perform the green completions of two Boeing 777-300Rs, on behalf of an undisclosed Asian customer, following what Jet Aviation characterized as an "intense and competitive" bidding process. "We have invested heavily in process and product improvements for popular widebodies such as the 777 to bring VIP interiors to the next level of quality and precision," said a spokesman. "This is a fantastic opportunity for us to showcase our new capabilities," he added.

Citing confidentiality agreements, Jet Aviation declined to provide renderings or representations of the planned interiors. The projects are already under way and the aircraft are scheduled for delivery to the customer in the third quarter of 2018.

Sierra Completions Building Colorado Facility

Sierra Completions, established by Sierra Nevada last fall, is proceeding with plans to build an $88 million completions complex at the Colorado Aerospace Park at Colorado Springs Airport. Nevada-based Sierra Nevada expects the facility–which it says will be one of the few in the U.S. capable of performing completions on the Airbus A350 and Boeing 747 and 787–to employ more than 2,100 people within five years. Sierra Nevada president Eren Ozmen said, "Our vision for Sierra Completions is to position it as the premier provider for general aviation completions of composite aircraft."

State and local incentives were "critical" to the location decision, according to Sierra Nevada, and Governor John Hickenlooper welcomed the choice. "Colorado Springs is on its way to becoming home to an aviation facility unlike any other in the country," he said.

Merger Unites Several Greenpoint Divisions

BBJ completion specialist Greenpoint Technologies merged in March with sister companies Odyssey Aerospace and Greenpoint Products and Services to form an expanded Greenpoint Technologies Corp. The merger unites Greenpoint's cabinetry and machining facilities in Denton, Texas, and its manufacturing and testing facility in Marysville, Wash., with the corporate headquarters in Kirkland, Wash. The divisions were already operating as a unified company, according to Greenpoint CEO Scott Goodey, as the teams at each facility "work together on every program, representing true vertical integration. We are 'one Greenpoint' and it's efficient to combine our business processes to reflect this."

The merged facilities employ nearly 400 people and have more than 130,000 sq ft of office, manufacturing and production space. Greenpoint Aerospace, a business jet MRO facility in Denton, Texas, continues to operate as an independent division servicing private, corporate and military aircraft.

Ruag Completes Major Upgrade on Malaysian Falcon 900

Switzerland-based Ruag Aviation's Geneva maintenance facility, under contract to Malaysian MRO provider Airod, has completed a major upgrade and refurbishment of a Dassault Falcon 900 owned by the Royal Malaysian Air Force. The project included a 4C check, overhaul of the aircraft's avionics systems and a full cabin renovation.

Ruag Aviation Geneva's upgrade of a RMAF Falcon 900 included a complete overhaul of the cabin and avionics.

"The check package, maintenance work and the extensive modification work could be carried out simultaneously, offering a single solution for the customer," said David Jones, general manager for Ruag Aviation in Malaysia, all within what Ruag called "challenging timescales." Ruag has previously performed engine and component repair and overhaul for the Malaysian Air Force. The cabin refurbishment was performed in partnerships with component and furnishing providers Honeywell, Vision Systems, AIP, ACH and Emteq. It includes new seating and LED lighting, along with the first installation of Vision Systems' new electronic dimming window shades, and a Honeywell Ovation cabin management system (CMS), Ruag's first installation of the CMS in a Falcon 900. An Airshow 4000 and Satcom 7000 system were also added to the cabin.

Scott Group Draws Inspiration from High-end Interior Carpets

Scott Group of Grand Rapids, Mich., has introduced its "Bespoke Collection" of New Zealand wool carpets for business jet cabins. Inspired by the tailored textures trending in commercial and residential property interiors, the 15 new hand-tufted designs feature classic tweeds, pinstripes, plaids and subtle patterns. Some designs incorporate mulberry silk. "You get a timeless appearance, and that's what designers are looking for: understated elegance," said marketing director Jennifer Kirchgessner.

Scott supplies carpeting to both OEMs and for aftermarket refurbishments, and Kirchgessner said the company can provide specific bespoke designs under exclusive agreements with manufacturers. Meanwhile, the "pick-it-and-go" availability of the collection's designs and their price will add to its appeal in the aftermarket, she said. This month Scott plans to introduce a "hybrid" hand/machine-made carpet collection that "caters directly to refurbishments," she added. ■

United Technologies (UTC) appointed **Robert "Bob" Leduc** president of Sikorsky, succeeding **Mick Maurer**. Mauer was promoted to the newly created position of UTC senior vice president of strategic projects. Leduc led a number of companies during his 35-year aerospace career, including the large commercial engines business at UTC subsidiary Pratt & Whitney.

