# Aviation International News®

February 2015

AIN PUBLICATIONS

Vol. 47 No.2 $9.00

www.ainonline.com


*Focusing on other priorities–specifically the CSeries and the Global 7000/8000–Bombardier is applying the brakes to its composite Learjet 85 program.*

## Bombardier halts Learjet 85 program

by Kerry Lynch and Chad Trautvetter

Struggling to balance a hefty development schedule that was quickly burning cash, Bombardier is "pausing" its Learjet 85 program in a move that will result in a $1.4 billion pretax charge in its fourth-quarter 2014 results and the layoff of 1,000 workers this year. The decision to halt the Learjet 85 program was widely expected after Bombardier refocused its resources last year on seeing through the CSeries program and moving ahead with the Global 7000/8000 programs.

"The Lear 85 pause is not a major surprise," said J.P. Morgan analyst Joseph Nadol III. "We had expected Bombardier's decision to shelve the Learjet 85 for now due to the program's struggles and the more important development and production challenges Bombardier faces for the CSeries and Global 7000/8000."

Analysts noted that the success of the CSeries, which has suffered costly, prolonged delays, is critical to the future of the company. The Global 7000/8000 program offers higher margins and has enjoyed stronger sales. The light jet market, meanwhile, is just now showing signs of improvement after the prolonged downturn, and with the exception of orders from the former Bombardier-owned Flexjet, sales of the Learjet 85 have been slower.

### Market Softness

"Bombardier constantly monitors its product strategy and development priorities," said Bombardier president and CEO Pierre Beaudoin. "Given the weakness of the market, we made the difficult decision to pause the Learjet 85 program at this time." He added, "We see tremendous market potential [for the CSeries and Global 7000/8000]. Both programs are progressing well."

Beaudoin discounted technical issues as a factor in the decision, saying it was purely market driven. He noted given the other models in the Learjet 85 niche, "the market doesn't justify us continuing investment at this time."

Bombardier said it is continuing to experience weakness in the light jet market and is scaling back its business jet sales forecast. At the same time, though, the company's 2014 business aircraft deliveries exceeded its original target of 200. The company said it delivered 204 business jets in the year, up from 180 in 2013.

The company also has been encouraged by the sales of the Learjet 70 and 75, and said its order intake overall had climbed in 2014. The company had orders for close to 130 business aircraft in the year. "We're doing OK on the Learjet 70 and 75," Beaudoin said, but added, "It is not the level it was pre-2008."

Business aviation analyst

*Continues on page 40* ▶

## FAA and airports adapt to installation of LED lighting

by Matt Thurber

In the rush to save energy by replacing incandescent light bulbs with LED (light-emitting diode-based) lights, airports and the FAA are trying to deal with visibility issues caused by LEDs installed in the runway environment.

On Dec. 19, 2007, President George W. Bush signed into law the Energy Independence and Security Act. One of the stipulations in the law mandated improved light bulb efficiency and not, as many believe, an outright ban on incandescent bulbs. Nevertheless, as a result of this law some airports have switched to LED lights for runways and taxiways and obstruction lighting, apparently without considering how LED lights can affect visibility for pilots. This is of particular concern during night approaches because airports have had a problem matching the intensity of LEDs to that of approach

*Continues on page 47* ▶


BARRY AMBROSE

**Helicopter manufacturers are seeing a hesitation in civil sales, and legacy products are proving to be the strongest sellers. Nonetheless there are plenty of helicopters on OEMs' drawing boards, many of them aimed at the formerly stronger oil and gas sector.** **Page 52**

LEARJET CHALLENGER GLOBAL


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# Inside this issue

## Aviation Apps

Special Report

Pilots have eagerly embraced what small computers can do for them in the cockpit now that hordes of programmers have devised apps for everything from weight-and-balance to what are essentially tablet-size avionics suites. We examine some of the more capable ones. Page 20







# Aviation International News

*The Newsmagazine of Business, Commercial and Regional Aviation*

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**THE CONVENTION NEWS COMPANY, INC. – AIN PUBLICATIONS**

**Aviation International News** (ISSN 0887-9877) is published monthly. Periodicals postage paid at Midland Park, N.J., and additional mailing offices. **Postmaster:** Send address changes to Aviation International News, P.O. Box 9058, Lowell, MA 01853-9053 USA. Allow at least eight weeks for processing. Include old address as well as new, and an address label from a recent issue if possible. Subscription inquiries: +1 (203) 798-2400.

## As we go to press

### J.P.MORGAN EXPECTS 'MEASURED' OUTLOOKS

According to its latest monthly business jet report, J.P.Morgan anticipates "measured commentary" about 2015 expectations for deliveries when OEMs report fourth-quarter earnings, despite the U.S. economic recovery now under way. The financial firm's aerospace analysts believe that Textron, parent of Cessna Aircraft and Beechcraft, has the most leverage in this recovery. It said deliveries of large-cabin jets at Gulfstream could be dulled by lagging demand in emerging markets, while the firm does not anticipate much delivery growth at Bombardier. Meanwhile, the new Legacy 500/450 should drive deliveries this year for Embraer, J.P.Morgan said.

### RULING COULD AFFECT CIVIL OPS AT NORTHOLT

Civilian flights at the Royal Air Force's Northolt base near London must be subject to Civil Aviation Authority safety standards, according to a January 23 judicial review in the UK High Court. The ruling, resulting from legal action taken by London Biggin Hill Airport and Oxford Airport, overturns the Ministry of Defence's contention that civil traffic at Northolt need comply only with military safety standards. According to Biggin Hill and Oxford, civil safety standards can be achieved at Northolt only with a significant investment of taxpayer money. They will now argue that the use of public funds in this way constitutes anti-competitive government subsidies under EU law and that they and other privately funded airports should therefore receive compensation.

### SENTIENT JET SALES, REVENUES SOAR IN 2014

Last year was the best in the past seven for jet card provider Sentient Jet. It experienced a 25-percent surge in year-over-year sales, to $214 million, and the $178 million in revenues for the year was a 17-percent jump from 2013. Overall, Sentient sold more than 37,000 flight hours last year–nearly 1,500 twenty-five-hour jet cards.

### UNDER-CONSTRUCTION HANGAR FALLS AT MMU

An approximately 40,000-sq-ft corporate hangar under construction at New Jersey's Morristown Municipal Airport collapsed on January 16, injuring two workers, one seriously. The collapse of the new structure did not interrupt operations at the general aviation airport. A statement released by the hangar owner, SL Aviation, said, "The cause of the collapse is unknown at this juncture and is under investigation."

### DAHER-SOCATA MADE BIG GAINS IN 2014

Daher-Socata reports it sold a company-record 64 TBM turboprop singles last year and delivered the second highest number since 2008. The company handed over 51 TBM900s last year, 27 percent more than the 40 it delivered in 2013. The used market also picked up, Daher-Socata said, noting it handled 150 aircraft transactions (new and used) last year. The improving North American market accounted for 78 percent of the sales of new aircraft, up from 72 percent in 2013. South America accounted for 10 percent, Europe 8 percent and Asia made up the remaining 4 percent. The 2014 shipments push the total deliveries of the TBM series to 713.

### SENATE GA CAUCUS CO-CHAIRS NAMED

Sens. John Boozman (R-Ark.) and Joe Manchin (D-W.Va.) agreed to co-chair the Senate General Aviation Caucus in the 114th Congress. Both senators were praised for their grasp of the industry. GAMA president and CEO Pete Bunce noted Boozman's efforts on general aviation issues such as the third-class medical bill and Manchin's background as an aviator. NATA president and CEO Tom Hendricks said, "Proven advocates for general aviation, Senators Boozman and Manchin understand the importance of our industry to the nation and the issues facing aviation businesses."

### EX-GULFSTREAM EXEC DEFRAUDED COMPANY

Marvin J. Caukin of Calabasas, Calif., pleaded guilty last month to a federal conspiracy charge of committing mail fraud between 2001 and May 2013. Caukin and his co-conspirators created fictitious business invoices and submitted them to Gulfstream Aerospace, where Caukin would approve them in his capacity as the director of finance and accounting at the company's Long Beach facility, causing checks to be mailed to pay them. The co-conspirators defrauded Gulfstream Aerospace out of millions of dollars, of which Caukin used at least $2.4 million to pay for two California residences. As part of his plea agreement, Caukin will forfeit the homes and about $70,000 in cash and cashier's checks. Sentencing is set for May and Caukin faces a prison term of up to 20 years. A spokeswoman for Gulfstream declined to comment on the case.

### FAA WORKING TO IMPROVE CERTIFICATION

The FAA is working with industry to expand its designee system and take a more risk-based approach to certification, Dorenda Baker, director of the agency's Aircraft Certification Service, told the House Transportation and Infrastructure Committee on January 21. While the FAA has taken steps forward, a Boeing official told the committee that the company is still spending "an inordinate amount of time on things like seat certification." Boeing said the agency needs to step up its organization designation authorization (ODA), inspector training and harmonization of certification standards.

# GA advocates wary of Part 23 rewrite pace

by Kerry Lynch

General aviation advocates are pushing the FAA to release the Part 23 rewrite proposal by this summer, fearing any further delay could substantially set back the effort to overhaul the standards both in the U.S. and internationally.

Congress directed the FAA to complete the Part 23 rulemaking by the end of this year, but Peggy Gilligan, FAA associate administrator for aviation safety, told lawmakers last summer that the agency was targeting the end of 2017.

Missed congressional deadlines are not unusual, but in this case the missed deadline was decreed in a mandate passed in a rare stand-alone bill supported by an overwhelming majority of Congress, GAMA president and CEO Pete Bunce told **AIN**. Bunce expressed frustration at the agency's delays, noting it has signed on to the stated goal of achieving twice the safety at half the cost. "That's real," he said of the goal, and it comes from the Office of Management and Budget's (OMB) focus on a consensus standards approach to such projects. The Part 23 rewrite could serve as the example for the OMB's goals, according to Bunce.

Bunce is urging the FAA to accelerate the process so that the rule can be released under the current administration and, in particular, under the current OMB.

Releasing a proposal this summer gives the agency time to assess comments and draft a final rule for review under the current administration, he said. Otherwise, the rule could languish into the next administration, which would take time to establish and renew regulatory reviews. "It would delay [the rewrite] for a long time," he said.

European regulators initially were preparing to move forward by next year but are now waiting to move in tandem with their U.S. counterparts, Bunce said.

The aviation community and international regulators "have done some incredible work" on the effort, he said. "We have a lot of people working toward being ready for the new standards once they are done."

ASTM dedicated an international committee, F44, to the development of consensus standards for Part 23 aircraft. Even the FAA's own engineering staff have "rolled up their sleeves" to make progress on a new approach to certifying general aviation aircraft, he said.

#### Cautious Optimism

While that news is positive, Bunce said he is not encouraged by the pace of the U.S. rulemaking or confident that the "bureaucracy" within the agency understands the urgency of moving out a notice of proposed rulemaking this summer.

He also is wary of efforts by some officials within the agency to approach the rewrite piecemeal, to break it up into smaller, more doable parts. While this would be the easiest route for the FAA, the aviation community is strongly resisting those efforts, Bunce said. If the FAA addresses only the easier parts of the rewrite, the more difficult and more encompassing changes might never get accomplished, he said. In that case, it would undercut the benefit of the rewrite, making the stated goal of twice the safety at half the cost less achievable, Bunce added.

The general aviation community is watching closely, as are lawmakers, Bunce said. "We're doing everything we can to put political pressure on the FAA."

"Congress rightfully has focused on this issue," said NATA president and CEO Tom Hendricks, adding that the Part 23 rewrite effort is important for all facets of industry. "It has a direct impact on aviation businesses." He predicts that with a reauthorization bill looming this year, Congress will likely readdress it if the agency hasn't made substantial progress in the coming months.

Bunce is hoping that the FAA will act before Congress readdresses the deadline. He says, though, that the reauthorization bill–and potential for further congressional action–might provide an incentive for the FAA to get a proposal out sooner rather than later. ❑

### NEXTANT G90XT MAKES MAIDEN FLIGHT

Nextant Aerospace's re-engined G90XT flew for the first time on January 13, and Nextant also held a rollout at its Cleveland, Ohio headquarters at Cuyahoga County Airport to celebrate the event. The G90XT, a Beechcraft King Air C90A equipped with GE H75-100 turboprop engines and Garmin G1000 avionics, is Nextant's second program. The remanufactured 400XTi (Beechjet 400/Hawker 400XP) is its first.

The G90XT flew twice on January 13 and twice the following day. During the first flight, which lasted for 24 minutes, according to FlightAware, the G90XT reached 8,000 feet and about 230 knots (groundspeed). On January 14 it reached 261 knots (groundspeed). Projected maximum cruise speed is 280 knots and range 1,240 nm with four passengers.

Nextant president and CEO Sean McGeough expects the flight-test program to take about six weeks, with certification in late March or early April. "The increased power was very noticeable during the takeoff run," said chief pilot and v-p of flight operations Nathan Marker. "I was also impressed by the lower noise levels in the cockpit. The change in position of the propellers relative to the fuselage combined with the new engine makes for a much quieter and more comfortable flight experience for passengers."

The G90XT replaces the original P&WC PT6A-135 with the H75-100, which weighs less than the PT6A. The GE engine has a 4,000-hour TBO with no hot-section inspection interval and in the G90XT it has Unison single-lever electronic engine control. The mod includes digital pressurization and dual-zone air-conditioning. The G90XT will sell for $2.6 million if Nextant provides the C90A or $2 million for a customer-provided airplane. The remanufacturing program includes an extensive inspection of the airframe and replacement of all worn components, the new engines, systems and avionics and a new "significant interior upgrade." *–M.T.*

*Nextant's G90XT entered the flight-test phase last month.*

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## NEWS BRIEFS Compiled by Chad Trautvetter

### Helo Operator NHV Acquires Rival

Belgium-based helicopter operator NHV has completed the acquisition of Norway's Blueway, as announced last year. The new group—also including Dancopter, Vertech Offshore and Airlift—employs approximately 650 people for a combined $270 million turnover and a fleet of close to 60 rotorcraft. The company has just started operating its newly delivered Airbus Helicopters EC175 in offshore oil-and-gas service.

### Delta Private Jets Expanding Fleet to 60

Delta Private Jets recently added five aircraft to its managed fleet, taking its overall fleet to 60 aircraft. Driving this growth is Delta Private Jets' new Ownership Assist program, a charter-management program that guarantees owners monthly revenue. Three of the latest aircraft additions are part of this program. The fleet is on course for more expansion early this year with pending contracts for four more Ownership Assist aircraft.

### FlightSafety Adds Airbus EC145 Trainer

FlightSafety International is developing a simulator for the Airbus Helicopters EC145 and plans to begin offering training on the model next year. The simulator will be level-D-qualified, the company said. FlightSafety currently offers training for the Airbus EC135 at its center in Dallas, Texas, and plans to open a new facility in Colorado next year that will provide training for the Airbus Helicopters AS350B2, EC130T2 and EC135. The new FS1000 simulator for the EC145 will be designed to replicate the exact flight performance of the light twin-engine utility helicopter, according to FlightSafety.

### 'Climb Via' Clearances Confusing

U.S. air traffic controllers have interpreted new "climb via" phraseology to include top or final altitudes as crossing restraints, contrary to what the industry expected. This has translated into almost every standard instrument departure (SID) becoming eligible for use of the phraseology, according to Rich Boll, a business jet pilot and chairman of NBAA's ATC and flight technologies working group. Designed to reduce radio chatter and save time, the new phraseology was implemented "to emphasize the need to look at the arrival or departure plate to comply with vertical, lateral and speed restrictions," Boll said. Recent blanket implementation of 'climb via' dilutes its effectiveness and has caused confusion among some cockpit crewmembers," he added. Because of the NBAA committee's input, the FAA has agreed in principle to restructure the way controllers issue, receive and confirm "climb via" clearances.

### AW189 SAR Models Ready To Ship

AgustaWestland was set to begin deliveries of a search-and-rescue (SAR) variant of its AW189 super medium twin-engine helicopter to the UK SAR program following recent approval from EASA. The approval covers a 661-pound increase in payload, to 18,959 pounds, and SAR kits, including a dual rescue hoist with camera system, search radar, FLIR system, searchlight and increased-capacity fuel system.

### FAA Ups Ante for Part 25 Fuel Tanks

The FAA is proposing to upgrade lightning-protection standards for fuel tanks on newly certified Part 25 transport-category airplanes. The proposal would establish design and maintenance requirements to prevent fires and explosions from lightning strikes. The requirements would apply to certification of new or significantly modified airplanes, as well as STCs dealing with modifications to fuel-tank structures and systems. Comments are due March 18.

# FAA doles out exemptions as industry awaits small drone rule

by Bill Carey

The FAA continued issuing exemptions that operators can use to fly small unmanned aircraft systems (UAS) and took its "Know Before You Fly" drone safety campaign with trade groups on the road as the new year started. But still unreleased was the agency's long-delayed draft regulation that will begin to set the rules for routine commercial use of small UAS.

As **AIN** went to print in January, the White House Office of Management and Budget was reviewing the FAA's "small UAS" notice of proposed rulemaking (NPRM), one of the steps necessary to promulgating a federal regulation. Once the OMB clears a draft rule, the FAA's next step would be to publish the rule in the *Federal Register* for public comment. The process of evaluating comments, amending a rule and publishing a final regulation could take 18 months or longer. Knowledgeable observers such as Gerald Dillingham of the Government Accountability Office expect the small UAS notice will generate thousands and potentially "tens of thousands" of comments from the public.

MATT THURBER

*The as-yet-unpublished NPRM governing small UAS (those weighing less than 55 pounds) will cover certification requirements for pilots and crewmembers.*

The release of the draft rule will be none too soon. The FAA initiated the small UAS rulemaking effort on July 28, 2009, according to the Department of Transportation's regularly updated report on significant rulemakings. The draft rule was originally scheduled for publication on March 10, 2011, but bureaucratic wrangling, competing priorities and mounting privacy concerns about drones impeded its progress.

### Preparing for Commercial Use

The DOT's latest available report indicated the NPRM would be released on December 22. However, on that day the FAA and trade groups representing drone and model aircraft operators unveiled the Know Before You Fly campaign to provide users with operating guidance before thousands of new drones received as Christmas gifts entered the airspace. The agency and the trade groups–the Association of Unmanned Vehicle Systems International, the Academy of Model Aeronautics (AMA) and the Small UAV Coalition–promoted the campaign at the International Consumer Electronics Show in Las Vegas and the AMA Expo in Ontario, Calif., in early January. On January 8, the FAA issued guidance to state and local police on proper and unlawful use of drones.

The agency also continued awarding exemptions for commercial use of drones under a provision of the 2012 FAA Modernization and Reform Act–Section 333–that allows it to authorize operations based on a case-by-case safety analysis and under certain conditions. One of two approvals it announced on January 6 went to Tierra Antigua Realty of Tucson, Ariz., the first such exemption awarded for real-estate photography. With the two approvals, the FAA had granted 14 exemptions overall. At the time, it had a case load of 214 applications. ❑

# *Tax debate on the table for newly installed lawmakers*

by Kerry Lynch

The move by Congress late last year to approve only a one-year extension of certain tax breaks, including the research and development (R&D) tax credit and bonus depreciation, sets the stage for renewed tax debate this year.

President Obama signed into law a one-year extension of more than 50 of the tax breaks on December 19. Some of the measures are considered must-pass items, such as education and mortgage deductions. Others are widely accepted, such as the R&D credit.

The extension capped a year in which Congress first looked at much more comprehensive tax reform but then shifted to talk of piecemeal permanent extensions and/or a two- or three-year extension. But with the mid-term elections overshadowing the latter part of 2014 and White House opposition to a longer-term compromise that had been in the works, Congress gave up hope for anything but a one-year extension before 2014 ended.

That shunted most of the difficult decisions into 2015 under the new Republican-controlled Congress. House Republicans have immediately voted to implement a new accounting procedure called "dynamic scoring" that will make tax cuts easier. Such a scoring procedure would take into account economic benefits generated by a tax cut when evaluating the costs of that tax cut.

### Strong Support for Tax Breaks

Even with such a move, industry leaders agree that tax reform is challenging and the debate could stretch into years. If the discussions extend beyond 2015, Congress would need to adopt another short-term extension to ensure the continuation of some of the key tax breaks.

"Broad-based, comprehensive tax reform is difficult," said NBAA president and CEO Ed Bolen. "Whether this will be the year, we'll have to see."

Regardless of the outcome of more comprehensive reform,

*Continues on page 34* ▶

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## NEWS BRIEFS Compiled by Chad Trautvetter

### Collins Chosen for NASA Research

NASA selected Rockwell Collins as the lead research organization for its single-pilot operation program designed to evaluate the potential for safely reducing cockpit flight crews from two pilots to one. The research is also exploring concepts and technology for ground support and automation aboard airliners as well as crew resource management and physiological monitoring.

### Bombardier Wins Order for Six Learjet 75s

Bombardier's Learjet business continues to improve, with the company ending last year with an announcement of orders for six Learjet 75s and options for three more. The firm orders, from an undisclosed customer, are valued at $83 million, but that figure could grow to $124 million if all options are exercised.

### FAA to Crews: Check Circuit Breakers

The FAA issued a safety alert for operators to address the potential for cockpit crew confusion while executing some emergency checklist items related to circuit breakers. The FAA found some crews struggle to clearly identify whether a circuit breaker had popped open or been simply collared with a white tie. It also believes that in some cases a breaker might appear to be normal, when it has in fact been collared with a black tie wrap rendering that system inoperative or non-powered. The FAA suggests maintenance personnel use contrasting color tie wraps or circuit breaker collars when deactivating aircraft systems by pulling circuit breakers. Inoperative stickers should be placed near the deactivated system controls or on the instrument panel in full view of the pilots to ensure they are aware of the aircraft's configuration change.

### NetJets Exercises Phenom 300 Options

NetJets converted 10 options for Embraer Phenom 300s into firm orders, under an agreement valued at about $89.55 million. The original contract, announced in October 2010, included firm orders for 50 aircraft and options for up to 75 more. Embraer has delivered 36 of the aircraft from the original order for 50. Deliveries of the additional 10 Phenoms that have been converted to firm orders are set to begin next January.

### FSF Conducts 300th Safety Audit

The Flight Safety Foundation (FSF) conducted its 300th Basic Aviation Risk Standard (Bars) safety audit. The Bars program was launched five years ago to establish a common global aviation safety protocol that could be applied to any onshore sector supporting aviation activities. It consists of four components: a risk-based international safety standard, an auditing program tailored to that standard, a range of aviation safety programs and a global safety data analysis program.

### FAA Releases Draft Guidance on HEMS

The FAA is updating its inspector guidance to lay the groundwork for new training requirements for helicopter air ambulance pilots and other personnel. The draft guidance follows the Feb. 20, 2014 release of a sweeping new rule designed to improve the safety of helicopter operations providing emergency medical services. That rule also included provisions extending to other Part 135 helicopter operations. The draft guidance addresses three main aspects of the rule, including specialized training for the EMS helicopter pilots. Along with the EMS training provision, the guidance covers testing provisions for all Part 135 helicopter pilots for competency in flat-light, whiteout and brownout conditions. It also covers the requirement for helicopter air ambulances to establish operational control centers for operations with 10 or more helicopters beginning April 22, 2016.

# Bizjet accident fatalities spike in '14

by Gordon Gilbert

The number of fatalities in business jet accidents last year more than doubled the 2013 tally, climbing to a level not seen since the mid-1990s. According to research by **AIN**, preliminary data indicates that last year 53 people were killed in 11 business-jet accidents worldwide in contrast to eight crashes with 23 fatalities in 2013.

Fatal accidents involving U.S.-registered business jets held steady at six each for 2014 and 2013 (all under Part 91 for both years), but the number of fatalities last year climbed to 30 from 17 in 2013. Nonfatal mishaps by Part 91 jet flights rose to five last year from four in 2013. Part 91K and Part 135 jet operations improved their accident figures, with the fractional segment experiencing no accidents last year compared with one in 2013, and the air taxi/on-demand charter sector going from three accidents in 2013 to one last year.

While the total number of accidents involving non-U.S.-registered business jets was unchanged at nine, the number of fatal accidents rose to five in 2014 from two in 2013 and fatalities nearly quadrupled to 23 last year from six in 2013. Fatal crashes from year-to-year of privately operated jets stayed at one, although four people died last year, two more than in 2013. Five people were killed in one jet charter accident last year in contrast to zero deaths in 2013.

### Turboprop Record

In sharp contrast to the business jet safety statistics, business turboprop fatal accidents and fatalities worldwide dropped last year compared with 2013. According to the preliminary data, 17 accidents claimed 59 lives last year versus 27 crashes resulting in 87 deaths in 2013. Last year, U.S.-registered turboprops were involved in nine mishaps that claimed 24 lives in contrast to 15 crashes and 45 deaths in 2013. All of the U.S.-registered turboprop fatal accidents last year occurred under Part 91. In 2013, two fatal crashes and 11 deaths happened to turboprops operating under Part 135.

Nonfatal U.S. turboprop accidents dropped to 19 last year from 28 in 2013, with that gain credited solely to an improvement in the Part 91 data. Nonfatal mishaps under Part 135 stayed at three. The biggest improvement in reducing fatalities for non-N-numbered turboprops was by charter operators, which saw seven people killed in two crashes last year and 30 who died in five accidents in 2013.