Fang Liu was elected the next secretary general of the *International Civil Aviation Organization* (ICAO) effective August 1, making her the first woman and the first Chinese national to lead the United Nations aviation body. Liu had spent two decades with the Civil Aviation Administration of China (CAAC) before joining ICAO in 2007 as director of the Bureau of Administration and Services.

John Gawsyszawski was appointed CEO of *Pacific Aerospace Resources & Technologies*. He joined the company last year as COO.

National Air Traffic Controllers Association president **Paul Rinaldi** and executive vice president **Trish Gilbert** were each elected to a third term that runs through Aug. 31, 2018. They became the first two to run as a team in 2009 and are the first two in the association's history to hold the respective positions for three terms. Rinaldi, a 16-year controller at Washington Dulles Tower, was executive vice president from 2006-2009. Gilbert spent 21 years as a controller at Houston Air Route Traffic Control Center.

Mauro Moretti was selected as president of the *AeroSpace and Defense Industries Association of Europe*. Moretti has been CEO and general manager of Finmeccanica Group since May last year.

Jet Aviation Basel appointed **Ruedi Kraft** vice president of completions business development and **Matthew Woollaston** to succeed him as vice president of completions sales and marketing. Kraft has served with Jet Aviation for more than 25 years, and he joined the Basel completions center in 2011. Woollaston joined Jet Aviation Basel in March last year from a New Zealand-based firm, where he led the company's VIP completions business for five years.

Textron Aviation appointed **Doug May** vice president of piston aircraft. May, who is responsible for both Beechcraft and Cessna piston-engine aircraft, most recently was director of engineering flight-test and experimental operations for all Cessna and Beechcraft products. He has also held positions with Kohlman Systems Research and Bombardier Learjet.

Airbus Group named **John Harrison** to become group general counsel in June, consolidating the responsibilities of corporate secretary, general counsel and ethics and compliance. Currently, Harrison serves as group general counsel of Technip in Paris. Airbus also appointed **Pierre de Bausse**t president of Airbus Group India as of June 1. He has served as corporate secretary since 2008.

Gulfstream Aerospace named **Leda Chong** senior vice president of strategic planning. Formerly senior v-p Asia-Pacific for Gulfstream, Chong joined Gulfstream parent General Dynamics in 2007 as a director of government relations. The company also appointed **Lee Anne Tait** vice president of quality.

Executive AirShare promoted **Michael McMillan** to the newly created position of senior vice president of sales and marketing. Previously regional vice president of sales, McMillan has served as president and CEO of S-Tec, president of Aircraft Travel Solutions (a company he founded), vice president of sales and marketing for Piaggio America and regional vice president for Raytheon Aircraft.

Amy Koranda retired from the *National Air Transportation Association* March 31 as vice president of operations after spending 17 years with the association. Koranda also served as president of ASAP Passports and Visas, worked with the National Association of State Aviation Officials Center for Aviation Research and Education, and managed the 5010 airports program for AOPA.

Kathy Perfetti rejoined the *International Business Aviation Council* (IBAC) as senior advisor, regulatory affairs. Perfetti, who served from 2007 to 2011, also has spent 29 years with the FAA, acting as a primary driver behind the agency's "One Level of Safety" rule, which raised standards for regional airlines.

Dennis Moore joined *Advantage Aviation Technologies* as president. Moore has 25 years of executive operations experience, having held leadership roles with Rubbermaid and Pet Mate.

Cutter Aviation named **Michael Brasier** general manager of its El Paso, Texas FBO.

Thierry Casale was appointed senior v-p of *ATR*'s newly created programs directorate. Casale joined ATR in 2005 and most recently was senior v-p of operations.

Russell Coldiron joined *Spirit Avionics* as purchasing/material control manager. Coldiron has more than three decades in aviation purchasing and supply chain management, including a stint as director of materials for NetJets.

Merritt "Keith" Thogmartin has joined the *Spirit Aeronautics* quality control team. A 35-year industry veteran, Thogmartin has served as director of maintenance for Corporate Wings and Capital City Jet Center and vice president of technical services for Business Aircraft Group and director of maintenance for Capital City Jet Center. The company also promoted **Charles (Mike) Evans** to lead technician in the maintenance production department. **John Becan** was named production supervisor for the maintenance, avionics and interiors production teams. Becan has held management positions with Gulfstream Aerospace (formerly KC Aviation), Associated Air Center and Comlux America. **Reid Antonacchio** was named regional sales manager for the North American North Central Region. He previously worked at Eagle Creek Aviation Services, Avidyne and Gogo Business Aviation.