Not included in these statistics are turbine business aircraft that are stolen each year, usually for illegal flights, and shot down or destroyed after they are forced to land. ❑

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

*(2014 vs. 2013)*

| Business jets | Total | | Part 91 | | Part 91K | | Part 135 | | Public/Gov't | | Mfr. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2014 | 2013 | 2014 | 2013 | 2014 | 2013 | 2014 | 2013 | 2014 | 2013 | 2014 | 2013 |
| Nonfatal accidents | 6 | 8 | 5 | 4 | 0 | 1 | 1 | 3 | 0 | 0 | 0 | 0 |
| Fatal accidents | 6 | 6 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total accidents** | **12** | **14** | **11** | **10** | **0** | **1** | **1** | **3** | **0** | **0** | **0** | **0** |
| Fatalities | 30[1] | 17 | 30 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Incidents | 44 | 39 | 33 | 28 | 4 | 5 | 7 | 3 | 0 | 2 | 0 | 1 |

| Business turboprops | Total | | Part 91 | | Part 91K | | Part 135 | | Public/Gov't | | Mfr. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2014 | 2013 | 2014 | 2013 | 2014 | 2013 | 2014 | 2013 | 2014 | 2013 | 2014 | 2013 |
| Nonfatal accidents | 19 | 28 | 15 | 25 | 0 | 0 | 3 | 3 | 1 | 0 | 0 | 0 |
| Fatal accidents | 9 | 15 | 9 | 13 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| **Total accidents** | **28** | **43** | **24** | **38** | **0** | **0** | **3** | **5** | **1** | **0** | **0** | **0** |
| Fatalities | 24[1] | 45 | 24 | 34 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 0 |
| Incidents | 19 | 37 | 16 | 27 | 0 | 0 | 2 | 8 | 1 | 1 | 0 | 1 |

[1] *including three on the ground*

**Accidents/Incidents Worldwide Involving Non-U.S.-registered Business Jets and Turboprops**

*(2014 vs. 2013)*

| Business jets | Total | | Private | | Charter | | Other* | | Unknown | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2014 | 2013 | 2014 | 2013 | 2014 | 2013 | 2014 | 2013 | 2014 | 2013 |
| Nonfatal accidents | 4 | 7 | 2 | 6 | 1 | 3 | 1 | 1 | 0 | 0 |
| Fatal accidents | 5 | 2 | 1 | 1 | 1 | 0 | 2 | 0 | 1 | 0 |
| **Total accidents** | **9** | **9** | **3** | **7** | **2** | **3** | **3** | **1** | **1** | **0** |
| Fatalities | 23 | 6 | 4 | 2 | 5 | 0 | 6 | 0 | 8 | 0 |
| Incidents | 9 | 8 | 4 | 3 | 2 | 1 | 1 | 2 | 2 | 0 |

| Business turboprops | Total | | Private | | Charter | | Other | | Unknown | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2014 | 2013 | 2014 | 2013 | 2014 | 2013 | 2014 | 2013 | 2014 | 2013 |
| Nonfatal accidents | 13 | 12 | 4 | 6 | 6 | 5 | 2 | 1 | 1 | 0 |
| Fatal accidents | 8 | 12 | 3 | 2 | 2 | 5 | 2 | 5 | 1 | 0 |
| **Total accidents** | **21** | **24** | **7** | **8** | **8** | **10** | **4** | **6** | **2** | **0** |
| Fatalities | 35 | 42 | 14 | 5 | 7 | 30 | 12 | 7 | 2 | 0 |
| Incidents | 5 | 10 | 2 | 6 | 0 | 1 | 2 | 3 | 1 | 0 |

*All data preliminary*

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

*Sources: FAA, NTSB, Aviation Safety Network,* **AIN** *research*

***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

### NetJets Plans To Hire Nearly 200 Pilots

NetJets plans to hire up to 187 new pilots and 50 new flight attendants this year, marking the resumption of outside hiring since reducing its pilot workforce by nearly 500 in 2009 due to the economic downturn. As the economy slowly recovered, NetJets gradually recalled its furloughed pilots, and all furloughed pilots were offered recall by the end of last year. The company has already received more than 1,000 résumés from qualified pilots and about 200 from flight attendant candidates. The first group of new pilot hires is expected to start on-site training in the first quarter.

### Russian Oil Company Orders AW189s

AgustaWestland parent company Finmeccanica announced an order for 160 AW189 medium twins from Russian oil company Rosneft. The deal was inked on December 29 and includes integrated services, such as maintenance and training, for customers in Russia and CIS countries. These helicopters will be supplied mainly through HeliVert, a joint venture between AgustaWestland and Russian Helicopters, a subsidiary of Rostec. HeliVert will handle final assembly of Rosneft's AW189s at its Tomlino plant near Moscow, using subassemblies provided by AgustaWestland.

### U.S. Bizav Climb Continues Unabated

Business aircraft flying in the U.S. was up 1.6 percent year-over-year in December, marking the 13th consecutive month of growth, according to TraqPak data from aviation services company Argus. The Part 91 private and Part 135 charter operating segments saw year-over-year improvements of 1.6 percent and 3.3 percent, respectively, while fractional flying fell 2.7 percent. By aircraft category, turboprops took the lead with a 3-percent gain in flying, followed by light jets (1.9 percent), large-cabin jets (1.1 percent) and midsize jets (0.1 percent). Argus TraqPak data provides "serial-number-specific aircraft arrival and departure information on all IFR flights in the U.S. and Canada."

### CBAA Reports Bizav Economic Impact

Business aviation operations directly result in 11,500 jobs in Canada, producing $650 million in taxes and $3.1 billion in economic impact, according to a new study from the Canadian Business Aviation Association (CBAA). The study looks at the operation and management of business aircraft, measuring employment of aviation departments, FBO and maintenance providers, among others. "Downstream" businesses such as OEMs and suppliers are counted as indirect impact under this study. When the indirect employment base is considered, business aviation has a $5.4 billion economic impact, contributes $2.6 billion in GDP and generates 23,500 jobs, according to the study. Average business aviation wages are $69,000; the national average is $47,000.

### Embraer Deliveries Remain Flat in 2014

A strong push in the fourth quarter helped Embraer meet its 2014 delivery guidance, with the company shipping 208 business aircraft and airliners last year, one fewer than in 2013. Embraer handed over 116 business jets last year, compared with 119 in 2013. The company shipped 52 business jets (38 Phenoms, 14 large jets) in the fourth quarter, or 45 percent of the year's total. Last year's tally included 92 light jets and 24 large business jets. Phenom 300 deliveries reached the highest level since 2010, with 73 shipped. While Phenom deliveries were up over 2013 by two, large-aircraft deliveries slipped by five. The large aircraft shipments reflected three Legacy 500 deliveries, all of which came in the fourth quarter.

# *Jet fuel shuffles in line with crude's price drop*

by Curt Epstein

With the price of crude oil in retreat and autogas falling below $2 a gallon in many parts of the U.S. for the first time in years, motorists have been cheering at the gasoline pump for the past several weeks. The retail price of jet-A has come down too, but perhaps not as quickly as end users would wish.

*The average posted price of jet fuel at FBOs in the U.S. last month was $5.53 a gallon, according to Fuelerlinx.*

"Consumers like it, especially at the gas pump with the car," said one industry executive, "but it's difficult for wholesalers and retailers trying to keep their costs in check while still having to market the product in this environment; prices differ widely, determined by when they bought their inventory."

Since last summer, the price of crude oil has dropped by approximately 55 percent. Looking at "normal" years (as opposed to 2009, when global economic collapse appeared to be a real possibility and a barrel of crude oil fell to the high-$30s), "We haven't seen these prices since 2005," noted Thomas Kloza, global head of energy analysis for the Oil Price Information Service (OPIS). As the cost of crude oil has tumbled, so too has the price for some users of jet fuel. According to OPIS data, the spot market price for jet-A last month averaged less than $1.60 a gallon, slightly more than half the cost a year ago, a development that has been greeted warmly by most in the aviation industry. "Without question, airlines are the biggest beneficiaries of this dramatic price crash," Kloza told **AIN**.

General aviation operators have seen some relief as well, but not on the grand scale the airlines are enjoying. Industry fuel price tracker Fuelerlinx calculated the overall average posted price for a gallon of jet-A at FBOs in the U.S. at $5.53 a gallon last month, with a high of $5.81 in the southeast and a low of $5.35 in the south central states. That represents a drop of about 50 cents from the January 2014 average of $6.06 a gallon and an 89-cent decline from the average in mid-January 2013. Both numbers appear pale in the context of the bonanza the airlines are reaping. The price plunge is more apparent for business aircraft operators who have directly negotiated FBO jet fuel pricing, with Fuelerlinx citing a national average of $3.93 a gallon last month, down $1.17 from January a year ago, and down $1.35 from January 2013.

### Jet-A Prices Slow To Come Down

So why has the average posted price of jet-A at FBOs fallen by only 10 percent (approximately) if the price of crude oil has plunged by 55 percent?

The aviation fuel suppliers offer several reasons, the most important being volume. Given the much higher level of production, demand and competition for gasoline, the local gas station will turn over its supply of gas more quickly than most FBOs and therefore has more flexibility to keep its prices in line with falling costs.

"The retail price of jet fuel will lag what we see in the wholesale market," said Steve McCullough, senior vice president for business development and strategy with Oregon-based fuel reseller Epic Aviation. "It takes some time for that less expensive crude to get processed and delivered to the street as a refined product." During that processing and delivery time, oil prices have been moving ever lower, making it difficult for retailers to keep pace. As the price of crude has plummeted, fuel suppliers have found themselves saddled with high-priced inventory in their tanks that they have to sell before they can buy a new load of fuel for less and reduce the posted

*Continues on page 30* ▶

### LOW-COST AVIATION FUEL A DOUBLE-EDGED SWORD

The business aviation industry is beginning to feel some of the effects of cheaper oil. Private aviation provider Magellan Jets announced that starting in the middle of last month it would reduce fuel prices for new member contracts by 16 percent across the board as it shares savings with its customers.

If the price of crude remains depressed or sinks lower, the industry might be in line for some changes, and not all of them positive, according to New Jersey-based aviation analyst Brian Foley. He believes a continued decline in fuel costs will benefit the smaller end of the general aviation market, from small piston-powered airplanes up through the midsize jets, a segment that has traditionally been rooted in North America. According to Foley, cheaper fuel could spark a sales resurgence in the segment since operators of those aircraft are more sensitive to the price of fuel. Gains in flight activity would boost related businesses such as FBOs, MROs and charter and fractional providers.

Foley also notes that such long-term changes could alter the sales distribution pattern of business jets. While the long-range, large-cabin models have held their own during the recession, lower oil and commodity prices could hurt the once hot emerging markets for these aircraft, such as China. He believes the long dormant small and midsize jet segments could rise on the tide of the growing U.S. economy, since their sales center of gravity is not aligned with commodities.

In the commercial aviation market, Foley anticipates sustained low costs for the lifeblood of the industry could engender even broader changes as airlines second-guess or even defer large orders for more fuel-efficient jets carrying premium price tags. "In some cases the scale will tip in favor of keeping the relatively young fleets they're already operating even if they're burning more low-priced kerosene," said Foley. If passenger ticket prices remain high despite the decline in operating costs, the fatter profit margin could attract new entrants to the market, using low-time aircraft cast off in favor of more fuel-efficient models. Foley noted that their greater thirst for jet-A would be offset by lower acquisition costs. *–C.E.*

# AN ICON JUST GOT LARGER


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## NEWS BRIEFS Compiled by Chad Trautvetter

### Canadian Airport Plan Meets Resistance

General aviation groups are opposing a measure that would give the Canadian transport minister greater authority to block airport development or improvement projects if such a move is believed in the "best public interest." The measure, part of a larger budget bill before the Canadian Parliament, stems from an effort to increase public consultation on new airport projects, according to the Canadian Owners and Pilots Association (COPA). The group is not opposed to consultation, but "the one-sided nature of the…amendment to prohibit [airports] without a similar ability to prohibit incompatible activities in the vicinity of [airports] is unbalanced and simply unfair." Canadian Business Aviation Association president and CEO Rudy Toering expressed similar concerns in a letter to key Canadian Parliament members.

### LEA Gets FAA Part 129 Approval

London Executive Aviation (LEA) was granted Part 129 status from the U.S. Department of Transportation, clearing the charter company to operate unrestricted flights between the European Union and the U.S. With the status, LEA is planning to expand its transatlantic flights. "We are seeing increased demand for transatlantic charter flights," said Chris Watson, commercial manager of LEA.

### TenCate Tapped for Kestrel Composites

TenCate signed a long-term supply agreement to provide its TC275-1 epoxy prepreg system for the Kestrel K-350 composite single-turboprop aircraft. Kestrel called the use of composites key to optimizing the shape of the aircraft, improving its speed and weight. TenCate joins Honeywell and Garmin as a key supplier in the program. Honeywell is providing the TPE331 turboprop engine and Garmin the G3000 avionics suite. Kestrel, which has been looking to line up investors to produce the aircraft, has not yet released a timeline for the program. The company estimates it would need an additional $125 million to bring the aircraft to market.

### Phoenix Criticizes FAA on ATC Changes

The Phoenix City Council is demanding that the FAA reverse the September 2014 NextGen-based airspace system changes the agency made after numerous residents complained the new routings were disrupting their lives. The FAA altered airspace in Phoenix, as well as other major metropolitan areas in an attempt to enhance air traffic safety and efficiency. Phoenix city officials claimed the FAA never told them that suggested airspace alterations would take effect last fall. The Phoenix City Council said the FAA had also not reacted quickly enough to Phoenix residents' complaints about increases in aircraft noise that began shortly after the airspace updates took place last September. The council demanded the FAA be required to bring any future airspace changes to the council for feedback before implementation.

### Civil Test Pilot School Opens in Mojave

A new civil flight test school opened at the Mojave Air and Space Port in Southern California. The International Flight Test Institute's first group of students began their studies in the six-month flying qualities course last month. The Institute was launched by the same group that owns Mojave-based Flight Research, an upset-training and flight test, certification and support provider. The teaching staff consists of military test pilots, former astronauts and aircraft manufacturers' flight-test crewmembers. The available fleet of about 40 research and training aircraft includes helicopters and the Sabreliner 65. Classes range from two-week refresher training to 12-month professional studies. Custom programs are also available.

# *Flytenow sues to preserve ride-sharing program*

by Kerry Lynch

Web-based Flytenow is suing the FAA for essentially halting its general aviation flight-sharing program. The Goldwater Institute filed the lawsuit January 5 in the U.S. Court of Appeals for the District of Columbia on behalf of Flytenow, asserting that the FAA is "stifling innovation" and preventing pilots from using the Internet to communicate travel plans.

The FAA, which is not commenting on the lawsuit, issued legal opinions last summer finding that Flytenow's program and a similar program operated by AirPooler were commercial activities and that participants would need Part 119 certificates.

Flytenow started a year ago as a way to connect pilots with potential riders to share the expenses of the flights. Founder Matt Voska told **AIN** that he launched the program to help pilots defray the costs of their flights. The programs were designed to draw new people to aviation while helping offset costs and enabling pilots to stay current.

### FAA: Program Unauthorized

But FAA inspectors began warning pilots that their participation might be unauthorized, prompting both Flytenow and AirPooler to seek the interpretations. Following the interpretations, Flytenow maintained the website linking pilots with riders but eliminated the expense-sharing component. Without expense sharing, Voska said, "it hasn't been successful."

"The FAA has essentially said that sharing flight expenses by posting a flyer on an airport bulletin board is OK, but sharing expenses by posting travel plans on the Internet is not," said Jon Riches, an attorney at the Goldwater Institute.

The lawsuit argues that for decades the FAA recognized the rights of pilots and passengers to share flight expenses and connect through a variety of platforms.

"Flytenow has effectively created an online bulletin board to facilitate the genuine sharing of expenses between pilots and passengers who have a demonstrated common purpose in a flight," the lawsuit says, adding that the FAA's interpretations that participants are engaged in common carriage "upend more than four decades of established legal precedent."

The lawsuit argues the interpretation violates First Amendment rights by restricting pilots' ability to communicate travel plans through the Internet. It also contends that the FAA has violated the equal protection and due process rights.

The Goldwater Institute is hoping to convince the agency to update its regulations. "All we're asking is for the FAA to bring its regulations in line with the times so that new ideas in the aviation industry can take off," Riches said. ❑

## GE AVIATION BEGINS PASSPORT FLIGHT TRIALS

GE Aviation started flight-testing its Passport engine, which will power Bombardier's Global 7000 and 8000, on a company-owned Boeing 747-100 testbed. On December 30, a single Passport mounted on the 747's number-two pylon successfully demonstrated aircraft systems and instrumentation functionality. Flight-testing will continue until the engine receives FAA certification this year.


To date, the Passport engine has logged more than 750 hours and 300 cycles of testing on the ground. GE Aviation said that before entry into service the engine will accumulate the equivalent of 10 years of flying for an average Bombardier Global 7000 or 8000 operator–more than 4,000 hours and 8,000 cycles.

Most recently, GE completed hail and bird-ingestion certification tests and is currently instrumenting Passport engines for water ingestion and fan-blade-out certification tests that will start "in the coming weeks." Last year the company completed ice-ingestion tests and ground testing in an altitude chamber that demonstrated engine performance and operability up to 51,000 feet.

The Passport for the new Globals will produce 16,500 pounds of thrust and provide 8-percent lower specific fuel consumption than other engines in its class, while still meeting CAEP/6 emissions and Stage 4 noise restrictions, according to GE. Fresh technologies on the Passport include a composite fan case, 52-inch front fan blisk and smooth "super finish" surfaces on high-pressure compressor blades and blisks, as well as an exhaust mixer, centerbody and core cowls made of lightweight oxide-oxide ceramic matrix composites. *–C.T.*

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BY EMBRAER

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# Heli-Expo 2015

## Rotorcraft industry alights in Orlando next month.

by Matt Thurber

### Safety of operations to take center stage

Geopolitical and industrial circumstances and their effect on the oil and gas industry bring both good news and bad news for the rotorcraft industry as this year's Heli-Expo show prepares to get under way. The show is being held at the Orange Country Convention Center in Orlando, Fla., from March 2 to 5.

The good news, obviously, is that operating costs are down, thanks to dramatically lower oil prices stemming from technology-driven breakthroughs in oil-extraction techniques and continued high levels of oil production around the world. Although aviation fuel prices haven't dropped as quickly as automotive fuel prices, any reduction is beneficial for operators and their customers.

The bad news, said Helicopter Association International president Matt Zuccaro, "is that [lower oil prices] ultimately affect oil-exploration initiatives by oil companies. Certainly activity has slowed, but we haven't heard of any draconian initiatives or long-term strategic [changes]. Everybody is cautiously watching and reacting in a logical manner. This could affect new aircraft purchases and fleet expansion, day-to-day activities and staffing requirements. Everybody's also watching what's happening in the Middle East and the effect on oil pricing. But I don't think people are reacting in an emergency response and panic mode."

Matt Zuccaro

HAI's surveys, in fact, show rotorcraft acquisitions continuing at a high pace, he said. "The one dynamic that seems to be changing is that more and more operators are leasing rather than buying." A big driver of the growing ranks of leasing companies and the many helicopters that they have placed in the market is the predictable operating costs that come with hourly-cost maintenance programs. "I think operators are looking to stabilize operating costs," he said. "Pricing contracts make business much easier. Back in the dark ages when you didn't have power-by-the-hour, if you had a gearbox or engine prematurely fail you were stuck with it. Now maintenance is controlled under the leasing agreement."

#### Land & Live

Last year's Heli-Expo served to amplify HAI's Land & Live campaign, which was introduced in mid-2013 following an examination of accidents where a precautionary landing could easily have broken the accident chain. The idea is to remind pilots that a key part of helicopter utility is the machine's ability to land almost anywhere and especially when weather, low fuel, maintenance problems or other adverse circumstances raise the risk. "It's going quite well," Zuccaro said of Land & Live. "When safety is in question, land [the helicopter] and prevent the accident."

The popularity of the program is growing, and HAI members have requested that the association create a Land & Live sticker for pilots to place on their instrument panels. Pilots can fill out a form to take the Land & Live pledge on HAI's website. Many have also sent HAI descriptions of their own precautionary landings and the lack of any push-back from authorities on the ground. Now helicopter schools as well as many operators have embedded Land & Live in their training programs, Zuccaro added. "When we go to trade shows with 'Land the Damn Helicopter' T-shirts, that's the first thing we run out of. [This program] has met our expectations, and we see the accident rate being positively affected."


*Organizers expect some 60 aircraft on display in Orlando.*

MARIANO ROSALES

From the safety viewpoint, HAI and other associations are deeply involved in revisions to rules for helicopter emergency medical services (HEMS) operators. The rotorcraft industry and FAA held a meeting in Washington, D.C., on January 29 to discuss issues related to new equipment requirements and plans to facilitate the necessary upgrades. Zuccaro said he hopes that the meeting will resolve issues generated by the new HEMS rules and foster improving communication between the industry and FAA. "We're going to get into the remaining concerns are and what the FAA has plans for," he said. These issues will likely be a hot topic at the Heli-Expo show.

#### UAVs Front and Center

Expect to see a sharper focus on unmanned aerial vehicles (UAVs) at this year's Heli-Expo. "It's become a major issue in our industry," Zuccaro explained, "and is going to be a major part of the rotorcraft industry. Helicopter UAVs will be the largest [segment]." The reason for this, he added, is that "UAV mission profiles and altitudes pretty much mirror what helicopters do now. There are numerous missions where UAVs are going to replace helicopters. Who better than the helicopter industry to handle UAVs? We think we are the best qualified. This is going to have to be regulated, people are going to have to be trained and we'll have to have regulatory oversight and surveillance and communication between [the operators of] UAVs and other aircraft."

HAI is expecting more UAV-related exhibitors this year, including some existing companies that are adding UAV divisions. "We're trying to get ahead of the curve," he said. And to that end, HAI is holding a meeting at Heli-Expo, as a first step toward forming a UAV committee. At 2 p.m. on March 4 a general forum called "Unmanned Aircraft Systems: Challenge or Opportunity?" will discuss the issues.

As always, safety is a key element of the many forums and educational sessions planned for Heli-Expo, which again features the popular Rotor Safety Challenge from March 2-4. Participating in six or more of the 53 sessions earns showgoers a certificate of recognition. Also on tap for Heli-Expo are the annual Helicopter Foundation International scholarship golf tournament (March 1 at Falcon's Fire Golf Club); the annual Salute to Excellence Awards at the Hilton Orlando on March 4 at 8 p.m.; and on the opening day of the exhibit floor on March 3, the HAI Helicopter Industry Career Fair, beginning at 10:30 a.m.

"All of our numbers are up for this show," Zuccaro reported, with more than 700 exhibitors expected and 60 plus helicopters on display. "We've already broken several records in certain categories, and I think it's going to be a great show." ❑

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# GAMA review poised to paint positive outlook

by Kerry Lynch

When GAMA reveals industry deliveries during its annual "State of the Industry" media event on February 11, the report is expected to mark the first substantive upswing for business jets since the economy flew into the storm cell in 2008.

While the final 2014 shipment reports were still filtering in during January, market indicators have remained positive and manufacturers are expressing a general feeling of optimism, particularly about the North American market, according to GAMA president and CEO Pete Bunce.

The optimism of the manufacturers, while still tempered with some caution, is shared by business aviation operators, NBAA president and CEO Ed Bolen said, adding that sentiment has been evident at the association's conventions and gatherings over the past year. "I think the data will show that 2014 was one of the best years since going into the recession."

Bolen noted that for the first time "in a long time," all market metrics, from delivery reports to flying hours and used aircraft inventory, have improved.

Total airplane shipments were up 5.7 percent and business jet shipments were up 9.3 percent through the end of last year's third quarter. Analysts such as J.P.Morgan's Joseph Nadol III and Brian Foley of Brian Foley Associates have been predicting that business jet deliveries would end 2014, on a percentage basis, with an improvement in the low single digits.

This builds on the returns of 2013, when the industry stabilized, total shipments were up 4.3 percent and business jet deliveries began to turn for the better with an improvement of less than a percentage point.

The improved results follow five years of decline since the peak business jet deliveries of 1,313 in 2008 and recent-history peak of total general aviation deliveries of 1,815.

Business jet deliveries, which steadied at 678 in 2013, are still nearly half of those delivered at the peak.

### Double-digit Growth Ahead

While numbers are expected to have grown in 2014, analysts believe that the market is poised for double-digit growth this year. Foley predicts 2015 will be the "pivot point when the industry, including its laggard segments, turns meaningfully upward."

The long-suffering light-jet segment appeared to gain steam last year and is predicted to continue to rebound in 2015 thanks to a number of new products that are entering the market. Learjet's 70/75 upgraded series has improved sales for Bombardier, while Cessna, Embraer and HondaJet are all bringing new light and midsize aircraft to the market.

Also bolstering the market, Bunce said, is improved access to credit, which has been particularly important for lighter aircraft. North America, the largest market for light and midsize business jets, has strengthened, providing a further bounce.

While that news is encouraging, Bunce notes that the industry remains a global endeavor, and manufacturers are watching the political environments in countries such as Russia and China, where government actions have slowed growth. Middle East activity could be hindered by the plummeting oil prices, he said. ❑

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# Congress acts fast on FAA funding

by Kerry Lynch

Facing a September 30 deadline, lawmakers quickly returned their focus to FAA reauthorization once the 114th Congress convened. House Transportation and Infrastructure (T&I) Committee leaders scheduled their first hearing on reauthorization in late January, picking up from an initial hearing held in November.

T&I chairman Bill Shuster (R-Pa.) has repeatedly emphasized that he does not want a repeat of the 23 short-term extensions that occurred in the past reauthorization cycle. To pave the way for a smoother process, T&I leaders had met privately with industry over the past year before beginning the public hearings.