Scott Nordstrom was promoted to senior v-p of sales and marketing for *Zenith Aviation*. Formerly vice president of corporate sales and services for AvCraft Support Services, Nordstrom joined Zenith in September 2013 as director of business development.

Investec appointed **Konrad Blocher** strategic aviation analyst in its Dublin aviation finance office. Blocher previously served as senior v-p of risk modeling at SMBC Aviation Capital.

Gregor Bremer was appointed COO at *OHS Aviation Services*. Bremer previously spent 10 years with Beechcraft Berlin.

MNX Global Logistics named **Jan Willem van 't Riet** senior v-p for the EMEA region and global aviation, **Lori Mildren** vice president of sales and marketing and **Larry Glasscock** senior v-p for global accounts.

Aircraft Interior Products named **Rick Richardson** national sales manager. Richardson has a 27-year background in aviation design and engineering, including stints with Bombardier Aerospace, Dassault Falcon Jet, Advent Aerospace and R2 Aerospace.

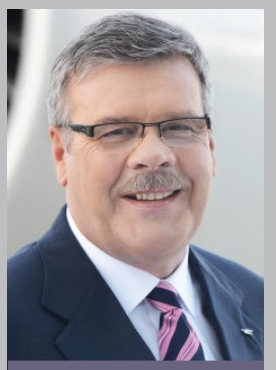
Yuval Hadaya joined *GrandView Aviation* as director of operations. ❑

Awards & Honors

The *Aircraft Owners* and *Pilots Association* (AOPA) recently presented the 2014 Joseph B. Hartranft Jr. Award to House Transportation and Infrastructure Committee Chairman **Bill Shuster** (R-Pa.). Shuster was recognized for "his unparalleled work on behalf of general aviation in the U.S. Congress," the association said. The award is presented annually to government officials who have made significant contributions to the advancement of general aviation. Shuster, a member of the House General Aviation Caucus, helped shepherd expedited congressional passage of the Small Airplane Revitalization Act and backed legislation requiring the FAA to go through the rule-making process before implementing policy changes related to sleep disorders.

Landmark Aviation has named **Isaac Lee**, general manager at its Miami International Airport facility, as the 2014 General Manager of the Year. Lee was selected for the recognition last year too. Landmark cited Lee not only for the FBO's success in 2014, but also for his extended service in the community. He was recently appointed to the Miami Dade College School of Aviation's advisory committee; serves on the Greater Miami Convention and Visitors Bureau and the Florida Aviation Business Association; and supports the Ronald McDonald House Charities of South Florida.

The *National Air Transportation Association* is honoring former TSA Administrator **John Pistole** with its 2015 William A. "Bill" Ong Memorial Award, while long-time NATA employee **Amy Koranda** will receive NATA's Distinguished Service Award during the association's Aviation Business Conference on June 17 in Washington, D.C. Pistole will be recognized for "extraordinary achievement and extended meritorious service to the general aviation industry." At the TSA, Pistole promoted a "philosophical change…to security through the introduction of highly effective intelligence-driven programs," NATA said. The Distinguished Service Award recognizes "outstanding service and ongoing contributions to the general aviation industry." Koranda held several titles over her 17-year career at NATA, originally joining the association staff to develop and manage NATA's Safety 1st Professional Line Service Training. ■


Ruedi Kraft


Doug May


Michael McMillan


Michael Brasier


Greg Bremer

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Calendar Compiled by Jane Campbell

MAY

AHS INTERNATIONAL FORUM AND TECHNOLOGY DISPLAY…May 5-7, Virginia Beach Convention Center, Virginia Beach, Va. Info: (703) 684-4646; www.vtol.org.

MAINTENANCE MANAGEMENT CONFERENCE… May 5-7, Oregon Convention Center, Portland, Ore. Info: (202) 783-9000; www.nbaa.org.

BUSINESS AVIATION TAXES SEMINAR…May 8, Hotel Adolphus, Dallas. Info: (202) 783-9000; www.nbaa.org.

GREATER WASHINGTON AVIATION OPEN…May 11, Army Navy Country Club, Arlington, Va. (703) 261-5025; www.gwao.org.