Shuster told attendees at the most recent NBAA Convention that he wanted all affected stakeholders to have a spot at the negotiating table, including general aviation, and later emphasized during the November hearing, "FAA reauthorization needs to be done together."

Shuster has not yet set a timetable for the bill, and he must juggle a busy reauthorization year that also is expected to include comprehensive highway and Amtrak bills. The FAA will compete for attention both on the House and Senate floors and in the authorizing committees. However, NBAA president and CEO Ed Bolen noted that sometimes the busier the agenda, the quicker the accomplishments.

### 'Transformational' Bill

A simple, straightforward reauthorization bill could happen fairly quickly, Rich Swayze, FAA assistant administrator for policy, international affairs and environment, told an Air Line Pilots Association (ALPA) symposium in December. But a more ambitious bill, one that seeks dramatic change, could take some time, he said.

Shuster also has said he is pushing for a reauthorization that is "transformational." During the November hearing, he stressed, "All options are on the table."

Industry stakeholders already have begun discussions about FAA air traffic management reform and potential privatization. FAA reform and funding emerged as key issues during the initial T&I FAA reauthorization hearing in November and continued through the ALPA symposium.

While FAA funding has been a recurring theme for decades, industry groups are entering this reauthorization debate with a desire to work together, rather than engaging in the rhetoric wars that fueled the lengthy delays and numerous extensions of the last bill.

While acknowledging the collaborative spirit, GAMA president and CEO Pete Bunce said the general aviation community would take a stand against any potentially harmful proposal that surfaces, such as user fees.

Bunce, however, believes that the committee will first try to iron out the issues where there is agreement. The first reauthorization hearing of this year was scheduled on reforming and streamlining the FAA's certification processes. Other issues could include unmanned aerial systems, aircraft noise, data security, NextGen, FAA facility consolidation and general aviation airport funding.

Asked what the FAA would like to see in its funding reauthorization, Swayze replied, "a bill that's not an extension." ❑

# New leaders take reins on aviation issues

by Kerry Lynch

The 114th Congress is convening with new leaders in charge of key committees on Capitol Hill, but those leaders are familiar faces with a background in aviation issues.

In the new Republican-controlled Senate, Sen. John Thune (R-S.D.) is taking the helm of the Commerce Committee, which steers aviation matters. Thune had been the committee's ranking Republican since 2013, working alongside chairman Jay Rockefeller (D-W.Va.).

Sen. Bill Nelson (D-Fla.), who was one of the featured speakers at the most recent NBAA Convention, has stepped up to replace Rockefeller as the top Democrat on the Commerce Committee. Rockefeller retired last year after serving 30 years in the Senate and five as chairman of the Commerce Committee.

Thune, a Senate General Aviation Caucus member, was the 2012 recipient of AOPA's Doc Hartranft Jr. Award for his "tireless work on behalf of general aviation in Congress." Nelson also has pushed a number of key general aviation measures, including authoring an amendment to block user fees.

"It's good to know that we have two senators who possess an understanding of the importance of business aviation and the issues our industry faces at the helm in Commerce," said Dick Doubrava, NBAA vice president for government affairs.

### More Familiar Faces

Sen. Kelly Ayotte (R-N.H.) slides over to the chairman position on the commerce subcommittee on aviation operations, safety and security. She had been the ranking Republican of the committee in the 113th Congress, working with then-chairman Sen. Maria Cantwell (D-Wash.). Cantwell is now among the most senior Democrats in the Senate and on the Senate Commerce Committee.

Ayotte has been focused on ATC modernization, which she said "is vital to New Hampshire's general aviation operators and businesses, airports, aviation suppliers and small businesses." Both Ayotte and Cantwell are GA Caucus members.

Fewer leadership changes were made in the House, where the Republicans retained control. Rep. Peter DeFazio (D-Ore.) has become the top Democrat on the House Transportation and Infrastructure Committee (T&I), taking over for the former ranking Nick Rahall (D-W.Va.).

DeFazio, one of the more outspoken members of the committee, has served on the committee since 1987 and has chaired or served as ranking member of four of its six subcommittees, including aviation.

He will work with Rep. Bill Shuster (R-Pa.), who returns as chairman of T&I. Like Thune and Nelson, DeFazio and Shuster were praised as staunch supporters of business aviation and members of the House GA Caucus. "They understand the importance of business aviation to the national economy and the need to update and strengthen our aviation infrastructure," said NBAA president and CEO Ed Bolen.

As for the aviation subcommittee, Frank LoBiondo (R-N.J.) remains chairman.

In addition to setting the leadership, the House Republicans have named 12 members to the committee. They include Rep. Todd Rokita (R-Ind.), who has championed the third-class medical exemption effort. ❑

Special Report

# Aviation Apps

by Matt Thurber


## Pilots value new tablet features

Tablet computers have taken over cockpits, not just in general aviation flying but also in airliners. While development of certified electronic flight bags (EFBs) continues, the capabilities of non-certified but regulator-accepted tablets have rapidly outpaced those of EFBs because tablets and their operating software and applications are updated and improved at the rapid pace driven by consumer electronics.

The lack of regulatory oversight and approval, from a certification standpoint, has created a robust and creative environment for aviation software development. Multiple apps offer synthetic vision, for example, and when coupled with an ADS-B receiver that also includes attitude and heading reference system (AHRS) sensors, these apps can act as an emergency backup primary flight display (PFD) that shows the aircraft's position relative to terrain.

Cool features aren't limited to the all-in-one EFB apps; Apple's new iOS devices (iPhones and iPads) have a barometric sensor, so developers have released altimeter apps that are surprisingly accurate. Aircraft performance calculations are tedious and complex using paper manuals, so developers and even some aircraft manufacturers provide apps that greatly simplify the determination of takeoff and landing limitations, weight-and-balance, cruise performance and even oxygen requirements for Etops. Many apps now offer a flight-logging feature. A useful tool for even the most experienced pilot is the ability to draw diagrams and text on approach plates and airport diagrams; this is especially helpful when given a long taxi clearance at an unfamiliar airport.

A big change in recent years is the number of aircraft with in-flight connectivity. Previously airborne Internet access was for passengers to conduct business or to keep texting-happy kids occupied, but pilots are finding benefits, too. This includes access to current weather information, Notams and TFRs and communication with flight operations such as real-time transmission of out-off-on-in times, maintenance data and other important information.

Six EFB apps deserve special recognition because they have enabled virtual GPS integration of their apps with flight simulation software such as X-Plane and Microsoft Flight Simulator. This is a huge benefit for pilots who want to practice using the app before taking off in the airplane. The integration spoofs the simulator's GPS position via Wi-Fi so that the app's moving map displays the simulated aircraft's position. This capability is available for FltPlan Go, ForeFlight Mobile, Hilton Software's WingX Pro7, iFlightPlanner, Seattle Avionics's FlyQ EFB and Xample's Air Navigation Pro. For those apps that don't natively support flight simulator integration, any iPad EFB app can receive location information from either X-Plane or Flight Simulator using the Cygnus Home Direct cable ($199) or Pro Wireless ($599) device, available from King Schools.

Business aviation pilots have taken to tablet computers in a big way, and there is no shortage of products aimed at this marketplace. Microsoft is now a player in the cockpit tablet business, too, with thousands of its Windows-based Surface Pro devices ordered by airlines. This special report looks at many of the popular tablet-based hardware and software products available for pilots, but it is not all-inclusive. If you feel that a product not included here deserves mention, please contact the writer (mthurber@ainonline.com) for possible coverage in a subsequent issue of **AIN**.

## Hardware Platforms

### Apple: iOS (iPad and iPhone)

Apple's iPad transformed the EFB industry by delivering a reliable, lightweight and easy-to-update software platform in the form of the iPhone and iPad. App developers jumped quickly on the iOS bandwagon, and now these apps provide highly sophisticated capabilities, including 3-D synthetic vision enhanced by AHRS-driven stabilization. Current iPad models include the iPad Air 2 (starting at $499) and iPad mini 3, starting at $399. Many pilots have switched to the smaller mini as it provides a sharp view of approach plates in a lighter and smaller package. A neat new feature in the iPad Air 2 and iPhone 6 is a barometric sensor, and this has encouraged developers to create altimeter apps, such as the Pro Altimeter from Hunter Research & Technology (99 cents).

### Android: Tablets and Phones

Google's Android operating system has spawned a competitive set of devices that finally offered an alternative to the iPad for those who aren't Apple-inclined. The key difference between the two environments is that Apple makes and tightly controls its own hardware and software. The Android system encourages hardware makers to develop their own products, and thus there is a huge variety to choose from. Generally, the higher-end and more expensive Android tablets have been found more suitable for aviation applications. These include the Samsung Galaxy Tab, Google's Nexus tablets and others by recognized manufacturers.

### Microsoft: Surface Pro Tablet

While Windows computers were a key part of the early development of cockpit EFBs, there hasn't been much competition in the Windows tablet EFB field until fairly recently. Now Microsoft's Surface Pro 2 and 3 bring high-resolution large-screen tablets to the aviation market. Air Asia, Austrian Airlines, Delta Air Lines and Lufthansa have all selected the Surface Pro for their pilots. These devices run Microsoft's Windows 8.1 operating system and Jeppesen's FliteDeck Pro software. On the Surface, FliteDeck Pro is nearly identical to the iPad version, including geo-referenced maps and charts. While there are currently few Surface Pro aviation apps targeting the professional pilot, the widespread adoption of the Microsoft tablet computer should encourage developers to design new Surface Pro apps, likely generating more interest in the Surface Pro by business aviation pilots.

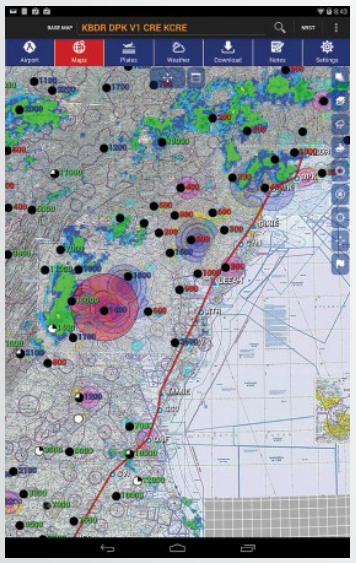
# EFB Apps

Most EFB apps include basic features, such as weather, flight planning, navigation, terrain display and aviation charts. Rather than repeat all the similar information, this report highlights the more notable features of these EFB apps.

## 123west Software Naviator (Android)

**Price: $34.99 per year, plus $75 per year for Seattle Avionics geo-referenced ChartData**

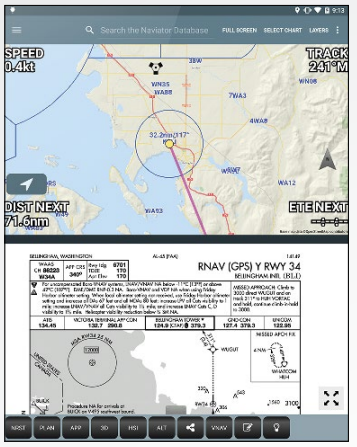
Full-featured Android EFB with 3-D synthetic vision, Lockheed Martin Flight Services or Duats flight-plan filing, Altitude Optimizer using 123west's Global Forecast Engine and split-screen display. The Flight Recorder function logs flight parameters, and Flight Following sends GPS position (when connected to the Internet) to the user's personal Naviator Hangar, which can be accessed online for emergency location purposes.



## AvNav EFB (Android)

**Price: $4.99 per month**

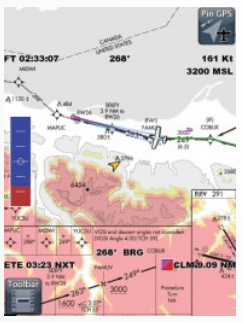
Seamless charting with geo-referenced charts, approach plates and airport diagrams. Includes fuel prices, high-resolution terrain and obstacle data, split-screen mode and a full suite of weather imagery. Basemap offers Mapquest satellite, OpenStreet map or world map. Allows app use while downloading updates.



## Adventure Pilot iFly GPS (iOS, Android)

**Price: $109.99 per year**

Includes flight planning with relative-terrain profile view, simulation mode for training or replaying past flights and customizable on-screen instrument panel display. RealView airport satellite images are available for more than 12,600 airports, and more than 950 airports have geo-referenced taxi diagrams. The AutoTaxi+ feature automatically pulls up the taxi diagram while the aircraft is on the airport surface.



## Control Vision Anywhere Map Freedom (Android, iOS)

**Price: Freedom Pro $149.99, then $99.99 per year**

Control Vision is known for its complete hardware/software packages, which now include the Anywhere Map Freedom Android app and either a seven- or eight-inch Samsung Galaxy Tab. Anywhere Map's Freedom Pro pricing includes activation of Sirius XM WX (which requires additional equipment plus a monthly subscription fee), and the XM WX images can be overlaid on map views. The app's Cones of Safety show safe gliding distance around airports in case of engine failure. Another notable feature is the Virtual Glideslope, which displays a three-degree glideslope to the destination runway, complete with a recommended descent rate.

## AnywhereEducation eKneeBoard (iOS)

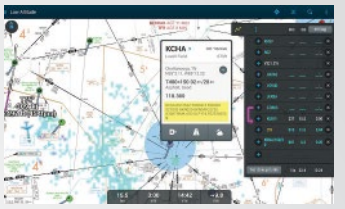
**Price: $49.99 per year**

The eKneeBoard app offers all the usual EFB features. All VFR and IFR en route charts are seamless, and more than 2,000 geo-referenced airport diagrams area available. Pilots can store Notams, Metars, Tafs, wind and other data, which is updated when connected to an ADS-B receiver. Users can access a variety of educational courses, which are downloaded and stored on eKneeBoard. Prices range from $69.99 for flight maneuvers to $299.99 for the complete flight instructor course.

## FltPlan Go (Android, iOS)

**Price: free**

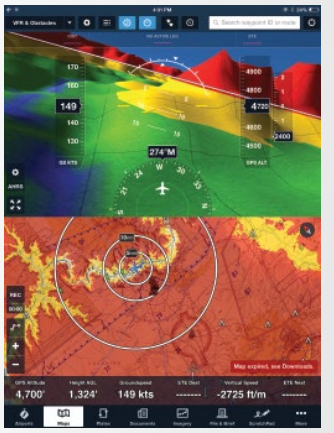
FltPlan.com released its free Go app for iOS and Android devices last year, and the free service includes all current aviation charts, approach plates and diagrams, which are geo-referenced. In addition to moving-map features, Go offers a built-in checklist, which is managed on the FltPlan.com website, as well as overlay of Velocity Weather from Baron Services and Sirius XM WX imagery. The Go app is tightly integrated with FltPlan.com's free web-based flight planning service, and Go users can quickly access features such as eLogBook and pre-departure clearance service. FltPlan Go also includes a handy weight-and-balance function and useful calculators for wind, fuel, temperature, density altitude and ISA.



## Aviation Mapping Solutions FlightPro (Android)

**Price: $149.99 per year**

Full-featured tablet EFB with flight planning (integrated with Lockheed Martin Flight Services), geo-referenced charts, approach plates and airport diagrams, weight-and-balance calculator, split-screen mode, fuel prices and flight/scratch pad. For emergencies, FlightPro displays the route to the nearest airport and vertical speed required to reach a suitable runway.



## ForeFlight Mobile Pro (iOS)

**Price: $149.99 per year**

The latest version of ForeFlight Mobile Pro adds synthetic vision ($25 additional), which includes attitude display when coupled with a Stratus 2 ADS-B/AHRS device ($899). The synthetic vision features a day-to-night-mode transition, textured runways with FAA-style labeling, terrain highlighting with shading from peaks to valleys and automatic declutter. Another new feature is availability of weather forecasts at more than 1,800 airports where no official forecast is available, using NOAA's Model Output Statistics system. In the past year, ForeFlight added weight-and-balance, performance planning, flight notifications, Notam advisory, flight recording (logging), overlay of approach plates on maps and terrain profile view.

*Report continues on next page ▶*

# Management Leadership

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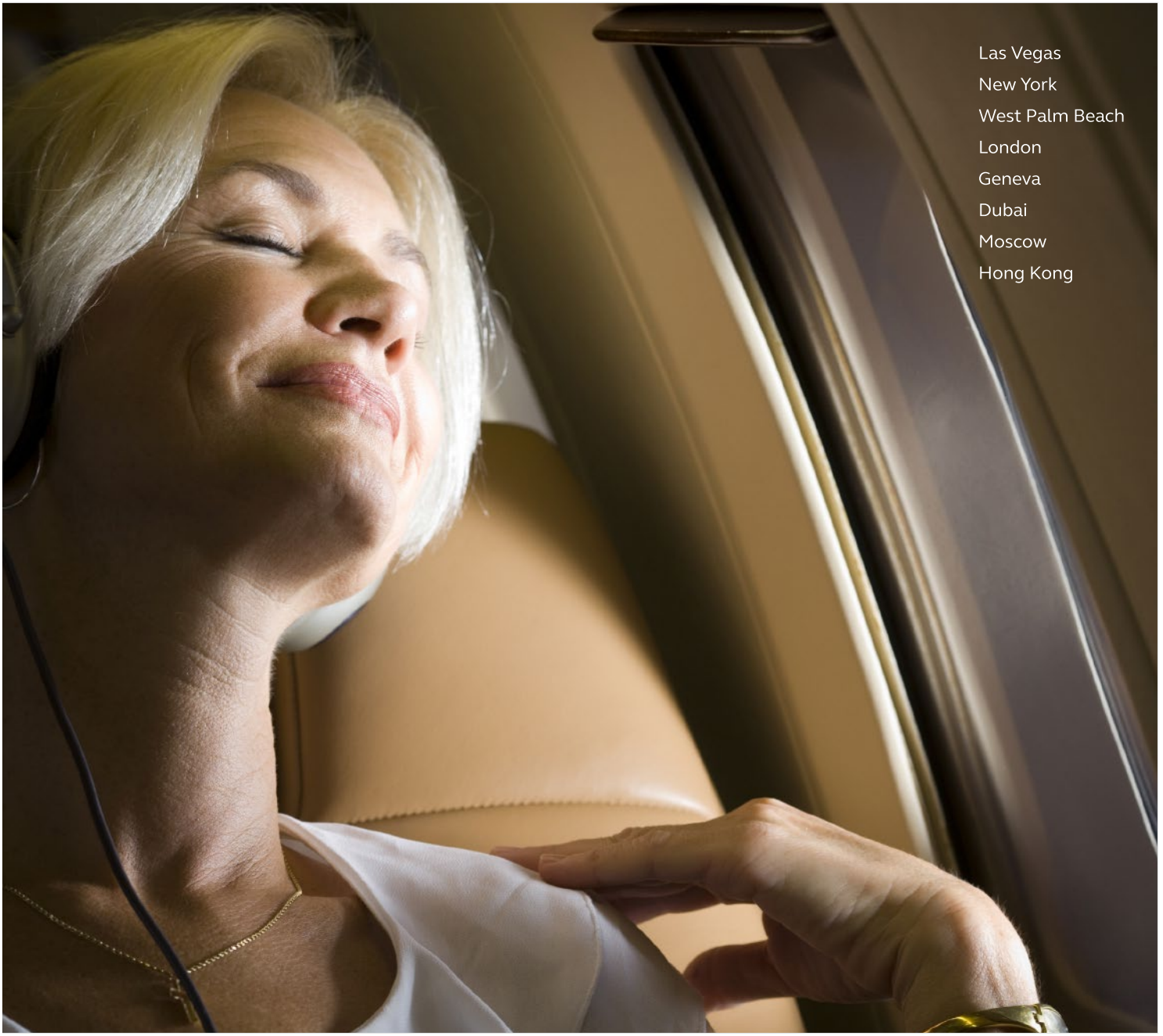


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# Modern aircraft management

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Because of the growing complexity of the international regulatory environment and the expertise required to operate safely and efficiently within it, quality management has never been more important. As Scott Ashton, president and general manager of Sikorsky-owned Associated Aircraft Group (AAG), said, "Aircraft management is a lot more than just planning the itinerary and making sure the catering is right."

A good management company's turnkey solutions "free the owner to focus on their business and the other needs that drove them to secure their aircraft in the first place," said Bill Deere, senior v-p, government and external affairs, at the National Air Transportation Association.

Using management services can be much more economical than many owners may realize. Given the bulk-purchase discounts on fuel, insurance, training and other products and services that these companies pass along to customers, "dollar for dollar, the costs of internal operations versus outsourcing management are usually within five percent of each other," said Jeff Agur, CEO of the Van Allen Company, a business aviation management consultancy in Georgia.

"Owners have a lot of choices and options" in selecting a management company, noted Jeff Weiand, senior v-p and general counsel at consultancy Boston Jet Search. The National Business Aviation Association (NBAA) lists more than 700 management companies among its U.S. members, and more than 900 total worldwide. At least several among them should be well suited to support any owner's aircraft, location and objectives. "Don't take the most obvious choice," advised Wieand. "People should compare and contrast" the available offerings before deciding on a provider.

This guide highlights capabilities and operational benchmarks that distinguish quality management services, and explores some of the ways leading management companies provide them. These standards can help owners gauge the quality of their aircrafts' management.

COVER PHOTO BILL BERNSTEIN

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COURTESY OF PRIESTER AVIATION

# Providing expert guidance

From acquisition to disposition, management companies ensure an optimal ownership experience in a complex world

As an aircraft owner, you focus on getting from point A to point B. A management company takes a broader view that encompasses the entire ownership experience, from acquisition to sale. Guiding you to your destination takes more than a well-trained flight crew.

"We have excellent pilots, but you need a breadth of capabilities in others areas, including experience in maintenance services, risk management, finance and regulatory issues," said Kyle Slover, COO at Volo Aviation, based in Stratford, Connecticut. "We're not managing just an airplane, we're managing an asset for the owner."

Founded in 1997, Volo began providing management services a decade ago, and moved into FBO ownership in 2007 to enhance the support infrastructure for its managed fleet. Today Volo operates six FBO facilities in the Eastern U.S., complementing its management portfolio.

Whatever its range of capabilities, either in-house or outsourced, a good management company has the expertise to create custom solutions that meet individual objectives.

"The first thing with any management client is to sit down with them, understand what they're going to use the aircraft for, where they're going to travel, and how [the airplane] needs to operate," said Tom Wells, general manager, Gama Aviation PLC. Headquartered at the UK's Farnborough Airport, Gama operates from 44 locations across North America, Europe, the Middle East, Asia and South America. Based on clients' objectives, Gama, like other quality providers, advises on ownership structures and operating issues that affect costs and usage.

"Should it be operated Part 91 or Part 135?" Gerrit Basson, president of ExecuJet Aviation, asked rhetorically, referring to the rules governing non-revenue and charter flights, as he listed options owners may need help weighing: "Where should it be registered? The Isle of Man? Does Danish or Swiss registry make the most sense because of the customer's business structure? So many factors come into play." Zurich, Switzerland-based ExecuJet, which manages more than 165 aircraft at two dozen-plus locations in Africa, Asia, Australia, Europe, Latin America and the Middle East, has the resources to provide expert advice. "We have internal legal counsel—aviation-law specialists—and owners can have sessions with them and explore the various possibilities for deploying their aircraft," said Basson.

> "It really gets down to experience."

Once an aircraft is in service, the issues demanding attention multiply, and a quality management company has the capabilities to address them proactively. "It really gets down to experience: the operations team, management, flight crews and maintenance," said Clay Lacy Aviation president Brian Kirkdoffer, who credits his company's 25 years in aircraft management and its full-service operational model for the sound guidance it provides clients. "We have FBOs, we offer charter and provide maintenance, and they all support management in some way. It all revolves around great people providing an exceptional aviation experience."

Based at the Los Angeles-area Van Nuys Airport, and with a second FBO at Seattle's Boeing Field, Clay Lacy Aviation has about 80 aircraft under management at 10 locations around the Western U.S., and a facility at Teterboro, New Jersey.

Management professionals say more owners are taking the asset-management model to heart, leading to a growing demand for valuation services to help with divestiture and purchase decisions. "The owner's operational model used to be, 'Buy equipment and run it into the ground,'" said Charlie Hughes, senior v-p, management sales, at Priester Aviation in Wheeling, Illinois, founded in 1945, which manages 48 aircraft. "Prudent owners today recognize there's a sales cycle, and a better time to buy and better time to sell, and those decisions should not be ruled by emotion." Priester, in consultation with "OEM [original equipment manufacturer] and broker counterparts" and consultants the company has long partnered with, provides clients with "accurate information reflecting market reality" to steer their asset decisions wisely.

COURTESY OF KEY AIR


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# Conducting seamless flight operations

Making every journey a joy, every moment an epiphany of excellence

Built on a foundation of safety, flight operations form the core of management services. All the other vital services your aircraft requires—maintenance, regulatory compliance oversight, administrative responsibilities—are in place to ensure your aircraft is ready when you need it, every detail of your journey considered, every need accounted for. Every management company has its own way of delivering on its commitment, but they all share the objective of providing owners with a seamless travel experience.

"This is all about communication," said Alan DePeters, president and CEO of Key Air, who recently returned to lead the "boutique style" management company he founded in 1986. "We have total communication clarity with our clients through our client-services and flight-operations departments," simplifying owners' booking and travel arrangements. Key Air, headquartered in Oxford, Connecticut, provides the flight crews of the 13 aircraft it manages with customer-service training "to ensure they provide the client with anything they need to fly in total comfort."

"This is all about communication."

Service training is receiving growing attention among quality-focused management companies. "If you're managing airplanes and you're not focused on service as well as safety of operations, you're probably missing 80 percent of what the customer perceives any management company should be doing for the owner," said Don Haloburdo, v-p and general manager, Jet Aviation, which provides such training to its flight crews. "We have a manager of cabin services and standards to make sure cabin crews and pilots deliver the Jet Aviation level of service. If we're operating as safely as possible flying from A to B but the rest of what the owners expect isn't there, that's not going to work for long."

Owned by aerospace multinational General Dynamics, Jet Aviation manages more than 250 aircraft, operating from over two-dozen locations in North America, Europe, Asia and the Middle East.

Management companies recognize that the personal relationships they forge on the ground can play a large role in customers' satisfaction with their experiences in the air. Successful organizations find ways, even as they grow, to nurture those relationships.

"You cannot have a large management company and expect the president or CEO to have a personal relationship with every one of the aircraft owners," said Dan Drohan, CEO of California-based Solairus Aviation. Formed in 2009, Solairus manages more than 70 aircraft, but belying the company's youth, its management combines decades of experience in all facets of aircraft acquisitions, operations, maintenance, charter and related support services. To maintain close customer relationships, Solairus assigns a client aviation manager (CAM) to each aircraft. "It's 'the buck stops here' guy," Drohan said. "The CAM"—often the aircraft's lead pilot or maintenance supervisor—"is a complementary role, to assist management and provide an easy point of contact for the owner."

Seamless flight operations can also be the product of working with an experienced provider focused on the owner's type of aircraft, particularly if operating platforms that are not common to many fleets, AAG's Ashton pointed out. AAG, based in Wappingers Falls, New York, manages nine Sikorsky S-76 twin-engine rotorcraft. "The reason our program works for our clients who own helicopters is because 'helicopters' is all we do," he said. "Our SMS [Safety Management System] is completely geared to helicopter operations, and we put an emphasis on issues germane to off-airport landings. For us it's not an emergency. Our infrastructure is built around that."

Flight-handling capabilities are another critical component of seamless operations. With the resources available today through partnerships and digital channels, a management company doesn't require a global footprint or a large fleet to support worldwide operations. But whatever the size of the organization, developing and maintaining truly global capability requires significant investment, commitment and experience.

Executive Jet Management is among the companies that have brought personnel from third-party flight-planning services in-house to support an already strong staff of specialists. "We find it invaluable to have [the planners] in-house, integrated with our dispatch department," said Michael Tamkus, senior v-p and general manager, Executive Jet Management. "We're not waiting on a phone call or email" from an offsite planner.

A wholly owned subsidiary of fractional service provider NetJets, itself owned by Warren Buffett's Berkshire Hathaway holding company, Executive Jet Management operates over 190 aircraft from more than 70 locations in the U.S., Europe, and now China.

Further helping smooth operations, Executive Jet Management has a flight-delay reduction program, aimed at speeding traffic for its own customers as well as for NetJets. "We collaborate with the FAA and schedule flights as far in advance as we can," said Tamkus. "It helps reduce ATC delays."

COURTESY OF VOLO AVIATION

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# Overseeing maintenance & modifications

## Keeping your aircraft mission capable while enhancing the value of your asset

Successfully managing maintenance and modifications are the keys to preserving an aircraft's utility and availability and enhancing its value in the pre-owned market. And with an aftermarket filled with products promising like-new performance and regulatory compliance for older aircraft, owners also need expertise on upgrades. From orchestrating maintenance schedules to identifying modifications that meet owners' objectives and where installation work should be performed, good management companies have the knowledge and personnel these tasks require. All have experienced in-house maintenance technicians. Many management companies have major maintenance and modification divisions under their own roofs, while others partner with leading aftermarket service providers to deliver superior service. Whichever model of quality provider you work with, you can enjoy the peace of mind that comes with flying aboard a meticulously maintained aircraft.

For each aircraft, Gama Aviation assigns a business manager who is charged with forecasting maintenance needs and coordinating the shop visits to minimize service disruptions. "We schedule the maintenance in conjunction with clients' travel schedules," said Wells. Gama outsources maintenance to third-party partners, overseen by its technicians. Their oversight is complemented by Gama's in-house engineering capabilities, including Part M approval to perform Continuing Airworthiness Management services for EASA, Cayman, Aruba, Bermuda, Isle of Man and FAA registered aircraft.

Similarly, ExecuJet uses FlightWare software to give dispatchers, flight and maintenance planners the ability to jointly "see where the aircraft is flying now and where it's going when, so we can plan the maintenance events," taking into account charter demand as well as owners' needs, said Basson.

Executive Jet Management offers clients preferred rates at its in-house maintenance facility in Cincinnati, Ohio. The company is also a perennial winner of the FAA Diamond Award for excellence in maintenance training.

Management companies can also help owners avoid unnecessary costs on outsourced maintenance by providing expert oversight. "When you take an airplane through a heavy maintenance check or refurbishment, everyone's trying to make money," said Slover at Volo Aviation. "You need to be aware of optional stuff that may be sold as mandatory when it's not."

Slover noted that management companies can likewise be invaluable in providing expertise in modifications and upgrades "that will breathe life into older airplanes." That's particularly important today in light of impending equipment mandates and evolving international regulatory standards. Volo Aviation has managed aircraft that have served as STC (supplemental type certificate) launch platforms for several cockpit upgrades, including the first glass-panel Dassault Falcon 900 upgrade, performed in association with MRO provider Duncan Aviation.

Aside from mandated installations, today's owners can take advantage of upgrades that bring entertainment and communication to the cabin, as well as modern avionics to the cockpit, and their aircraft stewards can serve as project managers.

"If an owner has an upgrade in mind, we craft options for them," said Hughes of Priester Aviation. "We look at the installations time-wise, cost-wise and schedule-wise for the owner and identify the right service facility to do the installation."

Priester recently divested its in-house maintenance capability in favor of an outsourced model, but nonetheless has a dedicated maintenance technician on staff assigned to each large-cabin aircraft it manages. "They pay for themselves in dispatch responsiveness," said Hughes. "Their job is to keep the airplane airworthy, not just fix it when it's broken."

"You need to be aware of optional stuff that may be sold as mandatory when it's not."

All quality aircraft managers take a proactive maintenance stance. "The most expensive part of owning an aircraft is when they're not flyable," said Kirkdoffer at Clay Lacy Aviation. "Aircraft management should work to maximize the time the aircraft is airworthy and available to the owner. We run maintenance 24 hours a day and can give the owner 10 to 15 percent more availability than they would otherwise have."

Clay Lacy Aviation has also been a leader in developing cockpit upgrades, and now offers an STC for FANS 1/A+ compliance for GIV/V and Challenger 601-3A/R aircraft.

Yet whether they have complete modification and maintenance capabilities in-house or not, you can expect good management companies to put out requests to multiple providers for proposals for any upgrade. "Our process is to sit down and understand what [aircraft owners] want to do, and bid that out to market," said Haloburdo of Jet Aviation, which has some of the industry's most comprehensive modification and refurbishing capabilities. "We get a set of quotes in line with the customer's expectations. Some customers are looking for the lowest cost, even if it takes an extra two or three weeks; others want the aircraft down for the shortest time."

For customers buying new aircraft, Jet Aviation is also a noted completion center. Like many management companies, it oversees interior completions at manufacturers' facilities for clients, as well.


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# Ensuring regulatory compliance

## Keeping your aircraft on the right side of regulations, no matter where you fly

The patchwork of rules governing international airspace grows ever more complex, even as new mandates for next-generation navigation and communication technologies demand attention. Meanwhile, business aircraft operations have gone global in recent years, requiring owners to deal with regulatory concerns involving restricted airspace, operations over areas of conflict, crew rest periods and other evolving compliance issues. A growing number of owners turn to management companies for assistance.

"With the changes in international requirements, and the FAA taking a harder stance on training and safety procedures, a lot of smaller operators are seeing the value of partnering with a company that has expertise in [compliance], rather than reinventing the wheel," said Slover of Volo Aviation, whose cockpit upgrade programs have helped customers equip their aircraft to meet upcoming mandates such as ADS-B, FANS and LINK 2000+.

> "Keeping up with all the airspace regulations is a lot to expect from a small flight department."

Beyond hardware compliance issues, the welter of regulations that must be met while operating internationally presents a host of challenges. "If you plan to run a large-cabin jet on your own, keeping up with all the airspace regulations is a lot to expect from a small flight department that's already dealing with pilots, flight attendants, a mechanic and flying internationally with crew-rest issues," said Haloburdo at Jet Aviation, which also has hands-on experience in compliance upgrades and conducting global operations. Jet Aviation maintains flight operations centers in Teterboro, New Jersey; Dubai, United Arab Emirates; and Hong Kong, to manage its flight activity around the clock.

Given the potential complexity and cost, DePeters of Key Air called regulatory compliance assistance "the key ingredient of a management company's services," and bulleted the company's own approach: "Any mandates that are coming up on the regulatory calendar, from whatever government or authority, we bring them to the owner's attention well in advance, explain what the regulations are, the options for addressing them, and develop plans accordingly."

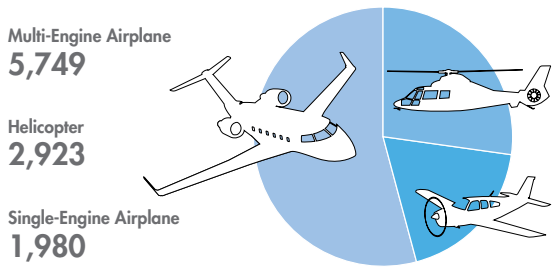
DePeters pointed out its compliance initiatives are all performed within an operational budget set in consultation with owners when establishing their management agreements.

Owners who operate in the U.S. face compliance issues as well, and management companies can keep them on the right side of the rules.

"As a corporate aircraft operator, we deal not only with the FAA, but also with the DOT and the IRS, and OSHA has become more of a factor; our pilots are all in the HazRep system," said Ashton of AAG. "A smaller aircraft operator may not be equipped to deal with all the legal entities you have to contend with."

Worse than any regulatory fine print, sanctions related to flight operations today can include criminal penalties, and management companies are providing solutions. Citing the case of the Embraer business jet crew that faced criminal charges following a midair collision while under ATC guidance in Brazil, Priester Aviation has added criminal defense and repatriation coverage under its master insurance policy. It's a "valuable security for the crew members," Hughes said.

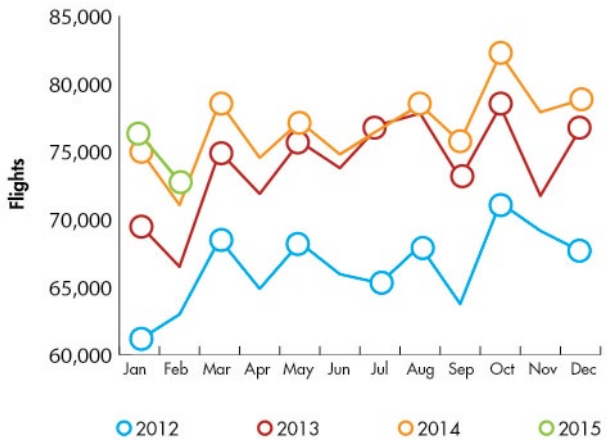
### Aircraft in Part 135 Service in the U.S.




**Total: 10,652**

### Part 135 Flight Activity

January 2012 – February 2015

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# Aircraft management directory

Business aviation management companies range from those managing a single aircraft to those responsible for hundreds across the globe. Below is a directory of notable management companies, all of which have safety ratings or audits from one or more of the following: ARGUS, Wyvern, IS-BAO and IATA.

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**gamaaviation.com**
With our 31 years' experience of operating and owning aircraft, we know more than most what it takes to manage an aircraft. We have three 24/7/52 operations centers allowing us to seamlessly handle flights, flight planning, tech issues, ground transport, etc. all via one phone call.

**jetaviation.com**
Jet Aviation, a wholly owned subsidiary of General Dynamics, was founded in Switzerland in 1967 and is one of the leading business aviation services companies in the world. With more than 20 facilities worldwide, the company provides maintenance, completions and refurbishment, engineering, FBO and fuel services, along with aircraft management, charter services, and personnel services.

**keyair.com**
At Key Air, our approach to aircraft management is personal. Through three decades of service, we realize that every customer has a unique set of aircraft and travel needs. Just as you took great care in selecting your aircraft, we take great care in managing it. Leave the details to Key Air - your aircraft will be flight ready when you are.

**priesterav.com**
Owning and operating an aircraft is complex, and managing the details can be daunting. Our management programs simplify jet ownership and can be structured to meet your individual needs. Priester Aviation takes a personalized approach to managing client assets and gains a full understanding of the clients' expectations to guarantee an enduring relationship.

**solairus.aero**
We understand that owning an aircraft is a major investment that comes with considerable responsibilities. When you select Solairus Aviation to support the operation of your aircraft, you gain a full range of services focused on safety, service and savings. Our focus on the management of your aviation asset allows you to simply enjoy the benefits of your investment – flexibility, convenience and reliability.

**voloaviation.com**
At Volo Aviation, the vector for visionaries, our mission is to provide clients comprehensive and innovative management services with an individual focus. Our tailored aircraft management programs deliver professional oversight of your asset, with the knowledge gained from over twenty years in operation as a certificated air carrier. From turboprops to long-range jets, let our experience help guide you through the complex area of aircraft ownership and operations.

## Aircraft management directory continued

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**Aerolineas Ejecutivas**
aerolineasejecutivas.com

**AvJet**
avjet.com

**Chartright**
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**Corporate Flight Management**
flycfm.com

**Deer Jet**
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**Delta Private Jets**
deltaprivatejets.com

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**Executive Flightways**
fly-efi.com

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flyfairwind.com

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flightworks.com

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hongkongjet.com.hk

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**Jet Linx Aviation**
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**Nicholas Air**
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**Pentastar Aviation**
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**Royal Jet**
royaljetgroup.com

**Skyservice**
skyservice.com

**Starbase Jet**
starbasejet.com

**Sunwest Aviation**
sunwestaviation.ca

**TAG Aviation**
tagaviation.com

**Talon Air**
talonairjets.com

**TWC Aviation**
twcaviation.com

**Western Airways**
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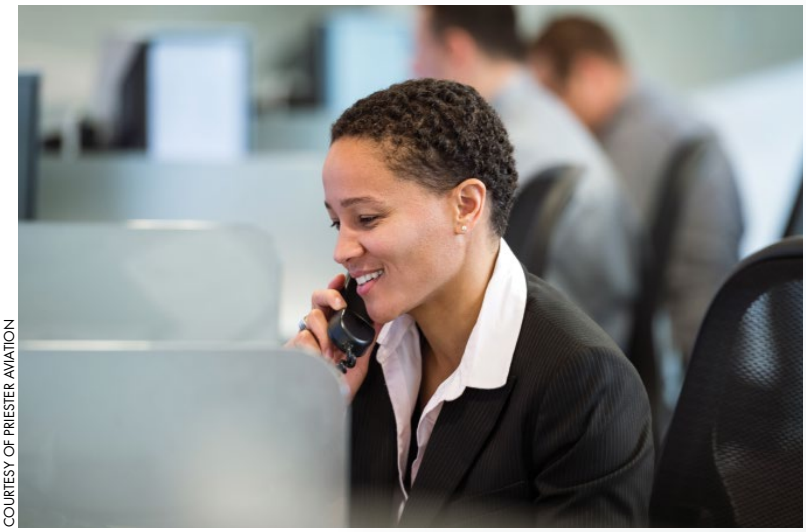
**Wing Aviation**
wingaviation.com



COURTESY OF PRIESTER AVIATION

# Handling administrative responsibilities

## Providing complex accounting services and financial oversight with total transparency

Owning and operating a business aircraft is a capital-, labor- and paperwork-intensive endeavor. A single flight can produce dozens of documents along with invoices for fuel, ground-handling services and more. In the wake of the Great Recession, owners have become more attentive to their operating costs. A good management company not only handles accounting and administrative needs efficiently, but also provides owners with simple, transparent tools, enabling them to see exactly where their money is going. "If you think of aircraft ownership as a manila folder, from before 2006 up until the peak of '08, that folder was in the bottom drawer of most desks," said Drohan of Solairus Aviation. "The owners would pull it out every 18 to 24 months, give it a quick check over, and put it back in the drawer. I believe that folder is now permanently on top of the desk and it will never leave again."

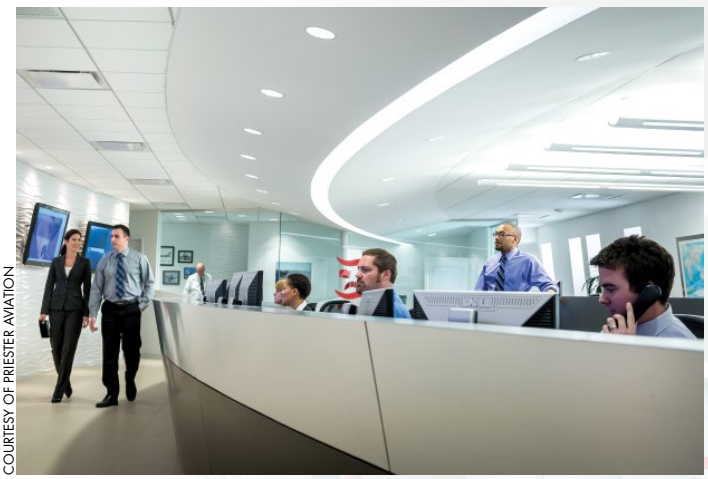
> "Sharing this information will change the relationship between owners and management."

But an owner who wants to handle those accounting chores on his own would need a very big folder and a sizeable accounting budget, which suggests another area where management companies add value. Running a business jet "could generate thousands of invoices over a year," said ExecuJet's Basson, citing bills for catering, maintenance, landing permits, slots and engineering work. Even maintenance paid for under OEM warranties or third-party programs can create a tsunami of documents, resulting in an administrative burden that "can become costly," Basson said. "As a large operator, we have economy of scale, and a large room full of accountants that go through invoices, sharing the costs across many aircraft."

But turning over administrative and accounting responsibilities doesn't mean relinquishing oversight, as management companies push to provide more transparency through secure client portals and reporting tools. ExecuJet has developed "a totally transparent, totally visible customer iPad app that gives owners executive-level insight into the operation of the aircraft," Basson said, noting that the app reports data about such factors as fuel burn, hours flown and utilization. This year the company will add financial data to the app. "Sharing this information will change the relationship between owners and management," said Basson.

The ability to provide this level of transparency while assuming administrative responsibility "basically zeros in on the quality of the management company," said Key Air's DePeters, even as the information "has made individual and corporate owners more attuned to the costs associated with the aircraft." In the wake of DePeters's return to the company, Key Air has enhanced its own administrative and information-sharing capabilities. "We expanded our FOS system very recently," DePeters said, referring to Rockwell Collins's Flight Operations System, a software program favored by many aircraft operators for its robust capabilities. "A training class is going on right now."

Clay Lacy Aviation has parlayed the power of new technology-based administrative tools into increased personal connection with customers. "We started an initiative three years ago, just as the economic downturn started trending upward, to invest in technology to automate what used to be manual systems, and allocate those same human resources to direct service and relationships with aircraft owners," said Kirkdoffer. "We've spent almost $2 million, and thus far it's working out really well."



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# Maximizing ownership efficiencies

## Mastering methods of providing improved operations at lower costs

Effective management provides many avenues for increasing efficiency in ownership. Good management companies closely track the operations of their aircraft, ensuring flight crews use efficient power settings and achieve optimal fuel flows. Proprietary software can minimize maintenance downtime and increase aircraft availability for charter bookings. The financial strength behind many providers allows them to make investments in equipment and infrastructure that yield increased efficiencies, which independent operators might not be able to afford or justify.

But perhaps the most immediate efficiency such providers offer is the reduced costs for a host of essential services that result from management companies' economy of scale. "Management companies are able to consolidate buying power for almost any line item—flight training, fuel, hangar, even pilots' salaries through workers' compensation plans," explained Slover of Volo Aviation. "Whenever you can convince vendors you're bringing more than one unit to the table, you have negotiating power." By that measure, the merger of Gama Aviation and Hangar 8 PLC, completed January 5, will provide an efficiency windfall for customers of Gama Aviation PLC, the new entity, now with a fleet of 144 managed aircraft. "The most significant aspect is that it gives a new scale of breadth and depth to our entire operation," said Duncan Danes, the company's CMO. As prior evidence of its ability to operate efficiently, Danes pointed to Gama's operation of the Wheels Up membership program fleet, which has gone in about a year from no flights to almost 40 per day originating from multiple locations.

Going forward, Gama customers can expect to see the expansion of popular programs like The Jet Club management offering, created by Hangar 8, a premium product for owners who have no interest in having their aircraft used for charter. Danes noted that as a PLC, Gama will now have access to the public capital markets, providing the financing needed to continue its growth.

Maximizing efficiency also means having the creativity and capability to craft customized solutions for owners whenever and wherever they need it.

"We have a Malaysian customer with an aircraft on Swiss registry, operated on our Swiss AOC [air operator certificate], and they fly into a very small regional airport in Australia a lot, which had runway loading issues that appeared incompatible with the aircraft," said Basson at ExecuJet. "Our Australian team went to the airport, we had meetings and worked through the issues, and we made arrangements with the insurers in the UK, allowing the aircraft to operate in and out of the airport. That's an example of how we assist our customers who fly long-range aircraft all over the world."

Solairus Aviation creates efficiencies with its management model that enable owners to base their aircraft at the airport of their choice. The company stations a full-time crew with each aircraft and exercises "remote located management" with its onsite CAMs acting as its "tip of the spear," in Drohan's words. "Some management companies don't believe in that model or prefer to operate in a more command-and-control environment. We utilize communication, information technology and corporate culture instead."

Similarly, Priester Aviation has no facilities at most of the 30 locations where it bases managed aircraft, and it applies its model the same way "whether the aircraft is managed at Teterboro or Oklahoma City," Hughes said. Priester relies on the company's "backstop" supplemental-lift capability, along with codified systems and processes wielded by its remotely based leadership teams.

> "We map out everything we do on a decision matrix."

Priester has also been enhancing its internal efficiencies. "Over the past 14 months we've initiated a quality-systems evaluation," Hughes said. "We map out everything we do on a decision matrix. It's a painful process but it is essential to a very defined and controlled growth, and to conserve energy and resources. There are 50 different ways of doing things; this is a documented path of how we do business, but it doesn't mean we can't customize our service."

Among its ongoing internal initiatives, Executive Jet Management hosts annual roundtables, bringing its pilots and maintenance technicians to its headquarters in Cincinnati for candid discussions of "what's working and what's not working," Tamkus said. "It truly becomes an invaluable session, of learning from each other and continuing to lift our standards."

Tamkus also believes Executive Jet Management's association with NetJets creates additional efficiencies for customers, by being able to craft a solution that can include fractional ownership to meet their travel needs. Meanwhile, on the heels of expanding its management and charter operations in China, Executive Jet Management has now brought its management offering to the Middle East.

Showing owners how to make better use of their assets is another route to enhanced efficiency. AAG's Scott Ashton said he's been "almost evangelical about getting people to think about using the helicopter differently"—for example, when traveling between New York and Washington, D.C. "In a business jet you have to go to Teterboro, go into DCA [Reagan National Airport], and use an air marshal," he said. "We can pick a client up in Manhattan and in an hour have them at a local airport just outside the no-fly zone. It's much less expense and hassle, it saves them a lot of time, and it saves cycles on the business jet."


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# Customizing charter revenue solutions

## Arranging the perfect blend of aircraft access and ancillary income

Charter revenue is an important component of the ownership equation for many aircraft owners, and overseeing and conducting charter operations is a primary service of most management companies. In fact, air charter is the fulcrum upon which most owner-management company relationships are balanced. The companies maintain AOCs that authorize them to operate charter flights, and the revenue generated helps defray operating costs for both the owner and the management company.

When the job is done properly, owners enjoy a predictable stream of revenue without compromise to their own access to the aircraft. But if the job is not done right, charter revenue may not reach the customer's targets, their use of the aircraft may be restricted, or charter flights that put excessive wear and tear on the airplane and harm its long-term value may be approved. This makes it imperative for owners to select a company they can trust to manage their aircraft, mutually develop targets for charter revenue, and understand how the company will reach those revenue goals.

"Every owner comes with a different expectation about charter revenue," said Tamkus of Executive Jet Management. "We have that conversation early on, while we're discussing the possibility of a partnership. We've got other owners under management and we have to fulfill our obligations to them, so we collaborate to develop reasonable expectations."

A management company can be only as good as its charter division. Some 25 Executive Jet Management employees support its retail charter business. "The group monitors how we are trending toward our owners' goals every week, and we retain the ability to move aircraft to make sure we have the right mix to meet the [charter] demand we're showing," said Tamkus.

Priester Aviation, another management company that has a dedicated charter sales team ("It's a huge value to the owners," Hughes said), also utilizes highly experienced charter brokers to provide "value assessments" for owners, which help with scheduling decisions about when to make their aircraft available. "Some want to know anticipated [charter] value, or what the market's doing," he said.

Priester has also developed an Owner Approval app, streamlining the process of getting the owner's sign-off on charter requests. "It automatically sends owners updates on trips, the revenue potential, specific dates, location and the number of charter hours," said Hughes. "It's an approval path that makes sense for the owner."

> "Charter business is a value-added service for management clients."

Management companies also establish charter rates for their aircraft, and quality providers don't cater to the bottom end of the charter market. "We're IS-BAO Stage 3 certified, Wyvern Platinum rated and have one of the most robust SMS in the business," said Drohan at Solairus. "We can ask more per hour perhaps than a smaller operator could; the robustness of our operation allows that."