▲ **REGIONAL AIRLINE ASSOCIATION CONVENTION…**May 11-14, Cleveland. Info: (202) 367-1170; www.raa.org.

ATCA TECHNICAL SYMPOSIUM…May 12-14, Resorts Hotel and Casino, Atlantic City, N.J. Info: (250) 656-7227; www.atca.org.

BUSINESS AVIATION SAFETY SUMMIT…May 13-14, Bonaventure Resort and Spa, Weston, Fla. Info: (703) 739-6700; www.flightsafety.org.

MIDDLE EAST CORPORATE AVIATION SUMMIT… May 13, Abu Dhabi, United Arab Emirates. Info: +44 20 8123 7072; www.aeropodium.com.

AOPA FLY-IN…May 16, Salinas Municipal Airport, Salinas, Calif. Info (302) 695-2159; www.aopa.org.

◆ **EUROPEAN BUSINESS AVIATION CONVENTION & EXHIBITION…**May 19-21, Palexpo Convention Center, Geneva. Info: (202) 783-9000; www.ebace.com.

AIRCRAFT FINANCING AND LEASING CONFERENCE…May 28, Broward College Aviation Institute, Fort Lauderdale, Fla. Info: (305) 767-4707; www.aeropodium.com.

TAMPA BAY AVIATION ASSOCIATION CHARITY GOLF OUTING…May 29, Westchase Golf Club, Tampa, Fla. Info: (407) 257-0857; www.mytbaa.org.

JUNE

SAFETY AND AUTOMATION IN AVIATION FORUM…June 2-3, Eurocontrol headquarters, Brussels, Belgium. Info: +32 2 729 90 11; www.eurocontrol.int.

BALTIC BUSINESS AVIATION…June 5, Tallink Spa and Conference Hotel, Tallinn, Estonia. Info: www.aeropodium.com.

AMERICAN ASSOCIATION OF AIRPORT EXECUTIVES ANNUAL CONFERENCE AND EXPOSITION…June 7-10, Philadelphia, Pa. Info: (703) 824-0500; www.aaae.org.

INTERNATIONAL AVIATION SAFETY CONFERENCE…June 10-12, Brussels, Belgium. Info: +49 221 8999 000; www.easa.europa.edu.

◆ **PARIS AIR SHOW…**June 15-21, Le Bourget Airport, Paris. Info: www.siae.fr.

INTERNATIONAL AIRPORT EMERGENCY PREPAREDNESS CONFERENCE…June 22-24, Western Oaks Houston Galleria Hotel, Houston, Texas. Info: (703) 797-2526; www.aaae.org.

INTERNATIONAL CONFERENCE ON ICING OF AIRCRAFT, ENGINES AND STRUCTURES… June 22-25, Prague, Czech Republic. Info: (703) 684-4646; www.vtol.org.

PAN AMERICAN SAFETY SUMMIT… June 22-26, Medellin, Colombia. Info: (786) 388-0222; www.alta.aero.

EMBRY-RIDDLE NEXTGEN 101 SEMINAR…June 23-24, Washington, D.C. Info: (386) 226-7232; www.erau.edu.

JETNET IQ GLOBAL BUSINESS AVIATION SUMMIT…June 23-24, New York City. Info: (800) 553-8638; www.jetnet.com.

REGIONAL FORUM…June 25, Teterboro Airport, N.J. Info: (202) 783-9000; www.nbaa.org.

FLIGHT ATTENDANTS/FLIGHT TECHNICIAN CONFERENCE…June 30-July 2, Loews Ventana Canyon Resort, Tucson, Ariz. Info: (202) 783-9000; www.nbaa.org.

MEDITERRANEAN BUSINESS AVIATION CONFERENCE…June 30, The Palace Hotel, Sliema, Malta. Info: www.aeropodium.com.

JULY

EAA AIRVENTURE…July 19-26. Oshkosh, Wis. Info: (920) 426-4800; www.eaa.org.

AUGUST

◆ **LATIN AMERICAN BUSINESS AVIATION CONFERENCE & EXHIBITION…**Aug. 11-13, São Paulo, Brazil. Info: +55 (11) 50 32 2727; www.labace.aero.

LATIN AMERICAN CARIBBEAN GENERAL ASSEMBLY CONFERENCE AND EXHIBITION… Aug. 31-Sept. 2, Panama City, Panama. Info: +44 (0) 20 8831 7510; www.aci-waga2015.com.

SEPTEMBER

VIKING ALL OPERATORS FORUM…Sept. 8-10, Victoria Conference Centre and Viking Headquarters, Sidney, British Columbia, Canada. Info: (250) 656-7227; www.vikingair.com.