Drohan views charter business as a value-added service for its management clients, but like all quality providers, the company devotes significant resources to marketing its charter product. Solairus recently unveiled Altitude by Solairus, a "private membership charter club" offering discounted rates and guaranteed access, introduced as an alternative to jet card and fractional ownership programs.

The ability to provide backup lift for a charter customer, in the event that a technical issue unexpectedly grounds an owner's aircraft, is another important consideration when you're seeking a management partner for generating charter revenue. "When the chips are down, we're coming up with solutions," said Wells at Gama Aviation. "If you don't have a contingency plan in place for them, or they think you walked away from the problem, that charter client may be lost for future business, and the owner loses out on future revenue."

Owners themselves may need supplemental lift at times, another benefit of working with a management company, as clients typically enjoy discounted charter rates. Volo Aviation offers its owners an interchange charter agreement. "If your aircraft is in for maintenance or a scheduled check, you have the option to use an aircraft that's in the interchange program," Slover said, adding that currently all of Volo's owners are in the program.

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# Working with flight departments

## Creating organizational partnerships for improved operations

Though historically self-contained and independent, a growing number of corporate flight departments work with management companies for services ranging from international flight handling to supplying supplemental lift.

"A good management company can complement almost any flight operation, and the services can be tailored as needed," said Clay Lacy's Kirkdoffer. "Some flight departments have great pilots and a great maintenance staff and just need some à la carte offerings that are very valuable."

"It's getting more and more complicated to operate these airplanes, and a management company is one possible avenue for an in-house flight department to tap into some of the tools needed to do it right," said Drohan at Solairus Aviation. Nonetheless, flight department personnel can be "fearful" of management companies, he said, and the organizations require a good cultural fit for the association to succeed.

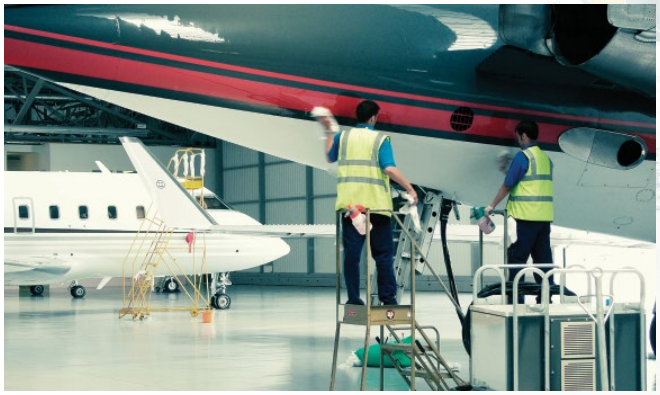
Executive Jet Management provides corporate flight departments with fleet-optimization, aircraft-upgrade and flight-planning services and help with compliance issues. "We become their easy button," said Tamkus. "If there's an AOG [aircraft on ground] situation, we have unmatched resources to keep them on schedule with peace of mind. We don't come in and change the culture they've built over the years. It's more about instilling best practices we ourselves have learned at EJM."

> "We become their easy button."

The need for servicing expertise can also be an important draw for flight departments, as AAG, an authorized Sikorsky repair station, has found. "A lot of corporate operators are our clients, and when something doesn't go quite right, the first call is to the DOM [director of maintenance]," said Ashton. Some flight departments also have arrangements with AAG for supplemental lift. "They like to have the availability for surge capacity," he said.

The uptick in the economy has also brought more flight departments and management companies together. "In the past year we've seen Monday-through-Friday-type flight departments that maybe have only one scheduler ask us if we can help out on the weekends or when their dispatcher goes on vacation," said Haloburdo at Jet Aviation. "What we charge to do that is less than half the cost of hiring another person to cover. And when you start looking at large-cabin operations, with the whole crew on the other side of the world, there are flight departments that get nervous about handling that alone."


COURTESY OF AAG



COURTESY OF GAMA AVIATION

# Understanding management fees

## Calculating the costs and benefits of superior service

The cost of services is often among the first factors owners ask about when they're considering a management company. Management fees vary greatly, depending on the company, the location, aircraft usage and other factors. If you own an aircraft that is highly in demand on the charter market, and your goal is to generate as much charter revenue as possible, you might be able to have it managed for a very low rate, because of the revenue it generates for the management company. The level of usage also affects fees; the more the aircraft is used, the more management time and resources it requires. From a lightly flown turboprop or small-cabin jet to a large-cabin jet that makes many overseas trips, management charges might range from $2,000 to $15,000 per month. A good management company sits down with potential clients to understand their needs, will create a solution and explain the basis for the charges.

"Our management fees are not cookie cutter," said DePeters at Key Air. "When we present a management proposal, it's not only aircraft-specific, but specific to exactly what the owner of the aircraft wants us to do. That could be total management of the aircraft, or partial management tailored to their needs for specific services."

"People get fixated on the management fee," observed Clay Lacy Aviation's Kirkdoffer. "In this industry it's all over the place." Factors that influence fees include cabin size, complexity of the mission, and the level of support the owner needs. "Some owners require a lot more resources from management companies than others for the same mission," he said. "Some people have multiple entities that own the aircraft, and that requires more accounting and tax work. We look at the allocation of resources and the return on those resources."

Jet Aviation has a three-tier fee structure that helps illuminate what management companies consider in establishing rates. Its Silver package is designed for owners that don't fly many hours, and offers a fixed hourly rate, primarily covering fixed costs and limited operational support. Extra services are paid for ad hoc. The Gold package includes scheduling and financial reporting and aircraft registration changes for a set total fee, rather than an hourly rate with additional charges for extra services. The Platinum package "is all-encompassing—that's focused on customers who want to ensure they don't feel nickel-and-dimed," said Haloburdo.

> "If something sounds too good to be true, it probably is."

Gama Aviation's Wells added some basic points to keep in mind when considering fees. "If something sounds too good to be true, it probably is," he said. Additionally, "even paying the management fee, owners end up with a much bigger savings overall," thanks to the savings on goods and services and increased value that a well-managed aircraft enjoys.

The company charges its clients a general management fee, a CAMO (Continuing Airworthiness Management Organization) fee, an hourly fee and a charter fee in addition to charges for operational or engineering support.

Wells's admonition to beware of deals that sound too good to be true notwithstanding, Drohan at Solairus said, "It is very typical for us to recoup on behalf of our clients the entire management fee in a matter of months" through passed-along savings on goods and services. "It's nice to be able to report to people that we are creating value for them—not just philosophical value, but in the dollars and cents."

# Evaluating management companies

## Selecting a provider to meet your unique ownership needs

Many excellent management companies exist. Not all are right for all owners. Plan to evaluate multiple companies to find the one that's best for you. Among the sources for recommendations are aircraft brokers, and financial institutions providing the funding for an airplane purchase—the latter have a vested interest in seeing the asset they own properly managed. The NBAA lists aircraft management company members on its website, accessible to anyone. Ask associates and colleagues who own or use business aircraft for their recommendations.

When evaluating, consider the company's reputation and longevity. Ensure they have experience with the type of aircraft you operate and the type of missions you fly. Ascertain that your charter expectations are in line and your operating philosophies in harmony. With safety always paramount at quality operators, expect candidates have IS-BAO certification, Argus, Wyvern or other safety audit certifications. Management professionals have their own advice on partnering with a good representative.

"The first thing owners need to consider is the ability of the management company to listen and understand their needs," said Slover at Volo Aviation. "Every owner has a reason for buying an airplane, and the management company has to be able to create a program that can satisfy that need."

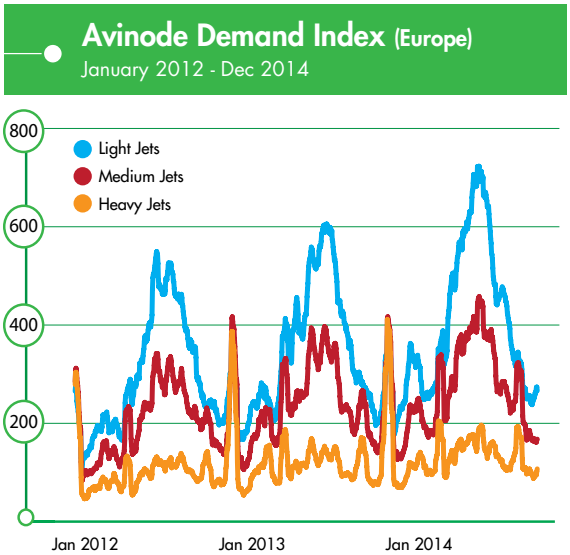
Kirkdoffer at Clay Lacy Aviation recommends judging management companies on how they perform when unexpected problems occur. "Aircraft management is never perfect," he said. "Anything with machines and humans has imperfections, and it's important for potential clients to find out how things go when there are issues, when there's a mechanical overseas, or when there's an issue with a crew member. Do they have the team and the resources that can address those problems?"

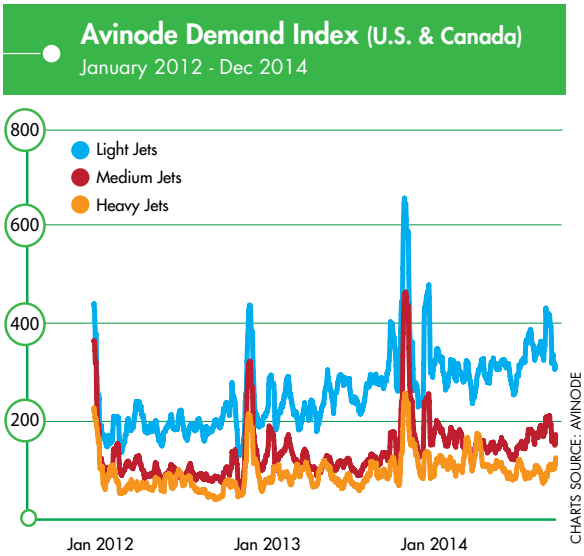
Executive Jet Management's Tamkus advises owners to tour the management company's facility. "Meet the people who will be managing your aircraft," he said. "Understand how they manage crew training, how they hire for flight operations, and how they handle emergency response." Be familiar with the company's history and the sources of its revenue streams, as well.

> "Owners have to realize there is a lot of value provided by management companies."

The degree of transparency between the management company and the owner is also important to consider, said Basson at ExecuJet. "I believe there's some level of mistrust between owners and operators in our industry. Examine invoices and documentation, and investigate owners' access to secure, web-based information through the management company's site."

A careful search will pay off. "Owners have to realize there is a lot of value provided by management companies," said Ashton at AAG, whose dedicated helicopter operations make him something of a third-party expert on fixed-wing management topics. "There are a number of very good ones, and they're always focused on the operation of that aircraft, so you're getting the benefit of an entire enterprise that is thinking about business jet operations 24 hours a day. It would give me great peace of mind to know my aircraft is being managed by an expert continuously."




CHARTS SOURCE: AVINODE

Avinode's Demand Index charts anticipated demand, highlighting trends in North America and Europe. Significant fluctuations in demand for all categories of aircraft show spikes corresponding with peak vacation seasons.

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Special Report

# Aviation Apps

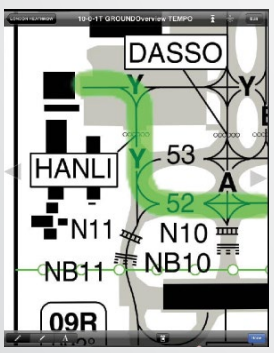
▶ *Continued from previous page*

## EFB Apps (cont.)

### Garmin Pilot (Android, iOS)

**Price: $74.99 plus $74.99 for IFR Premium**

Garmin's Pilot app is one of the few EFB apps that offers coverage in the U.S., Canada and Europe and also is available on Android and iOS devices. The premium package adds synthetic vision to Garmin Pilot, and other unique features include availability of worldwide Jeppesen NavData (another $99.99 per year), worldwide weather data, radar/satellite imagery for the U.S., Australia, Canada and Western Europe, display of Garmin's navigation panel and airborne weather and traffic using Garmin's GDL 39 ADS-B receiver (plus AHRS with the GDL 39D).



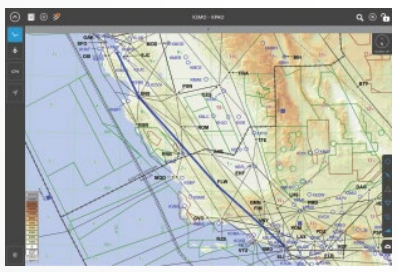

### Navtech iCharts (iOS)

Navtech has a long history of software development for classic dedicated EFBs and also offers the iCharts iPad app, used primarily by airline operators. Features available in iCharts include vector-based charts, drawing on charts, trip kit building, large buttons for easy viewing and one-click access to bulletins, customer content, location awareness and nearest four airports.

### GlobalNavSource EFB (iOS)

**Price: $39.99**

GlobalNavSource's EFB app provides charts and weather worldwide and "tailored plates for low visibility/Surface Movement Guidance and Control System, deice, ramp/gate, special approaches, RNP SAAR, tailored minimums and more," according to the company. Other services available include rapid decompression and EMI testing and lithium battery power documentation ($200 per iPad).



### Jeppesen Mobile FliteDeck (iOS, Microsoft Surface Pro)

**Price: depends on subscription region**

Jeppesen's Mobile FliteDeck for business aviation and FlightDeck Pro for airlines have been key enablers for flight operations switching from paper to vector-based electronic charts. While FlightDeck doesn't offer the flight-plan filing available in most other EFB apps, it does provide route planning in the redesigned Flight Info Drawer. SID and Star transition points are now displayed on en route charts with a dashed line. For pilots who like to write on maps, FliteDeck now lets pilots add comments to user waypoints. FlightDeck also allows display of own-ship position on en route charts and approach plates. Flights can be shared between iPads running FliteDeck with the same subscription level or with an iPad app that is set up to share with FliteDeck.

### Hilton Software WingX Pro7 (iOS)

**Price: $74.95 plus Advanced IFR $74.99 per year**

WingX Pro7, one of the early iPad EFB apps, added a number of new features last year, among them flight logging (WingX Rewind) and integration with Pebble smartwatches. The Pebble feature displays ETE, ETA, desired track and distance to the next waypoint. It also provides timer, fix and altitude warnings in the form of vibrations that the watch wearer can feel. IAP routing allows the user to select an approach, SID or Star, and the waypoints in those procedures are automatically added to the flight-planned route. Hilton Software was an early adopter of synthetic vision, and that feature is now free in WingX Pro7. To help promote WingX Pro7 and the Rewind feature, Hilton Software is offering a free Advanced IFR subscription to flight instructors.

### Seattle Avionics FlyQ EFB (iOS)

**Price: $119.99 per year**

Seattle Avionics has fully taken over marketing of the FlyQ EFB app that it developed for the Aircraft Owners and Pilots Association. FlyQ EFB also allows the user to overlay approach plates on maps, 2-D or 3-D synthetic vision with highway-in-the-sky (no extra charge), fuel prices at more than 2,000 airports, split-screen mode and graphical wind optimizer to show headwinds or tailwinds at various altitudes.

### iFlightPlanner (iOS)

**Price: iFlightPlanner Premium $89.99 per year**

The iFlightPlanner app is integrated with the company's web-based flight planning system, although a free version allows users to plan flights on the web and view them on the iPad app. iFlightPlanner provides a pilot log, weight-and-balance calculator for nearly 1,000 aircraft, worldwide Metars and Tafs, cockpit voice and flight data recorders and overlay of airport diagrams and approach plates on maps.

### Xample Air Navigation Pro (iOS, Android)

**Price: $49.99, plus added fees for nav data**

Air Navigation Pro is one of the few apps that not only runs on iOS and Android devices but also offers coverage throughout much of the world (more than 50 countries). Features include moving map with airspace display in front of the aircraft, terrain profile, 2-D and 3-D terrain awareness and 3-D synthetic vision, live flight tracking (when Internet connection is available), weight-and-balance, logbook and instrument panel display.

*Report continues on page 24* ▶


# HOW'S YOUR PLAN(E) COMING TOGETHER FOR 2015?

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JET AVIATION
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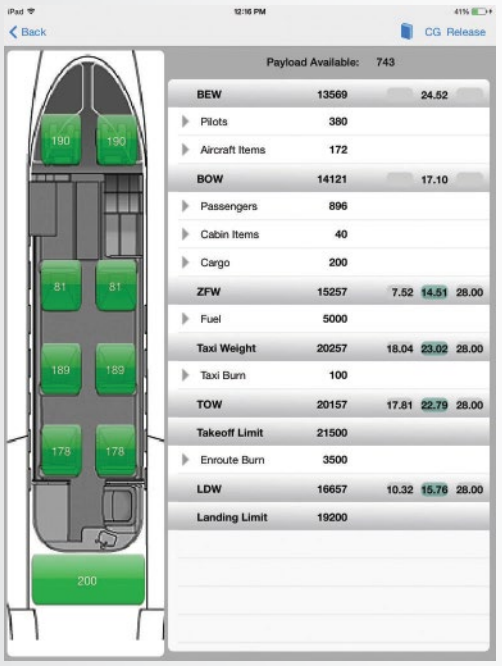
Special Report

# Aviation Apps

▶ *Continued from page 22*

## Performance Apps

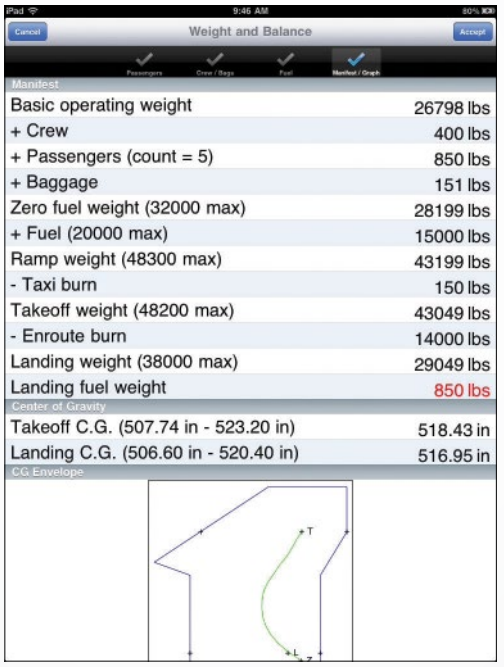
Most aircraft manufacturers either offer their own performance calculation software or work with independent providers. Embraer, for example, provides a version of APG's iPreFlight app to buyers of its Phenom 100 and 300 and Legacy 500. Cessna has developed the CLCalc (loading) and CPCalc (performance) apps for most of its turbine-powered aircraft. The Eclipse QRA app is available for operators of the 500 and 550 twinjets and covers all performance parameters from takeoff to touchdown. Likewise, Gulfstream's PlaneBook app provides performance information for all models from the G150 through G650ER. Bombardier and Dassault Falcon offer apps for paperless storage and updating of flight manuals on the iPad. For those aircraft without a dedicated manufacturer app, independent providers offer comprehensive performance calculating apps.




### Aircraft Performance Group iPreFlight3 (iOS)

**Price: $1,250 per airplane (3 to 5 users)**

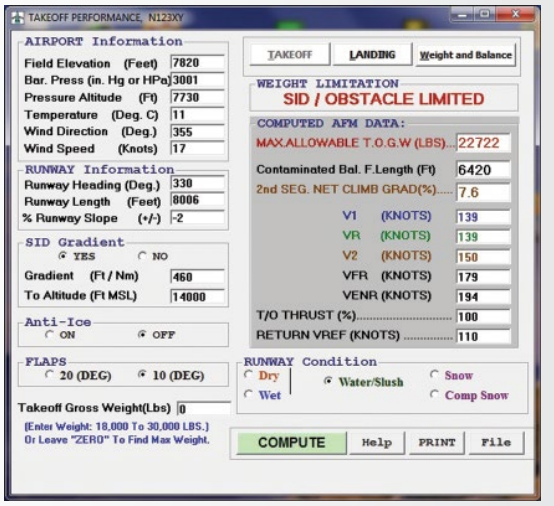
APG's iPreFlight3 integrates weight-and-balance, runway analysis and flight planning and is the performance engine used in software from Arinc Direct, FltPlan.com, Universal Weather and Aviation and Air Support's PPS Flight Planning and CrewBriefing system. The iPreFlight3 app works both offline and online, and new features will be added soon for more offline calculations. After performance and fuel calculations are completed, iPreFlight stores data in a Flight Book, which provides easy access to weather information in flight. Before departure, users can email, store or share with other iPad users a Flight Release containing runway analysis, weight-and-balance and weather information, and the release includes a signature feature to meet European regulatory requirements. The TOLD feature will display a full-page format with larger numbers and prominent colors, to make information easier to read during takeoff. Another new feature will be European approach minimums based on go-around capability, for example, the higher the available climb gradient, the lower the minimums.




### CAVU Companies EFB-Pro (iOS, Windows)

**Price: $50 per month first aircraft, $25 subsequent aircraft**

The EFB-Pro app provides weight-and-balance and takeoff and landing performance calculations for many aircraft types, from the Cessna 172S to more than 250 business turboprops and jets and also Boeing and Douglas airliners. Real-time weather is used for calculations when Internet connectivity is available, but all calculations can be done offline. The app can also store company documents and includes FAA publications such as regulations, Aeronautical Information Manual, Advisory Circulars and so on. EFB-Pro has a fuel-tankering module, which factors in FBO and landing fees and fuel rebates, and holdover-time tables for ground de-icing. CAVU offers free subscriptions to simulator instructors and special rates for contract pilots.




### Ultra-Nav Aviation (web app)

**Price: $840 per aircraft (one-time license fee)**

While Ultra-Nav isn't a dedicated mobile device app, it is available via most Internet-connected devices, and takeoff, landing and weight-and-balance calculations can be saved to bring along on the flight. More than 100 aircraft are available, from older jets (Learjet 35) through modern models (G650, Falcon 7X, King Air 350 and so on).

### International Flight Support PFB (iOS)

**Price: fee per module per aircraft, plus setup fees**

International Flight Support's Paperless Flight Bag for iPad supports takeoff and landing performance calculations, weight-and-balance and flight logging and reporting, including reports on fuel use and technical issues. Also available are a document library, security features, back-office integration and integration with third-party software such as flight-planning, charts and crew management.

*Report continues on page 26* ▶

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Special Report

# Aviation Apps

▶ *Continued from page 24*

## Utility iPad Apps

### CloudAhoy

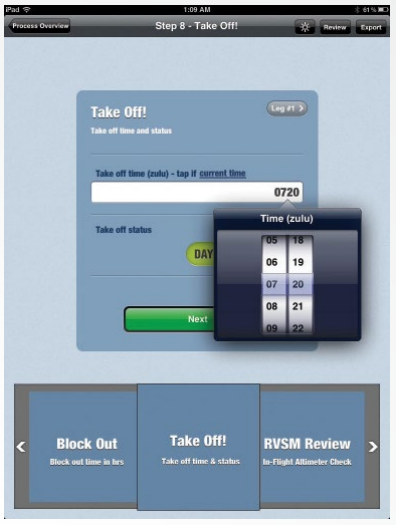
CloudAhoy pioneered the iOS device flight-logging and debriefing application and has recently added features that allow flights recorded using other apps and systems to be hosted in the CloudAhoy environment. Flights can now be logged either with the CloudAhoy app or with ForeFlight's Track Log. CloudAhoy can also import flights recorded with Garmin's Virb camera, G1000 flight deck, the Bad-Elf Pro GPS or Dual XGPS160 or devices that use the GPX file format. Even simulated flights on X-Plane can be recorded and viewed in CloudAhoy. A free version of CloudAhoy is available, but doesn't allow debriefing. The full version is $45 per year.

### Aeronautical Data Systems Ergo360

Ergo360 helps pilots determine the range available based on an aircraft's fuel and oxygen consumption rates, which is useful in an emergency such as a decompression. The app plots the available range as two circles–one for fuel, one for oxygen–and quickly shows where available airports fall inside those circles. Two modes address planning, for preflight calculations; and actual, for evaluating range capabilities during a real decompression emergency.

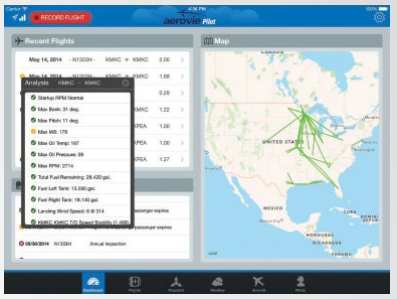

### X-Avionics Xavion

Xavion replicates a synthetic vision PFD view, but adds a handy capability that is made possible by modern sensors such as GPS and AHRS (although AHRS is not required). During flight, Xavion constantly calculates the optimum profile for the aircraft to glide to the nearest suitable runway. And if the engine fails or suffers a partial power loss, Xavion can guide the pilot to the runway end using highway-in-the-sky symbology, airspeed cues and flight path guidance. Xavion costs $199 per year.




### Cockpit Apps iLog

The iLog app replaces the traditional paper logbook used by flight crews to record flight and maintenance times and discrepancies. Available for $149.99 (one-time price), iLog walks the pilot through all the necessary information, such as on-duty time, RVSM review, departure and destination airports, fuel, block-out and takeoff time and so on. Pilots can record RVSM altimeter checks in flight and after arrival note landing and block-in time, fuel burned, flight time (night/day, approach types), off-duty time and VOR check details.



### Aerovie Pilot

Aerovie Pilot is a free app for recording and analyzing flight data. It combines a flight-logging system with dispatching capability as well as pilot and maintenance tracking. Aerovie Pilot can either record a flight using an iPad's internal GPS or an external GPS connected to the iPad, or it can import flight data files from Garmin G1000 and Avidyne avionics. The Pilot app's dashboard lists recent flights and a map with the routes superimposed. A reminders section posts alerts about any upcoming maintenance items or pilot limits. The flights page shows each flight on a map or satellite view, along with a playback function that allows the user to see the actual flight alongside a mini PFD view and engine indications (if that data is available).

## ADS-B and Weather Receivers

Business aircraft operators value the benefits of in-flight near-real-time access to weather information. While some aircraft are being equipped with ADS-B IN receivers as part of ADS-B OUT installations, portable ADS-B IN devices are easy to carry from aircraft to aircraft and offer wireless connectivity to mobile devices with free weather and traffic information as well as built-in GPS receivers. Note that some receivers offer one and others both ADS-B IN frequencies (978 and 1090 MHz). Some also include AHRS sensors, which equip tablets and phones to serve as an emergency backup attitude indicator/PFD and also facilitate display of synthetic vision, when available.

| Receiver | Apps | ADS-B Frequency | AHRS | Wireless | Price |
|---|---|---|---|---|---|
| Appareo Stratus 1 | ForeFlight Mobile | 978 MHz | | Wi-Fi | $499 |
| Appareo Stratus 2 | ForeFlight Mobile | 978 and 1090 MHz | ✓ | Wi-Fi | $899 |
| Dual Electronics XGPS170 | eKneeBoard, FlightPro, FlyQ EFB, Naviator, WingX Pro7 | 978 MHz | | Bluetooth (2 devices) | $549 |
| Flight Data Systems PathFinder | Avare, AvNav EFB, eKneeboad, FlightPro, FltPlan Go, FlyQ EFB, iFly GPS, Naviator, WingX Pro7 | 978 MHz | | Wi-Fi | $549 |
| Garmin GDL 39 | Garmin Pilot | 978 and 1090 MHz | | Bluetooth | $599 |
| Garmin GDL 39D | Garmin Pilot | 978 and 1090 MHz | ✓ | Bluetooth | $899 |
| iLevil SW | Air Navigation Pro, Avare, AvNav EFB, FlightPro, FltPlan Go, FlyQ EFB, iFly GPS, Naviator, WingX Pro7 | 978 MHz | ✓ | Wi-Fi | $1,195 |
| Radenna SkyRadar-D2 (no battery) | SkyRadar, WingX Pro7 | 978 and 1090 MHz | | Wi-Fi | $689 |
| Radenna SkyRadar-DX (no battery) | SkyRadar, WingX Pro7 | 978 and 1090 MHz | ✓ | Wi-Fi | $849 |
| Sagetech Clarity | AvPlan EFB, eKneeBoard, FltPlan Go, FlyQ EFB, GlobalNavSource, WingX Pro7 | 978 and 1090 MHz | | Wi-Fi | $1,150 |
| Sagetech Clarity SV | AvPlan EFB, eKneeBoard, FltPlan Go, FlyQ EFB, GlobalNavSource, WingX Pro7 | 978 and 1090 MHz | ✓ | Wi-Fi | $1,400 |
| SkyGuardTWX (no battery) | iFly GPS, Naviator, SkyRadar, WingX Pro7 | 978 and 1090 MHz | | Wi-Fi | $675 |

### Sirius XM WX

For access to Sirius XM WX, Baron Services makes the Mobile Link ($199.99), which works with the Bluetooth-capable WR-10BT receiver ($830) to deliver XM WX to mobile devices.

The $699 Sirius XM SXAR-1 is a single-box receiver that delivers XM WX products to iPads, using the WSI Pilotbrief Optima app.

Both systems require a subscription to Sirius XM WX ($34.99 to $99.99 per month). ■

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# Questionable 'customers' still target the charter business

by Matt Thurber

An **AIN** article last year about an individual who allegedly booked and flew charter flights without paying the provider more than $220,000 prompted readers to submit additional information about suspected aviation-related scams. In one case brought to AIN's attention, an individual expressed interest in large transactions that never came about and ended up costing a service provider a significant amount time and also harmed this provider's reputation. In another case, a charter company that might not even exist allegedly kept money for charter trips that never took place.

The purpose of this article is to alert readers to the existence of fraudulent activity in some segments of the charter marketplace, and to illustrate what is driving legitimate participants to seek reforms that would protect both customers and providers. Because formal charges have not been brought against the suspected scammers in all cases, AIN has withheld the names and identities of the people and companies alleged to have engaged in such fraud.

Nowadays it can be difficult to determine whether an earnest phone-caller is not only serious about a request but also has the money to pay for it. One caller contacted Skyflite Aviation vice president Winsor Brown early last year with a detailed story about wanting to purchase a number of large airplanes using his own funds and money from other investors. According to Brown, this individual claimed to be a stockbroker and provided information on a well known social media website that supported his claims. This person listed a previous job as CEO of a specific company for which AIN could find no website or any other records. He also listed on his profile that he was president of an aircraft management company during most of the first decade since 2000.

AIN contacted the CEO of the management company, who responded: "This guy never worked at [our company]. I have been here all 32 years and he was never with our company."

When AIN first looked at the individual's profile on the social media site, the listing for his work with the management company included the company's logo. The CEO said in an email to AIN, "We became aware of him when contacted by someone he was trying to scam."

The social media website has a process for users to submit information about possibly false listings, and the CEO said that he tried this process; however, as of January 13, the profile had not changed, although the management company logo was no longer there. This social media website has no telephone numbers on its website for either customers to contact the company or for members of the media to contact press representatives. AIN submitted a request for more information about this situation to the company email address but never received a response. The website user agreement requires that users provide accurate information.

AIN contacted the individual via the social media website and received a response from him. However, when AIN asked him about the management company listing in his profile, he did not respond any further, and he has not removed the information claiming that he worked there for nearly 10 years.

This individual also listed on the social media website that he received a bachelor of business administration degree from a noted business university. AIN contacted the university to verify this information and was referred to National Student Clearinghouse, a service that many educational institutions use. After submitting a request to verify that this person did graduate from the university, AIN received this information from the Clearinghouse: "Unable to confirm using the information you provided."

Brown provided more information to AIN about the individual's attempt to work with Skyflite. According to Brown, he contacted him with a proposal involving the purchase of many large aircraft (more than 19 seats) and a helicopter that would be used to transport sports teams in the northeast U.S. The individual represented himself as a big-city stockbroker and someone who could raise funds for such a project, claiming that he had done this before with a Boeing 727 and millions of dollars invested. "We put the project together and were to become an operating partner," Brown told AIN. This included coordinating a possible aircraft purchase with a major business aviation manufacturer, which sent a representative from its foreign headquarters to Skyflite to work on the project.

The project unraveled after Brown requested letters of commitment and actual funds to support the project. According to Brown, while at first the individual had claimed to be a major investor in the project, he later said that he was only a facilitator for other investors. At this point, Brown's wife, Sharon, began looking more carefully at this person's background. She says she found that he held no stockbroker license in the state where the big city was located and that "numerous individuals that he stated he knew did not know him." She also contacted the management company and received the information that the individual had never worked there.

"While we did not suffer any real monetary loss," Brown added, "there were nevertheless numerous hours expended to no avail. And we made ourselves look really bad in an aircraft manufacturer's eyes. The purpose of this email is to alert all [charter] operators to be on your 'A' game so you are not affected as well."

### Questionable Actions

AIN was contacted last year by Richard Zaher, CEO of Paramount Business Jets, a charter broker based in Leesburg, Va. In March 2013, according to Zaher, a person posing as a charter provider caused Paramount to lose $55,000 from a $78,000 charter. Zaher said he wired $78,000 to a bank account in New York to pay for a flight from Germany to Florida, to be fulfilled by this person, but the flight never took place. According to Zaher's attorney, Charles Morgenstein, hours after the funds were wired to this company, the company sent an email canceling the trip. In fact, Morgenstein stated, the business jet promised for the trip did not exist. In the following days, this person allegedly promised to repay the funds with an American Express card, a copy of which he sent to Zaher, but Morgenstein says it turned out that card had been canceled days before. About a month later, Paramount was able to obtain $20,000 from another company that was holding some funds from this person.

Morgenstein sent a memo to the Federal Bureau of Investigation on May 31, 2013, outlining not only Paramount's losses but also the alleged losses of other companies that were involved with this person. The memo outlined the names that this person was using and that the total amount involved in these alleged crimes was $315,000. The memo also named companies associated with this person. According to the memo, four companies lost money in transactions with this person and his companies in the respective amounts of $45,000; $65,000; $55,000; and $95,000.

Zaher said that the FBI responded that it could not do anything unless a far larger amount of money was involved. So he contacted the applicable county sheriff's office and provided information to help prove that this person was representing that he could provide an aircraft that did not exist. "We forwarded that to the sheriff's office and they put out a warrant for [his arrest]."

Zaher provided a copy of the warrant, and AIN contacted the detective involved to confirm the warrant and also the detective's attempt more than a year ago to reach out to French police about this person. According to the email from the detective to his French counterpart: "I am confirming have a felony arrest warrant on file for [this person] for fraud. He is operating a business from France and had defrauded several people in the United States. His MO is to book flight charters for people and [accept] their money when in reality he is not even booking the charters. [This person] defrauded my victim, Richard Zaher, out of $75,000 USD. The [name of his business is XX]. And his website is [XX]. If you need further information on [this person] or anything else to open a criminal investigation on him, please contact me."

The detective told AIN that he never heard back from France, but that the warrant for [this person's] arrest in the U.S. remains active.

Based on information provided by Zaher, AIN examined the website purportedly representing this person and his companies. The website claims that the company offers charter, aircraft

*Continues on next page* ▶

### Avoiding Charter Scams

The amount of money involved in jet charters is large enough to attract questionable clients, and charter operators have evolved strategies to prevent illicit transactions.

"We've learned a lot over the years," said Denise Wilson, president and CEO of Desert Jet, a Palm Springs, Calif. charter operator. In the early days of the company, she encountered a situation where a charter broker double-billed his client for the trip, by having the client pay the broker then pay Desert Jet separately.

Desert Jet also experienced a cashier's check that bounced. The assumption is that cashier's checks are guaranteed, but that isn't true. "We had a client pay for a pretty large charter with a cashier's check," she recalled. "And it wasn't till later that we got a notification from the bank that the check was no good. We initially had cashed it then put the money in the bank, then three or four days later the bank took the money back out. So we don't accept cashier's checks any longer."

Now Desert Jet requires color copies of the front and back of the customer's credit card and photo ID and verifies that the signature on the charter contract matches the signature on the ID and credit card. After vetting its regular clients, Desert Jet will accept ordinary bank checks for payment. "The risk is one-off brokers we've never heard of before," she said.

Wilson works with many brokers and respects those with legitimate businesses and infrastructure, but she is wary of the broker without a merchant bank account and no financial backing. "There are a lot of great brokerage companies out there," she said. What would help the industry and charter clients would be a broker registry with minimum requirements. "They would have to incorporate and have a checking account, not just a fax and a pretty website. We're trying to convince the [Department of Transportation] to create a registry. That would go a long way toward protecting consumers." Desert Jet is also a member of the Air Charter Association of North America (Acana), which sets standards for charter operator and broker members, including longevity, financial stability and references. "Acana is trying to address a lot of these issues with smaller brokerage shops," Wilson said.

Another option is using an escrow service. European escrow provider Baltic Air Charter Association, which launched service in the U.S. last year, is supported by Shelby Financial and protects money placed on deposit for a charter. The escrow holder does not release the money until all parties involved agree. *–M.T.*

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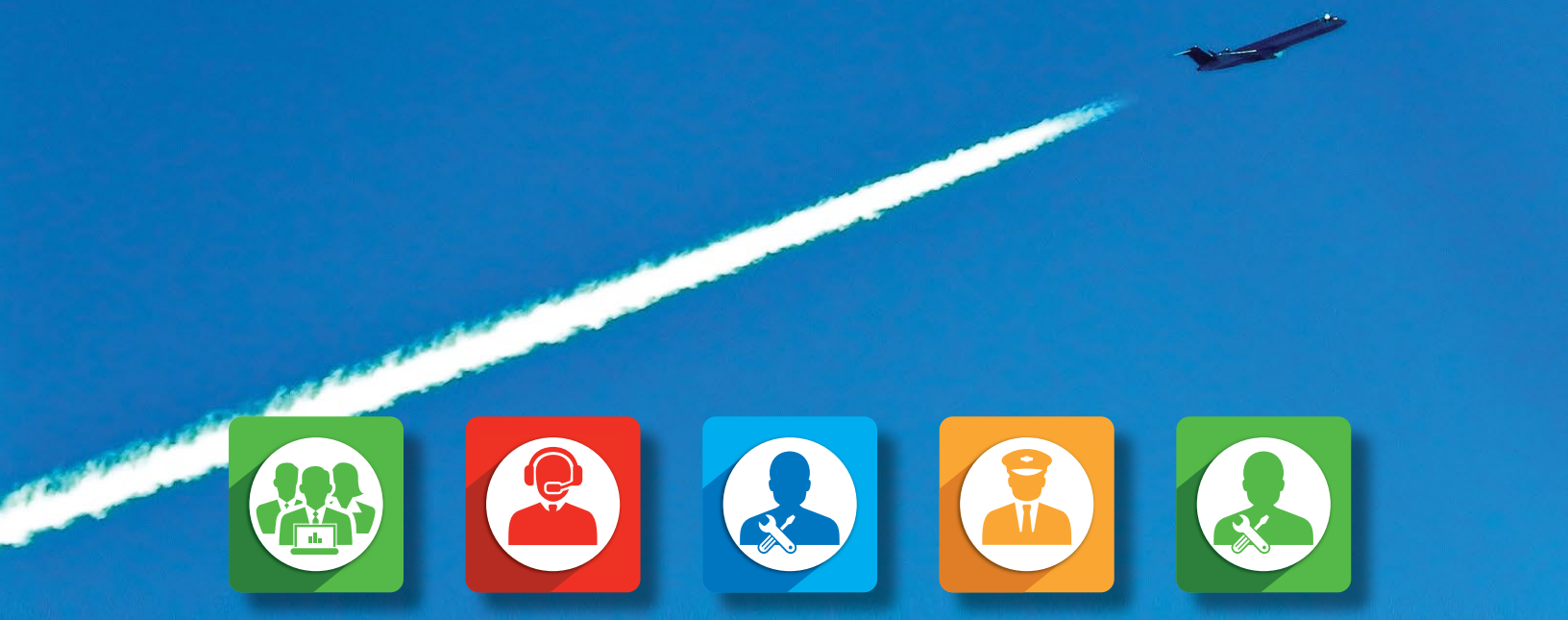

## Satcom Direct Training and Certification

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Training and Certification, Powered by Satcom Direct

# EDUCATION

"The better we can educate our customers, the more likely they are to get the functionality they need out of these systems, from flight deck to cabin."

Satcom Direct training programs are developed for aviation professionals by some of the best and brightest experts in satellite communication, technology, data security and, of course, aviation. Training is a core value at Satcom Direct, and is driven by the company's unwavering focus on innovation and commitment to providing world class support. "The key message about training is that today's aircraft are no longer mainly mechanical with some base level electronics systems," said Ken Bantoft, Satcom Direct's Vice President of Technology and Innovation. "Aircraft now have multiple computers and systems onboard that communicate with each other and outside the airplane."

## How To Sign Up for Satcom Direct Training

Most Satcom Direct classes and other events have online registration, which can be found at www.satcomdirect.com. Current Satcom Direct customers interested in training (at a Satcom Direct facility, or their own), including a visit from the Mobile Training Lab (RV) are invited to contact their Satcom Direct salesperson or field rep directly, or email training@satcomdirect.com. Enrollment requirements vary, and depending on the course, you do not have to be a customer of Satcom Direct to participate.

### The Future Is Now

Without a doubt, the training that many of today's experienced aviation technicians received in the past was focused on mechanical systems and basic avionics. But over the last 10 years, complex server-based networks have evolved for the cockpit and even more so for the cabin. Training for operation and maintenance of these systems had not kept pace, so Satcom Direct decided to create training programs that would encompass all of these new technologies, systems and advanced avionics, and to bring this training to its customers.

"Well-informed customers are more satisfied customers, and well-trained pilots and support personnel are better at their jobs," Bantoft said. "They need to understand how the on-board systems work. Then, when things go wrong, they are not in the dark–they know how to troubleshoot and maintain them." Scott Hamilton, Satcom Direct's Chief Strategy Officer, said, "The more information and the more knowledge we can impart to our customers about the communications systems on their aircraft, the more they will use them. The key focus of our training programs is around how the systems operate and what troubleshooting techniques they can use when something doesn't

work. The better we can educate our customers, the more likely they will be to get the functionality they need out of these systems, from the flight deck to the cabin."

## Cabin Communications Technical Training

"Our first major training initiative was our Inspection Authorization [IA] course on cabin communications, which the FAA certified four years ago. This class remains one of our most popular courses," explained Josh Wheeler, Technical Training Manager for the company. A key training aid of the class is the satellite communications lab, which includes custom-built racks of satellite equipment connected to antennas to provide hands-on training in a live environment.

"The IA course provides 16 credit hours over two days," said Mark Mata, Director of Training – Americas for Satcom Direct, who developed the course. "It includes classroom theory on the background of the satellite networks–Inmarsat and Iridium–and on Satcom Direct itself, and goes into what systems may be on board. The idea is to offer customers information on how to use their satellite systems, no matter which equipment manufacturer's systems they have or which satellite network they use."

Although the course was designed primarily for aircraft technicians, Satcom Direct has found that it also attracts pilots, flight attendants and even aircraft owners, who want to know more about how to configure and troubleshoot their satcom systems, experience hands-on training using Satcom Direct's lab equipment, and learn about the company's mobile apps and services. "IA is an overview of all the satellite networks with which we partner," said Wheeler. "We explain the four variations of satellite constellations and their capabilities. Then we go into Satcom Direct-specific training about the existing equipment on your aircraft, how to troubleshoot it and how to repair it."

While previously this class was just about radio communications, now the networking aspect of satcoms–such as packet-based networks, how to configure a router and so on–is growing in popularity. Because the routers on aircraft need to be more robust, configuring them is more in-depth. "Bandwidth management is one of our newest courses," Wheeler continued. "It is actually a subset of the IA course and is also certified by the FAA. Our support team members are often asked, 'What can I do about slow Internet?' Well, there is only so much you can do, but there are some tweaks and strategies you can employ that can make a big difference. When we go on site to do specialized training for a customer, we'll typically cover bandwidth too, because it's all about the Internet these days, and this course is applicable across the board."

## Airframes and More

Satcom Direct secures training partnerships with the best industry resources to ensure they are equipping flight departments with the most relevant tools and information.


The Satcom Direct Rolling Lab is used for on-site customer training.

## Why Internet-in-the-Sky Is Different

The reality of satellite communications systems on aircraft is that they operate differently from the communications systems in homes and offices. "This is because with an airplane you're in a big metal tube moving 450 knots at 40,000 feet. Just the nature of the physics involved means that, from a communications point of view, you may have to do some things differently than you would do in a stationary setting," Scott Hamilton, Satcom Direct's Chief Strategy Officer, explained. "Our mission is to make the experience on the airplane as close as possible to what it would be in an office or home." One major difference between ground-based and satellite Internet connections is the distance the data must travel. "Although radio signals travel at the speed of light, the distances between a satellite, an airplane, and a ground station are far enough to cause significant delays in transmissions, also known as latency," explained Mark Mata, Satcom's Director of Training – Americas. "In an office environment, it takes just a few milliseconds for data to move from one place to another," he said, "In an airplane, we see delays of 1,500 milliseconds. That's almost two seconds [2,000 milliseconds], which is a lifetime in computer talk."

## EDUCATION

"After establishing the IA class at Satellite Beach in Florida, we then established a relationship with FlightSafety International to provide a comprehensive course on the satcom systems on Gulfstream aircraft to support our Gulfstream operators," Hamilton said.

The classroom portion of this training takes place at FlightSafety's Maintenance Training Center in Savannah, Georgia, while the hands-on training is conducted at Satcom Direct's Savannah office.

"We continued that philosophy with FlightSafety at Teterboro Airport in New Jersey, where we set up another lab," he continued, adding that although Dassault Falcon also is at Teterboro, "this Satcom training lab is not exclusive to any OEM." The stationary training labs at both FlightSafety locations and at Satcom Direct's facility at TAG Aviation on Farnborough Airport in the UK have racks of satellite equipment designed to provide experiential training to better prepare participants for scenarios they may encounter.

"Historically, most of the training activity has been based in the U.S. and centered around our U.S. customers," Hamilton explained. "But over the past year and a half we have created our new international Training Programme, so that we serve our international customers in a similar way. Last year we rolled out our first training lab outside the U.S., at our Farnborough location. I expect that we will establish some more partnerships potentially with other FlightSafety locations [and with] other key partners."

Up to this point, training had been about educating Satcom Direct customers to give them the tools they needed to be able to keep the systems operating and make the best use of them. "Now with FlightSafety and TAG we are also developing professional certification programs," he said.



# CERTIFICATION

"Today's sophisticated avionics and satcom systems mean there is an increasing need for IT expertise on the team, which makes training more important than ever. That's why we created the AeroIT certification."

## AeroIT, a Training Game Changer

Another way Satcom Direct is raising the bar in the satcom industry is with its AeroIT professional certification, via an agreement with CompTIA, a nonprofit trade association focused on information technology. "With AeroIT we hope to create a standard in the industry," Mata said. "It is a certification credential, not just a certificate."

## The Next Step

"Cabin communications is one of the more important systems in the aircraft, because it affects the VIPs in the back," Mata continued. "But time and time again we have seen flight departments send someone out to fix the system who does not fully understand networking or how the system truly operates. You would not do this with an engine or landing gear problem. You would send experts. Until now, there was no certification for cabin communication or networking for aviation," he added. "This is the need we plan to fill."

"We saw a big learning gap between what a traditional airframe and power plant technician knows and what it takes to install a routing scheme for Internet," Wheeler recalled. "We wanted to bridge the gap between a basic overview of products, services and the configuration of Internet services to, 'How do I troubleshoot a network?' This is what led us to creating the AeroIT certification with CompTIA."

Mata said, "CompTIA works with the American National Standards Institute and ISO to develop curriculum; AeroIT certifications are written to these standards. Internally, all of our support staff is required to obtain Cisco Certified Network Associate [CCNA] and CompTIA Network+ credentials," he continued. "These credentials are for office environments, so they cover many of the same systems that we're bringing to the airplane. Networks and wireless services function the same wherever they are. Of course, you do have challenges on an airplane, such as latency, but the knowledge of networking definitely helps us to support our customers and also to troubleshoot the systems."

Wheeler said, "All of our courses are created by subject-matter experts, who have been in the field for years. Many of these experts are the people who actually developed the hardware. Certifying the courses with the FAA makes our courses different, and now offering AeroIT with CompTIA is another differentiator." The AeroIT CompTIA certification will be valuable to technicians from a networking standard alone, as it will be very much like a Network+ certification. [The Network+ certification is an internationally recognized validation of the technical knowledge required of foundation-level IT network practitioners.]

"Typically, a certification like this is valid for three years, and must be renewed," Wheeler said. "To get re-certified, you can take that same course and exam again, or you can take other equivalent courses; taking the AeroIT course is equivalent coursework that will give the Network+ holder some credit toward renewal." AeroIT certification is not brand-specific; therefore, similar to a Cisco Certified Network Associate certification, it demonstrates expertise in information technology and will be recognized as such by employers. "Our goal is to create this sort of accepted certification for the aviation field," Wheeler said.

Satcom Direct will offer "boot camp" training on AeroIT in classrooms; additionally, Satcom Direct is currently developing an AeroIT textbook that can be used for self-paced study to prepare for the AeroIT certification exam. "There are probably some experts in the field now who could pass the test without too much study," Wheeler speculated, "but we think most people will want to attend our class."

Whether one takes an AeroIT class at Satcom Direct or does self-study, he or she will be able to take the qualification exam at any Pearson VUE test center worldwide (where other CompTIA exams are administered). Satcom Direct is installing a Pearson VUE approved test facility in its new headquarters under construction in Melbourne, Florida and slated for completion in late 2015. Satcom Direct held its first AeroIT class in January, and the world's first AeroIT certification recipient was its own Vice President of Information Technology, John Zban. The entire Satcom Direct support team is also obtaining AeroIT certifications. "Our training leadership is not just about meeting industry needs, it's also about leading by example ourselves," Mata said. The company expects to announce the authorization of AeroIT by CompTIA at the end of the first quarter of this year.

"Our plan doesn't stop there," said Mata. "In the future we're looking to offer different levels of AeroIT, similar to Cisco, such as associate, professional and expert. The idea is to help create technology certification standards for the aviation industry."

### International Expansion

Reflecting the realities of "the rest of the world," where satcom on business aircraft is growing exponentially and becoming a must-have option, Satcom Direct's training programs outside North America are comparable to, but different from, those developed in the U.S. Providing training to customers with diverse language and cultural needs is an exciting challenge that is well underway by Sanaa Saadani, Satcom Direct's Head of International Training.

"Satcom Direct's international Training Programme follows accredited training practices, which are the standard internationally," Saadani explained. "To meet this standard, we use certified trainers, which means that the trainers abide by the latest learning and development trends. We created new courses based on market needs which are primarily related to raising the level of technical expertise, effectively troubleshooting satcom on aircraft, and an introduction to IP/IT networks.

"Because we follow accredited training protocols, we have the ability to create certified, custom-tailored courses for clients from Greenland to New Zealand," Saadani said. "This means that, upon successful completion of each course, an attendee receives a certificate which is recognized by accredited boards such as the Learning Performance Institute (LPI). These certifications strengthen their professional qualifications, just like a Microsoft or Cisco credential."