AFRICAN BUSINESS AVIATION ASSOCIATION… Sept. 24-25, Sheraton Addis hotel, Addis Ababa. Info: www.afbaa.org.

OCTOBER

HELITECH…Oct. 6-8, ExCel, London. Info: +44 (0) 20 8748 9797; www.helitechevents.com.

INTERNATIONAL AVIATION TRADE SHOW AND CONGRESS…Oct. 14-16, JW Marriott Cancun Resort & Spa, Cancun, Mexico. Info: +52 1 777 317 64 45; www.expo-ciam.com.

OFFSHORE REGISTRATION CONFERENCE… Oct. 15-16, Grand Cayman Marriott Beach Resort, Grand Cayman Islands. Info: +44 20 8123 7072; www.aeropodium.com/oar.

NOVEMBER

AIR TRAFFIC CONTROL ASSOCIATION CONFERENCE AND EXHIBITION…Nov. 1-4, Gaylord National Resort, Washington, D.C. Info: (703) 299-2430; www.atca.org.

◆ **DUBAI AIRSHOW…**Nov. 8-12, Dubai World Central, Dubai, United Arab Emirates. Info: dubaiairshow.com.

◆ **NBAA BUSINESS AVIATION CONVENTION & EXHIBITION…**Nov. 17-19, Las Vegas Convention Center, Las Vegas. Info: (202) 783-9000; www.nbaa.org.

◆ Indicates events at which **AIN** will publish on-site issues or distribute special reports.

▲ Indicates events for which **AIN** will provide special online coverage and e-newsletter.

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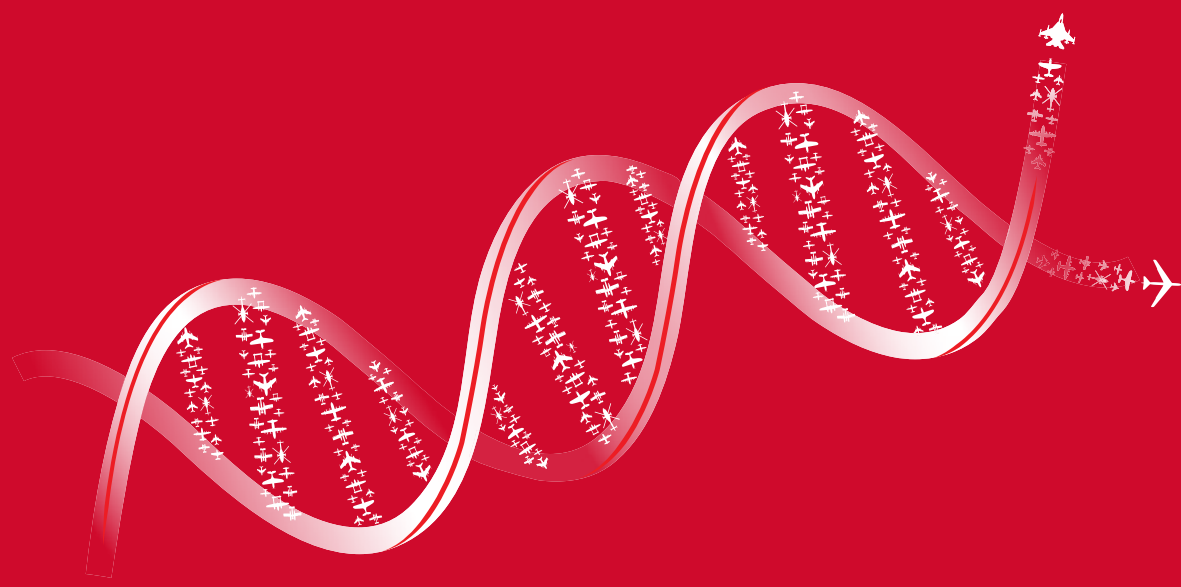

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- ***45,152*** *TRADE ATTENDEES FROM 125 COUNTRIES & REGIONS*
- ***274*** *DELEGATIONS FROM 76 COUNTRIES & REGIONS*
- ***CLOSE TO 70*** *CEOs, PRESIDENTS AND CHAIRMEN FROM VARIOUS AIRLINES AND INDUSTRY ASSOCIATIONS*
- ***1,132*** *HIGH-LEVEL MEETINGS TOOK PLACE BETWEEN VIP DELEGATIONS AND EXHIBITORS*

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