After conducting considerable research and analysis of international customer needs, Saadani created the one-day Satcom Direct Product and Services class, which provides an overview of all the company's innovative products and services and is suitable for all aviation professionals. The two-day Foundation Course for Satcom Aviation is primarily for maintenance technicians. "The first day is theoretical, providing the fundamentals of the Inmarsat, Iridium and ViaSat satellite systems for aviation," Saadani said. The second day is practical and hands-on, teaching users how to troubleshoot and fix voice and Internet systems. "We have equipment we can mix and match to replicate various scenarios," she added. In 2014, classes were rolled out in Basel, Switzerland; Farnborough, UK and Hong Kong.

The Introduction to IP and Voice Networks Course, for sales, maintenance and operational personnel, aims to provide a basic understanding of voice and Internet networks. It fulfills the fundamental requirement for taking intermediate IP or Cisco courses. Coming in the spring of this year is the Introduction to Inmarsat Services in Aviation, a one-day course for all aviation professionals. This basic course will provide a thorough overview of all the Inmarsat satellite communication systems available to aviation. Saadani added that several more intermediate courses are under consideration. The Satcom Direct Router Technical Course is another course that is meant primarily for maintenance personnel, although many pilots find it useful, too. This one-day course has a specific focus on operating and troubleshooting the unique capabilities of the router.

## Troubleshooting Your Satcom System

What should you do if your satcom is not working? Satcom Direct has developed a clever way to monitor all the mobile and computing devices on the aircraft and even to transmit a report back to the company's engineers in Satellite Beach, Florida. It's a mobile app called "MATA," which stands for Mobile Access Troubleshooting Application. "There is certain information we need to troubleshoot what is wrong," explained Mark Mata, Director of Training - Americas. "So instead of requiring the customer to get out a laptop and start typing in commands, this application runs various checks automatically and wirelessly, providing information about the router, the devices onboard and the Internet connection in general. When customers call us, we simply say, 'Read me what the app diagnostic says.' MATA makes a quick check of the system." Mata added that many pilots use the app as part of their preflight checks to make sure the system works without their having to test each part of it separately.

The app also includes a scanner, which provides a list of devices that are connected, in order to help identify which devices are taking up bandwidth and perhaps could be shut down. With the MATA app, customers can email the results of all the checks it has performed to Satcom Direct's support team, who can then analyze the results for problems. "We may call back and say, 'Try resetting your circuit breaker,' or 'Turn off some of the devices onboard,'" Mata said. "We may see that the data is being held up at a particular point on the ground, maybe at the customer's own facility, or that there's a problem with the router and that it could be bypassed."

# DIVERSIFICATION

## A Broad Range of Educational Offerings and Methods

Training opportunities include an array of course offerings including in-depth training on various satcom provider networks, instruction specific to a variety of hardware manufacturers, as well as technical training like the Introduction to IP and Voice Networks. On-site seminars and webcasts are scheduled every month throughout 2015. For those seeking professional accreditation, Satcom Direct offers several options.

The Cabin Communications Technical Training Class includes instruction that, when successfully completed, gives attendees 16 hours of credit toward their Inspector Authorization (IA). Satcom Direct typically offers this class four times a year. "We also offer four to eight IA credits at our annual Connecting-with-Customers Conference," said Mata. In its eleventh year, the event brings together the latest in satcom products, technology advancements, technical training, and updates on industry trends. The 2015 conference will be held March 2 to 5 in San Diego, California.

Training and Certification, Powered by Satcom Direct

## Mobile Training Lab

Like satellite communications itself, Satcom Direct's training programs have evolved over time and continue to evolve. The company offers many of its satcom training courses free to customers, including its workshops, webinars, annual seminars and other events focused on fundamentals. Not to be missed is the company's Mobile Training Lab, a souped-up, brightly painted RV that travels to flight departments and events around the U.S., recently appearing at NBAA's annual convention. Affectionately called "the ice cream truck" by employees, the "rolling lab" includes functioning Satcom Direct equipment and closely emulates how it all works in the airborne environment.

While the lab provides hands-on training with live connections to the satcom systems, there are differences between a stationary environment on the ground and the in-flight environment: airspeed is not an issue on the ground; the vibration generated by an aircraft in flight is missing; and there's no need to switch satellites as the airplane moves out of signal coverage. Taking these differences into account, satcom trainers provide a broad range of troubleshooting techniques, and demonstrate how to install and use new applications. The Mobile Training Lab features a similar, but smaller, rack of satcom and network equipment than what is found at the company's training facilities at Satellite Beach, Savannah, Teterboro and Farnborough.

The RV also includes high-definition satellite antennas and a DIRECTV antenna to facilitate showing some of the company's services and subscriptions, and therefore serves as a stage to demonstrate Inmarsat SB200, ViaSat Yonder®, as well as the company's platform for the future, the Satcom Direct Router (SDR). Also featured are services developed exclusively by Satcom Direct, including AeroX®, SkyShield, AeroV®, SD Flight Tracker and FlightDeck 360®.

"The rolling lab may be set up on an airport ramp or parking lot," said Wheeler. "Here we can showcase the SDR, demonstrate various satellite component systems and failure scenarios, and broadband management. Customers even bring out their iPhones and we show them ways they can reduce bandwidth usage on a flight. At the end of the training day, we'll often cook-up a full barbecue. Having the RV creates a great environment not only to demonstrate our products and services, but to bring people together." For 2015, the company is planning a three- to four-month coast-to-coast tour with the rolling lab, visiting customers, providing support services, and conducting on-site training. "It's just another way of providing better service and showing our appreciation to our customers," Wheeler said.

"Reflecting the realities of 'the rest of the world,' where satcom in business aircraft is still relatively new but quickly becoming a must-have option, Satcom Direct's training programs outside North America are comparable to, but different from, those developed in the U.S."

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# *FAA cancels rule allowing sim time for IFR training*

by Matt Thurber

*An FAA rule that would have allowed instrument pilot trainees to count sim time toward their training would have reduced the cost of training, but some say it would not have given pilots sufficient real-world experience.*

Two negative comments have felled a regulation that would have allowed aspiring IFR pilots to log more training time in an approved aviation training device (ATD).

The FAA has withdrawn a final rule that would have authorized instrument pilot trainees to obtain credit for up to 20 hours of instrument time in an approved ATD under Part 61 or no more than 40 percent of total training hour requirements for an instrument rating under Part 141. The final rule was published on December 3 last year and would also have eliminated the requirement that pilots logging instrument time in an ATD wear a view-limiting device.

Because FAA regulations allow a final rule to be issued instead of an NPRM, any negative comments on the final rule prevent its implementation. Two of the 20 comments were negative.

One ATP and CFII wrote: "ATDs are firmly on the ground and no amount of graphic imagery or display setup, even in full-motion simulators, ever causes a pilot to lose consciousness of that fact. Consequently, pilots do not experience the fear that accompanies real-life emergencies, or the sensory inputs that come with icing and thunderstorm contact." This commenter also wrote: "Flight simulators are wonderful but very limited devices. Instead of increasing a pilot's skill, however, they have come between real-world flying and desktop flying. They have increased reliance on screens and autopilots and diminished the pilot's sense of being in charge of the aircraft and the flight. Stalls, thunderstorms and icing are the greatest dangers, yet ATDs cannot depict these accurately or realistically.…I think this is the wrong direction for training to go. There is generally no 'reset' after a crash.

"It seems to me that the industry at large always diminishes the importance of safety and increases the importance of costs whenever training requirements are considered. I believe one hour in any aircraft is worth ten in front of an ATD. The cost of a lost aircraft and all its crew is not worth the imagined savings gained from flying imaginary aircraft in imaginary environments."

The other negative comment stated: "Highly recommend the use of such devices, but in dealing with pilots and humans from both a CFII and an air traffic controller [perspective], I caution too much of a reduction. Proceed with appropriate caution and understand the risk involved. As a quality control manager, [I see] an increase in poor piloting skills and decisions."

The Society of Aviation and Flight Educators (Safe) rebutted the first negative comment: "We respect [his] right to opposing opinions regarding the proposal but we must point out that all of his comments reflect personal opinion, lack substantiation and are contrary to current adult education doctrine regarding the use of training devices. In fact, several of his points are well contradicted by the extensive body of current research into the use of aviation training devices."

The society noted that modern ATDs such as those made by Redbird "replicate sensory inputs with an incredible degree of accuracy" and that instructors do need to incorporate all of a student's senses in learning. But instructors also have to teach students to "ignore sensory inputs," for example, at night, on narrow or sloping runways, landing on glassy water and in IMC. "We believe ATDs can provide the student with excellent opportunities to focus on learning the correct procedures for these kinds of operations without interference from conflicting or adverse sensory inputs before being exposed to them in the live flight environment where confusion can occur between the 'butt' and the brain until training and experience overcome the sensory input."

Simulation has been proven to speed learning, enhance student retention, boost confidence and reduce accidents, both during training and in normal operations. The commenter claims that "ATDs fail to convey fear associated with real-world flying," Safe wrote, adding: "Scaring students should never be the goal of flight training whether on an ATD or in the air. We would point out that ATDs have proved effective in practicing certain emergencies that are simply too dangerous to practice in the air and building pilot confidence in being prepared to handle such 'worst case' situations should they occur for real."

As to the commenter's statement that the aviation "industry is willing to trade safety for cost savings," Safe added, "This is outlandish and unsubstantiated. Successful industries value safety highly, understanding that it has a major impact on public perception and on the bottom line. If ATDs did not result in better trained, safer pilots, and in a cost-effective manner, they would not be used extensively by the military, the airlines, corporate operators and flight schools."

Jerry Gregoire, founder of Redbird Simulations, told **AIN**, "We believe any action that restricts students from taking full advantage of training technologies is a serious mistake. It is hard to believe that inadvertent language followed by this botched effort to solve the problem inside the FAA leaves us where we are today. The fact is that the major flight training organizations across the country and around the world are using Redbird and other simulators because they work."

### Advancing the Rule

The only way now for the FAA to adopt the training times in the rescinded final rule is to go through the rulemaking process, which could take years. And the industry will have to go back to the previous unwieldy system of FAA inspectors issuing waivers for additional loggable training time in ATDs.

The Aircraft Owners and Pilots Association has asked the agency to expedite the rulemaking process. "We believe that ATD training is a critical component of earning an instrument rating because it creates a more efficient and effective training experience," said AOPA director of regulatory affairs David Oord. "Through simulation, students can fly many more approaches of all types, safely experience critical instrument failures and emergencies and practice decision-making under challenging conditions set by their instructors. At the same time, ATD training is far less expensive than equivalent time in an airplane."

According to an FAA spokesman, "Withdrawal of the direct to final rule was necessary to comply with 14 CFR part 11, which governs the FAA's rulemaking procedures. The withdrawal of the rule was an administrative requirement and not reflective of a change in philosophy concerning the use of aviation training devices. The FAA is in the process of a rulemaking project titled Aviation Training Devices; Pilot Certification, Training, and Pilot Schools; Other Provisions. Any future rulemaking activity would need to take into account the withdrawal of the direct to final rule. However, the FAA is still actively engaged in rulemaking that would amend crediting provisions for ATDs as described above." ❑

## Questionable 'customers' target charter operators

▶ *Continued from preceding page*

management, jet cards and other services and that it has received a new large-cabin business jet into its fleet. AIN telephoned and emailed the company in an attempt to confirm information on the website and also to ask whether this person named by Zaher was involved with the company. AIN also sent an internal message, via the same social media network mentioned with the previous individual, to this person, who also had a profile; no reply was received.

During the telephone call to the company, a receptionist answered and said, "We cannot reach [this person]," then asked AIN to leave a message and promised to give him AIN's and telephone number. In response to AIN's email requesting more information, including what happened to the funds owed to Paramount, the following response came from a person with a different name at the company:

*Who is the Paramount Business Jets and who is the [company named by Zaher]?*

*I think you have some wrong informations.*

*Our [person] leave in Dubai and he is the representative of Middle East Group since 7 years.*

*Please check your informations.*

*We own a [large-cabin jet] who will be in operation on the next two weeks.*

*I m not able to give you more informations at this time.*

*I will ask to Mr. [this person] to contact you as soon as possible.*

AIN responded to this email, requesting further information about the large-cabin jet and other company activities, including information on the identities of the management team. We also asked whether the email respondent was the same person that Zaher dealt with. As of January 13, AIN had not received further response or a telephone call from anyone at that company.

A search for the company on the Web turned up two other pieces of information. One was an advertisement on an aircraft sales website listing for $5.9 million one-tenth shares of the same large-cabin business jet that the company said it has added to its fleet. The same airplane was listed on another sales website, but priced at $6.2 million for a share of the same size. AIN could find no records of the existence of that particular jet with the registration number shown. ❑

# Seasoned fliers boost Wheels Up client rolls

Private aviation program Wheels Up says it achieved its key goals for 2014, taking its fleet to 37 aircraft and its membership base to just above 1,000 by year-end. In the coming months, the company expects to agree on the next phase of fleet expansion by establishing with Textron Aviation the rate at which it will exercise options for more King Air 350is and Citation Excel/XLSs.

The Wheels Up fleet, managed and operated by Gama Aviation, now consists of 27 King Air 350is and 10 Citations. Agreements signed after the program launch in July 2013 call for up to 105 King Air 350is and an initial 20 Citations. Wheels Up is now targeting a client base of 2,150 members by year-end and expects to boost its activity levels from more than 10,000 hours from service launch in November 2013 to the end of 2014 to between 20,000 and 25,000 hours this year.

Wheels Up founder and CEO Kenny Dichter told **AIN** that he wants to launch initial operations in Europe by late this year or early next. "We are definitely on track with our fleet expansion plans and we've seen incredible growth with a powerful set of members that is just getting started," he commented.

According to Dichter, Wheels Up's growing membership roster includes significant numbers of experienced private fliers. "If there has been a surprise it has been how well the King Air 350i has resonated with people who have previously been flying in light to midsize jets," he noted. "We have also had great success with what we call concept buyers, people who have not previously been part of private aviation programs." He added that the age profile of Wheels Up members is relatively young overall and that there is a clear "gender balance" in terms of the number of women members. *–C.A.*



## *Jet fuel pricing*

▶ *Continued from page 10*

price, industry veteran John Enticknap, founding principal of FBO industry consultant Aviation Business Strategies Group, told **AIN**. "With the rapidly falling fuel prices, inventory management on their cost has been a real struggle."

"The price came down so hard so fast that I think many folks who were sitting on inventory–retailers, resellers–took losses," said McCullough. He believes that the market has gained some measure of relative stability over the last several weeks.

The price an FBO pays for a gallon of jet fuel makes up 40 to 60 percent of the final price it charges, and the formulas each company uses to determine its posted price remain closely guarded. However, all face a similar reality: their fixed costs, such as lease/rent, labor, fuel truck operations, insurance premiums, pumping and flowage fees, remain constant no matter the current price of crude oil. FBOs are like any other business in that they aim to make a profit, Enticknap pointed out, and the recent situation allowed some to make up some lost ground. "FBOs have been under quite a bit of margin pressure because of contract fuel issues. Selling at the posted price is a myth; it's always discounted, and the contract fuel suppliers have pressed that a lot harder," he told **AIN**, adding that the lower prices have allowed operators to stretch their margins.

However low the prices sink, consumers shouldn't grow too fond of them. Most analysts expect the price of crude to rebound to $70 to $90 a barrel by the middle to end of this year. ❑

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# *Citation aileron cable subject of unapproved parts notice*

by Kerry Lynch

In an unusual move, the FAA recently issued a suspected unapproved parts (SUP) notice warning that some Cessna-built and -supplied aileron cables for the Citation 560XLS might not meet type design. The SUP notice is the first in years that directly involves a business aircraft manufacturer.

The agency typically issues between five and 15 notices a year, covering everything from improperly maintained or imported parts to components produced without production approval. Few if any of the notices over the past decade covered an issue stemming directly from the aircraft manufacturer.

In Cessna's case, the FAA said the SUP notice involves a manufacturing issue.

Released in late December, the SUP notice warns that certain Cessna-supplied aileron cables for the 560XLS might not meet type design requirements and should be "quarantined" until the parts can be verified.

The SUP notice covers aileron cables marked with work order number 2344905 and have the part number 6660002-14.

Cessna confirmed that it built the part, but the FAA said even if it was supplied through a contractor, "as the production approval holder Cessna is responsible for the cable no matter where it is manufactured."

The SUP notice states that an FAA investigation revealed that Cessna sold the parts without ensuring the cables met the approved type design.

The agency began investigating after receiving a tip about a nonconforming part through the SUP hotline. The approved design calls for the cable to have a double shanked ball end, but the suspect cables have only a single shank end, the agency said, clarifying that a manufacturing issue–not a paperwork problem–prompted the SUP notice.

Cessna said that the problem is limited to a "small number of aileron cables [that] were distributed by the company with an incorrect single shank swaged end, rather than the approved double shank swaged end."

### Cessna Addresses Issue

The company has taken action to address the issue, saying it is working closely with its customers and with maintenance facilities on the appropriate replacement part. "A service letter has been distributed notifying customers and maintenance facilities to inspect the part for the proper terminal end and replace the part as necessary during the aircraft's next regularly scheduled maintenance event," said Cessna.

The FAA, which also encouraged operators, repair stations and other organizations to check their inventories for the affected parts, said it is satisfied that Cessna has addressed its concerns.

The agency acknowledged that this notice is unusual in that it involves the aircraft manufacturer: "To the best of our knowledge this is not a common occurrence," an FAA spokesman said. ❑

## WILLIAM E. BOEING JR. FLIES WEST

William E. Boeing, Jr., son of aviation pioneer and Boeing Company founder William Edward Boeing, passed away on January 8 at the age of 92. Boeing, a real-estate developer and philanthropist, was active in the creation and expansion of Seattle's Museum of Flight. He preserved the Boeing Company's birthplace, "the Red Barn," which is now part of the museum's collection. He was also involved in aviation education initiatives. Boeing chairman and CEO Jim McNerney said Boeing "helped showcase our heritage and inspire generations to join in and further advance the science and business of aerospace."

The American Institute of Aeronautics and Astronautics presented a certificate of appreciation to Boeing in 2010 for his "lifelong role in aviation, his dedicated support to education, and his significant commitment to the preservation of air and space history." –*K.L.*


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## *Tax debate*

▶ *Continued from page 6*

support for the tax breaks in the 2014 package is strong enough that Congress has some incentive to renew them again this year. "There is broad-based support for [measures] like the R&D credit," Bolen added.

The R&D tax credit is worth millions to larger manufacturers and is proportionately as important to smaller ones, noted GAMA president and CEO Pete Bunce. Encouraging is that R&D was one of the few tax credits that House lawmakers had attempted to make permanent. "Making R&D permanent would be huge for our members. It helps keep up the development cycle," said Bunce, noting that R&D has been a significant factor for helping lift companies out of the doldrums of the economic downturn.

Another provision adopted in the so-called "tax extenders" package in 2014 was a measure permitting small businesses to expense certain assets, such as aircraft parts. Strongly supported by industry groups, the Section 179 expensing measure provides a boost for small aviation businesses, said NATA president and CEO Tom Hendricks.

A third measure included in the 2014 package and followed closely by industry was bonus depreciation, which enables businesses to deduct 50 percent of qualified assets, including business aircraft, purchased last year. But bonus depreciation remains one of the more controversial tax measures, with key Democrats saying its purpose was to jump-start the economy and that it was never intended to become a permanent tax change. Some Democrats also question its effectiveness as a job creator.

### In Defense of Bonus Depreciation

Industry groups, however, disagree, calling bonus depreciation an important stimulus for the economy, which translates into more jobs. NBAA had noted that bonus depreciation boosts investment, "unleashing more potential growth for the aircraft industry and, in fact, all companies investing in business assets."

"We are starting to see positive signs in the industry. Things are generally improving," said Hendricks, adding that bonus depreciation is one of the measures that can help boost the momentum of that improvement.

A coalition of 500 industry groups, including GAMA, NBAA and NATA, had urged Congress late last year to act quickly to get the most benefit out of bonus depreciation. Although companies that purchased aircraft last year will be able to take advantage of the provision, the late-2014 passage of the tax extenders package limited the use of bonus depreciation to spur investment to the final few weeks of the year.

While glad that bonus depreciation was adopted, industry leaders were disappointed that the late passage of the bill generated probably only a few sales, said Bunce.

However, more important to them was the fact that the measure was packaged with the tax extenders bill, making it more likely that it will be included in future bills.

Also important to them is that business aircraft were not treated separately, something the White House and some key lawmakers have advocated in recent years, at least in terms of depreciation schedules. "We should not be singled out," Bunce said.

The multi-industry coalition has already begun discussions for another push this year to renew bonus depreciation. Some backers are hoping Congress will renew the tax provisions short-term while they continue to debate long-term tax reform. "We'd like to see an extension earlier rather than later," said Bill Deere, NATA senior v-p for government and external affairs. ❑

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# Charter portal Avinode aims to build U.S. market share

by Matt Thurber

Online charter data portal Avinode continues to develop products for its charter operator and broker members but is not aiming to serve buyers of charter lift directly.

Some confusion about Avinode's role may derive from comments made by Avinode co-founder and CEO Niklas Berg late last year, in which he discussed the company's real-time booking functionality and cited the travel-booking website Expedia.



The goal is to make "transparency around booking a jet simpler," explained Avinode managing director Oliver King, but not at the expense of Avinode members. "We are purely a business-to-business distribution system. Avinode is categorically not playing a direct business-to-consumer role itself. That has been the fear of everyone from the broker side since Avinode started. It never happened because it wasn't our vision. Our vision is to build a distribution system. We are not a front end for [charter-buying] customers."

### Automating the Booking Process

The real-time booking functionality means improving transaction efficiency for Avinode members, who pay monthly subscription fees for access to the service. Avinode is adding to its application programming interface (API) services and expected to launch a booking reference service by the end of last month. The idea for the booking reference is to create a system in which all parties involved with a transaction can view information related to that transaction. King said he expects the new booking reference service to be fully functional by the end of June this year.

The expanded API capabilities are focused on helping Avinode members find and reserve empty legs more efficiently and improve search functions within the Avinode system. The API will help facilitate one-way fixed-price charters, King explained, characterizing them as a growing and popular form of charter flying. "We would like to be able to support that," he said. The API allows members to incorporate Avinode raw data into their own systems, including mobile applications.

For brokers, the new APIs and booking reference service should make it possible to arrange trips without the lengthy human-to-human negotiation typically required. "In this way, we sit in the middle of the distribution players," said King. Profit margins are so slim in the charter business, especially for lighter jets, that it makes sense to allow charter customers to book charters online, whether from a broker or directly with the operator. "You are seeing that happen in the entry-level light jet segment both in Europe and the U.S.," he said. "Profit margins that used to be made are not there; it's much more cutthroat, and you don't want expensive humans involved in booking it. Customers want to book private jets this way."

That said, however, he acknowledged that "booking a private jet is not the same as booking a hotel room. [Securing] a jet is by definition a much more complex process, and an awful lot needs to fall into place to make it work with the click of a button. I think that goal is many years away." But for popular routes with regular service, this new way of booking charters makes more sense. "I think we're close to that taking place in a couple of years," he said. "And Avinode is developing technology to enable these capabilities."

Avinode handled more than 2.5 million requests last year, and membership continues to grow. Following Multi Service's acquisition of a majority stake in Avinode late last year, the company is targeting growth in the U.S. "In Europe we're well established," King said, "and membership growth is far [lower]. The U.S. is the largest market in the world and we see plenty of opportunity for growth. Latin America has also been a fast-growing area for us." ❑

### Multi Service Stake in Avinode Fuels Product Development

Avinode will be stepping up investments in both its online charter portal and SchedAero flight scheduling system following the recent acquisition of a majority stake in the company by transaction management group Multi Service Technology Services. The value of the late December transaction was not disclosed, but Avinode's founders are retaining a minority stake.

Avinode co-founder and CEO Niklas Berg told **AIN** that the management team of the Sweden-based group will remain in place and that the company remains committed to a purely business-to-business model in which charter operators and brokers use the system to market flights to their customers.

*Avinode intends to develop its online database of more than 3,000 aircraft available for charter. said CEO Niklas Berg.*

"We have been approached many times [about a possible investment] by different financial and industrial players and we always said 'no,'" said Berg. "Then our board challenged us to consider what might happen if we brought in a strong financial partner and how the company might benefit from it." Avinode was eager to find an investor that would not compromise its neutral position in the market, by avoiding any competitive conflict of interest.

Last year Avinode sold risk management and safety audit specialist Wyvern Consulting to flight support group Nexus. Berg said this move was part of a plan to focus more intently on developing the Avinode and SchedAero products. "We want to be sure that Avinode is the need-to-have distribution system for charter operators and brokers, and that SchedAero is the best possible web-based flight scheduling system," he explained.

Charter brokers and operators can include some of Avinode's data and functionality as applications on their own websites. Berg said that future investment will focus on improving the quality and scope of the charter data, as well as on providing more training for customers to help them get the most from the technology.

"Avinode represents a best-in-class offering that brings exciting technological advances to this important sector of the industry," commented Brandon Spears, COO of U.S.-based Multi Service. *–C.A.*

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*One of 600 lucky turtles is prepared to hitch a ride from Cape Cod to a more hospitable climate.*

# Business aviation flies turtles

by Curt Epstein

Every year as summer turns to fall in the Northeastern U.S. and temperatures drop, sea turtles get stranded in Cape Cod, Mass. Usually, fewer than 100 of the endangered seagoing creatures wash up on local beaches, but last year–perhaps as a result of the mild fall weather–the sea turtles moved north from their traditional southern waters. When the inevitable cold weather moved in, currents trapped them in Cape Cod Bay, and conservationists reported strandings of nearly 2,000 mostly young turtles, far more than local institutions such as the New England Aquarium could accommodate. Turtles are susceptible to cold shock, so if they were to survive they needed to be transported to southern facilities in a climate-controlled manner, and quickly.

Leslie Weinstein, founder and manager of aviation fastener manufacturer True-Lock and a board member of the University of Florida's Archie Carr Center for Sea Turtle Research, knew that business aircraft would be the perfect tool and swiftly spread the word through his aviation industry contacts and through the media.

### Volunteers Step In

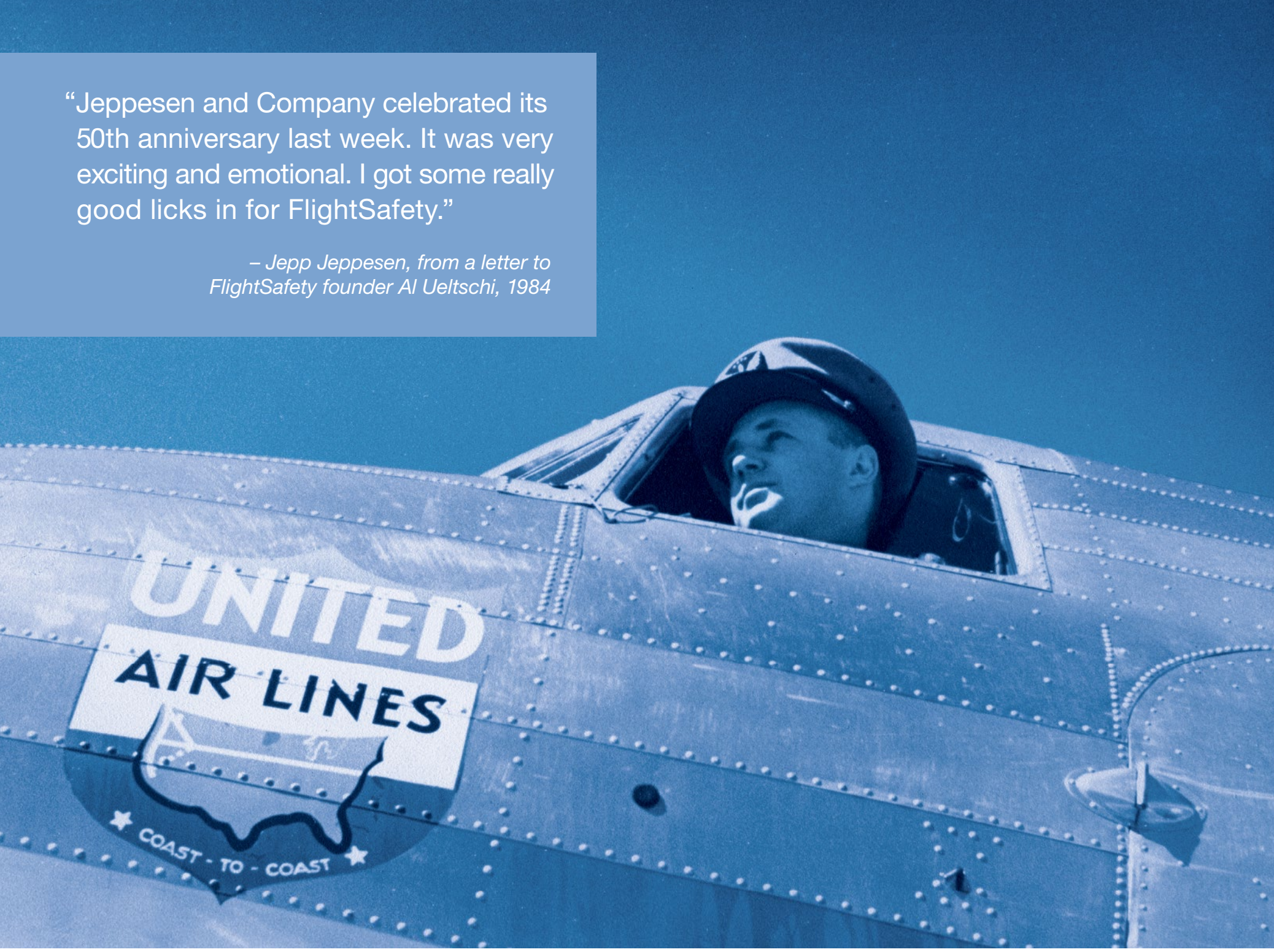
By December 15, when he scheduled the last flight, Weinstein calculated that approximately 600 sea turtles had been transported on 16 private flights. One of the volunteer aircraft was a PC-12 flown by an operator out of Caldwell Airport in northern New Jersey. He had planned to fly down to Florida with his wife and three children for the Thanksgiving holiday, and upon learning about the emergency decided they would make a quick side trip to New England before heading south. A team from the National Oceanic and Atmospheric Administration (NOAA) met the aircraft at Boston-area Norwood Airport. In 10 minutes, boxes containing 50 of the four- to five-pound turtles, each roughly the size of a dinner plate, were loaded on board and the aircraft was ready to depart.

During the flight, the pilot reported no odor or moisture issues from his unusual cargo. "I've certainly flown passengers who were less pleasant to be with than these sea turtles," he told **AIN**. "One of them was feeling pretty good and apparently would poke his head up every now and then and flap a flipper, but the kids reported the turtles stayed put and didn't complain."

Chaz Harris, flight department manager for Massachusetts-based family-owned Polar Beverages, made a similar trip, and this wasn't his first. The company frequently shuttles its Beechcraft King Air 350 between its Worcester headquarters and its other plant in Georgia. Two years ago, when Superstorm Sandy left many stranded turtles, one of the members of the family, who happened to be a board member of the New England Aquarium, offered space on the twin turboprop. The aircraft carried several Loggerhead turtles (approximately 75 pounds each) along with their plastic cages. Though there was no water involved, the normally aquatic creatures had to be supported on blankets and towels during the transport to ease their breathing. This time Harris found room on his flight to Malcolm McKinnon Airport, near Brunswick, to accommodate four 40- to 45-pound Loggerheads in their enclosures along with another six smaller turtles in their boxes. They were delivered to a team from the Georgia Sea Turtle Center.

*One volunteer's PC-12 loaded with turtles for the trip from Norwood.*

While Weinstein had heard estimates of approximately 1,000 of the stranded turtles perishing, of the 600 that were "air mailed," the vast majority survived to be rehabilitated and returned to the wild. "We wish we could have gotten some larger aircraft," he told **AIN**. "We could have saved a lot more turtles." ❑




"Jeppesen and Company celebrated its 50th anniversary last week. It was very exciting and emotional. I got some really good licks in for FlightSafety."

*– Jepp Jeppesen, from a letter to FlightSafety founder Al Ueltschi, 1984*

# A Legacy of Trust


## ELREY B. JEPPESEN *Navigational Aviation Pioneer*

Aviation pioneers Elrey "Jepp" Jeppesen and Al Ueltschi started out as barnstormers and went on to become industry leaders and icons. They were close friends and business colleagues who led industry-changing efforts to make aviation safer.

Their correspondence, now housed in Seattle's Museum of Flight, illuminates their mutual respect and goals. In 1962 Ueltschi wrote in a letter to Jeppesen, "If we can provide the finest instruction and equipment, our Company should continue to grow even more." Jeppesen shared how he actively promoted FlightSafety, whether at aviation events or in one-on-one interactions. As a longstanding member of FlightSafety's board of directors, Jeppesen was directly involved in the business. Al and Jepp discussed such milestones as ferrying the first Falcon aircraft across the ocean and the arrival of FlightSafety's Gulfstream, Falcon and JetStar simulators.

The company Jepp founded in 1934 continues to help aviation professionals worldwide reach their destinations safely and efficiently. Al's commitment in 1951 to provide the very best training and simulators remains at the core of FlightSafety's mission to enhance aviation safety around the world.

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# Learjet 85 halted

▶ *Continued from page 1*

Rolland Vincent disputes Bombardier's assertion that the light jet market is experiencing "weakness." Vincent, the creator of JetNet IQ and former marketing and communications director at Learjet, said he is forecasting "no decrease" in the light or midsize jet market. In fact, he is merely reallocating the market share for the Learjet 85 to competitors, namely the Embraer Legacy 450/500 and Cessna Citation Latitude. "This is good news for these two manufacturers," he told **AIN**. "But what this move really comes down to is a CSeries cost-reduction program. It's not a light or midsize jet market issue."

Vincent also contends that the "pause" is a "de facto cancellation" of the Learjet 85. He believes that Bombardier "might try to market the program to other companies or sell the Learjet 85 assets."

Richard Aboulafia, vice president of analysis at the Teal Group, agreed, commenting that the Learjet 85 had become "another CSeries casualty. What a carnivorous program that's turned out to be. Embraer is the big winner here. The 500 is arriving at exactly the right time."

Business aircraft market tracker Brian Foley added, "It's refreshing to see Bombardier show some level of transparency, which should normally be a matter of full disclosure to shareholders. Now, about that CSeries being delivered later this year…"

### Program Costs

The decision, however, sparked concerns among analysts that Bombardier is facing liquidity issues. Analysts closely questioned the manufacturer about its liquidity position during a January 15 call.

"Liquidity is now the key issue for the stock," said Nadol, noting that the $2.4 billion cash at the end of the year was $600 million below estimates. "Management has noted in the past that it needs about $2 billion to run the business, and Bombardier typically burns cash during the first nine months of the year." Further causing concern was a decision by Bombardier to lower its margin guidance for the Aerospace group to 4 percent for the year, instead of 5 percent.

The $1.4 billion impairment charge is primarily related to development costs for the composite Learjet 85. In addition, Bombardier is planning a $25 million severance provision in the first quarter of this year as it cuts its workforce in Querétaro, Mexico, and Wichita. The reductions will begin immediately, with Wichita accounting for 620 of the job losses.

But Bombardier stressed that each location remains a critical part of its activities, with Wichita housing Learjet 70 and 75 assembly, along with the Bombardier flight-test center and a service center. Querétaro, meanwhile, is providing structures for the Globals.

The decision comes less than a year after the Learjet 85 completed its first flight in April 2014. Bombardier would not reveal a certification schedule though, saying only that it was accruing hours and the program was progressing well. Bombardier had completed more than 70 test flights. The company had also nearly completed a second flight-test vehicle, and Beaudoin said it was almost ready to move into the flight-test program.

The company brought the Learjet 85 to the most recent NBAA Convention in Orlando, providing a public showing that the company was still backing the model at the time. But speculation continued over the program's ultimate fate.

Company executives maintain that its decision is just a pause and that the program will be ready to ramp back up should the market dictate. When the market picks up, Beaudoin said, "I think we have a fantastic airplane." However, he would not estimate how long it would take to ramp the program back up, given the layoffs and writeoffs.

"If Bombardier recovers from the CSeries, the Learjet 85 could be relaunched, although it might come back as something less ambitious, which is just as well," Aboulafia said. "It's far from clear that the market wants a composite jet."

In the meantime, Bombardier is working with its Learjet 85 customer base. The company is not revealing total number of orders for the jet, but Flexjet had been the aircraft's largest customer with firm orders for 60 valued at $1.2 billion.

Bombardier is hoping to shift those customers either to its 70/75 or up into the Challenger line. Otherwise, it will refund deposits. But Beaudoin said of the deposits, "It is not a significant amount." This is particularly true because with fleet orders, the deposits are spaced out according to the lead times of the delivery schedule. ❑



## ITALY FBO GROUP PROMISES IMPROVED HANDLING STANDARDS

Several Italian airports and FBOs have combined to form a consortium intended to offer business aircraft operators 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 the following locations: Cagliari (LIEE), Salerno (LIRI), Bari (LIBD), Brindisi (LIBR), Perugia (LIRZ), Florence (LIRQ), Pisa (LIRP), Treviso (LIPH), Venice (LIPZ), Verona (LIPQ), Brescia (LIPO), Genoa (LIMJ), Milan Linate, Rome Ciampino, Olbia, Bologna, Siena and Trapani (LICT).

According to representatives of the founding companies, Italy FBO's members want to remedy a situation in which operators are allegedly suffering at the hands of what they characterize as "rogue handling providers" who are not approved or equipped to provide the services they advertise. A spokesman for the group told **AIN** that Italy's complex bureaucracy and inconsistent application of rules has resulted in widespread confusion about which companies can legitimately provide handling services at the country's airports.

In 1999, new European Union rules required stiffer competition for handling for airports with more than three million passengers per year, or with more than two million in the six months in the period before the preceding April 1 or October 1. In practice, the country's municipally owned airports in large part resisted implementing the rule, drawing accusations from operators that a lack of competition had resulted in poor service and excessive prices at some locations.

But Italy FBO's founders say that the pendulum has now swung too far the other way: with relaxation of the handling market, there is excessive competition at smaller airports and confusion about whether handling providers are authorized and equipped to provide the required services. In many cases, the group claims, handling providers are doing no more than remote supervision of handling provided by a third party.

The founders include FBO groups Delta Aerotaxi (present at Florence, Pisa, Perugia, Bari and Brindisi), Venice Aviation (Venice and Treviso) and Sogaerdyn (Cagliari). The group is committed to ensuring operators have access to a dedicated private terminal building and all the trained personnel and equipment needed to provide full-service handling.

Italy FBO will make its public debut at NBAA's Schedulers & Dispatchers show in San Jose, Calif., z February 3 to 6. –*C.A.*

# U.S. Army issues RFI for eLoran receivers

by John Sheridan

On Sept. 10, 2001, the DOT's Volpe Transportation Center in Cambridge, Mass., warned that the very low-powered signals of the global positioning system (GPS) were vulnerable to both unintentional and deliberate jamming. Tests showed that powerful jammers could overcome GPS signals at ranges of 300 to 400 miles from the jamming source. High-powered jammers are not the only threat: several years ago a small half-mile-range $50 "truckers' special" jammer blocked FAA GPS landing guidance tests for more than a year at Newark Airport before being traced and confiscated. Those jammers are now illegal.

To counter the GPS jamming threat, the FAA, DOD and several other government and industry specialists established a Position, Navigation and Timing (PNT) committee to assess countermeasures against GPS jamming and "spoofing," where more powerful, but false, signals are transmitted. The agency released its finding on the subject at its PNT Symposium (*see box*).

Various PNT solutions to the loss of GPS have been studied over the past several years, involving combinations of VOR, DME, radar and certain ADS-B features but none has offered sufficient cost/benefits to justify national adoption. A total upgrade to the earlier Loran-C, named eLoran, was also proposed but not seriously considered. However, at press time **AIN** learned that the Army Contracting Command has issued a Request for Information (RFI) covering eLoran receivers. The RFI "provides an outline for the potential use of eLoran stand-alone and integrated (with GPS) receivers in Army and other Department of Defense (DOD) maritime, aviation and/or vehicular platforms and for position and timing purposes."

Besides technical details, the RFI requests rough order of magnitude per unit receiver costs, assuming a 50,000-unit order.

Differential eLoran tests by Dutch hydrographers at Rotterdam produced +/-5 meter lateral accuracies, versus +/-2 meters from GPS/Waas/SBAS in LPV applications. GPS receivers look for the four best positioned satellites of all those visible to derive their location. eLoran receivers look for the best combination of signals from the eLoran ground transmitter network. Positives: eLoran is essentially unjammable and offers a range of as much as 1,000 miles. Negatives: there are no airborne eLoran receivers or operational NAS ground stations–yet. ❑

### FAA Findings on GPS Jamming

- The FAA is dependent on GPS for navigation, surveillance and network/infrastructure timing.
- The majority of NextGen benefits currently rely on GPS and this reliance will increase in the future.
- GPS is vulnerable to unintentional or intentional interference. The GPS signal is almost a billion times weaker than other navigation signals (DME, VOR, ILS and so on).
- Inexpensive jamming and spoofing equipment and user tactics are widely available. ■

# 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.

## 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. |
| **Dornier Seaplane – Seastar C2D** (11/13 p. 38) | All-composite, push-pull twin-turboprop seaplane. Already FAA/EASA certified. Production resumption awaiting funding. |
| **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. mid-2015, service entry second half 2015. |
| **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. |
| **Mahindra – Airvan 10** (11/13 p. 37) | 10-seat single-engine turboprop, powered by RR250. First flight 5/1/12. Cert. 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. |
| **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. |
| **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** (9/14 p. 14) | 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. |
| **Piaggio – Avanti Evo** (1/15 p. 10) | Adds winglets, new nacelles, reshaped front wing, five-blade composite propellers. Range grows 17 percent to 1,470 nm. Deliveries possible by October 2014. |
| **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 was est. fourth quarter 2014. |

*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. |
| **AeroNimbus – NMX** (7/12 p. 48) | Twin-engine, all-metal very light jet, six to seven occupants, P&WC PW615 engines, range 1,290 nm. Progress unknown. |
| **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 pending. |
| **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** (5/14 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** (9/14 p. 12) | 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** (1/15 p.4) | 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** (1/15 p. 1) | Trijet, derivative of 7X with longer fuselage and 6,450-nm range. First flight 1Q/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. |
| **Gulfstream – G650ER** (6/14 p. 1) | Extended-range version of G650, to 7,500 nm at Mach 0.85, with 4,000 added pounds of fuel capacity. Entry into service 1Q/15 following FAA cert. |
| **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** (8/14 p. 44) | Composite single-engine jet, engine choice not yet made, five seats, $1.5 million, 1,400 nm range. FAA/EASA cert. est. mid-2016. |
| **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 cert. 1Q/15 followed by service entry. |
| **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** (5/14 p. 71) | 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. |
| **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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## Looking to certification this year, Cirrus adds to SF50 test fleet

The third and final conforming Cirrus SF50 Vision single-engine jet completed its first flight, moving the program toward certification and first delivery by late this year. The third aircraft, "C2," took off from Duluth International Airport (KDLH) on December 20 at 2 p.m. and flew for 20 minutes. "Though this first flight was planned to be brief, C2 flew as predicted and initial handling qualities were confirmed," said Mike Stevens, director of engineering flight test.

C2 joins C0 and C1 in the flight test program, which has accumulated 177 flights and more than 250 hours. C0 first flew in March and has tested aerodynamic performance and handling qualities. In-flight parachute testing with C0 is expected shortly. C1 flew November 25 and is focused on flight into known icing. C2 will be used for reliability and optional equipment testing, along with flight standards and training evaluations.

Cirrus expects the first production aircraft, P1, to roll off the assembly line in this year's second half. The company claims more than 500 position holders for the $1.96 million carbon-fiber aircraft. *–K.L.*

***The final conforming Cirrus SF50 Vision took to the air for the first time on December 20.***

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# Training, cost control key in aircraft acquisition decision

by Harry Weisberger

A brighter outlook for business aviation, evident in a resurgence of bizav activity, suggests that the overall economy may have turned the corner toward recovery.

New aircraft sales volume, at approximately $21 billion, has returned to its pre-recession level and most indications suggest a strengthening business aviation industry. The improvement will be slow at first but it will accelerate significantly after this year, at perhaps 3 to 5 percent annually throughout the decade. Increased business activity by smaller companies will see Barons replaced with turboprops and King Airs exchanged for jets. Booming activity in the MRO industries reflects this upturn, with more pre-purchase inspections of pre-owned aircraft translating to more pre-owned aircraft sales, resulting in firming and then climbing pre-owned prices.

With this rosier report card/crystal ball serving as the backdrop, Conklin & de Decker's 15th annual Aircraft Acquisition Planning seminar attracted a near-record number of attendees from the ranks of aircraft operators, FBOs, charter and fractional operators, aircraft brokers and management companies, legal services and guaranteed maintenance program providers. Six guest speakers joined the four Conklin & de Decker co-owners to present insight into aircraft financing, tax issues and wise aircraft acquisition strategies.

In the 1970s, jet aircraft acquisition revolved around the "glamour" of owning one, and cost ran a distant second, remarked Conklin & de Decker co-founder Bill de Decker. That has changed markedly, he noted, and today it's cost that drives the decision, with company financial officers often having the final say. He outlined the advantages and disadvantages of whole-aircraft ownership, as opposed to leasing, using financial analysis of all costs–not only acquisition, operating and maintenance but also crew expense and insurance premiums.

### Risk Management Is Key

Insurance premiums are affected by risk management strategies, which are beginning to include innovative flight crew training programs aimed at preventing loss of control in flight (LOC-I), a major cause of fatal airline and business aviation accidents. Andrew Spiegel, vice president for underwriting at USAIG in Los Angeles, discussed how risk management programs might reduce premiums. He said including flight training in an existing safety management system (SMS) could make an operator's risk more attractive to underwriters. Spiegel said that although USAIG is evaluating the risk mitigation potential of such training it has not yet instituted formal premium incentives to encourage it.

Upset prevention and recovery training (UPRT) that does offer such incentives is an arrangement among

### Accounting for Taxes and Personal Use

Those looking to acquire an aircraft need to consider the tax implications. Conklin & de Decker's Nel Stubbs concluded the seminar with a review of recent state sales, property and use tax changes along with a detailed explanation of federal excise tax and who is obligated to pay and collect it. She covered how depreciation schedules differ for aircraft operating under FAR Part 91 or Part 135. Her analysis also touched upon the possible effects of non-business aircraft use on the company's bottom line. Stubbs listed "Gotcha States" that impose a tax or fee on an aircraft that comes into the state on a "regular" basis even though that aircraft has been properly registered in another state. "This is seen in states that have registration fees, license taxes or similar taxes, including Arizona, Virginia, Minnesota, Washington and Maine." She added, "This is also true of any state with personal-property taxes, Kentucky, Texas, California and Missouri, to name a few."

She cautioned, "There are a lot of state tax audits going on to recover sales, use and personal-property taxes along with aircraft license and registration fees." Stubbs went into detail about how to prepare for a federal excise tax audit, pointing out that the IRS considers even some Part 91 operators obligated to collect and pay the commercial FET. She said the best place for an owner whose aircraft is operated through a management company to begin preparing for such an audit is with a carefully worded management agreement.

"It should precisely show who pays and employs the pilots, who has the control of the pilots, pays for insurance, hangar, maintenance and fuel. Owners should directly pay for as much as they can," she advised so as to avoid the appearance of taxable transactions taking place. If an operator flies solely under Part 91 and assumes that his non-commercial FET is automatically paid though the fuel tax, "…it's not necessarily so," Stubbs cautioned, explaining, "The IRS and the FAA disagree on the definition of 'commercial.' IRS Rev Ruling 78-75 states that the FAA's definition of commercial is not determinative in deciding which tax applies. The IRS perspective is that an operation can be Part 91 for FAA purposes but subject to the commercial FET."

The IRS is currently focusing particular attention on aircraft that are managed even though operated wholly under Part 91, she noted. *–H.W.*

international risk reinsurer and underwriter Swiss Re, flight simulation provider CAE and training operator Aviation Performance Solutions (APS), based at Mesa Gateway Airport (Phoenix). Swiss Re's Corporate Solutions offers premium credits of up to $25,000 to offset UPRT course costs as well as those of initial and recurrent pilot training.

To date, four companies have sent pilots to the UPRT course and approximately 20 have completed it, with another six companies signed up, said Drake Manning, communications vice president for SR Corporate Solutions. "There are other such programs available in the industry, but we are not aware of any offering this same approach and, to our knowledge, no other offers financial incentives tied to aviation risk management and insurance."

The three-day UPRT program integrates preparatory web-based self-study, 4.5 flight hours in the high-performance aerobatic Extra 300L, 7.5 hours of ground instruction, a one-hour jet-specific briefing, and a two-hour session in a model-specific Level-D CAE business jet full-flight simulator.

Total cost is $6,922 per pilot. APS offers an optional add-on to the Swiss Re/CAE/APS syllabus: the A-4 Skyhawk upset recovery program, which provides actual experience in departing the envelope during high-altitude (above FL300), all-attitude high-Mach flight.

### Deciding on the Right Aircraft

Conklin & de Decker co-owner David Wyndham discussed how best to match an aircraft acquisition to the company's mission. This, he said, requires a detailed analysis of planned aircraft use and the difference between "nice to have" and "must have" capabilities. He explained how changes in transportation requirements can dictate acquiring different aircraft, or switching from owning aircraft to leasing or chartering to serve the mission.

Bill Quinn, of Aviation Management Systems, Portsmouth, N.H., explained why pre-buy inspections are essential to the acquisition process. He described buying an aircraft without a comprehensive pre-purchase inspection as "playing Russian Roulette with a fully loaded gun." Quinn stressed that the value of the pre-buy to the purchaser is determined long before it takes place. "The rules of the game are established right at the start, by the wording of the purchase agreement or letter of intent," he said. "If everything isn't spelled out then, you may get only the inspection the seller wants you to get, and on his terms."

Conklin & de Decker co-owner Brandon Battles explained the significance of asset management to flight departments. "Aviation assets are all the elements of an aviation operation," not just the aircraft, he advised. They include real property, employees and, where the flight department does its own maintenance, parts, inventory and equipment. The department manager must be able to account for and justify them to his company's financial officers through a complete, understandable budget. ❑

# *Georgia Tech and Gulfstream partner to train returning vets*

by David A. Lombardo

Veterans face a higher unemployment rate than civilians, for reasons that include a lack of civilian work experience and challenges transitioning to a new organization with a very different language and culture. In an effort to help veterans make the transition, Gulfstream Aerospace is sponsoring active-duty Army soldiers for a four-week internship program. The initiative is part of the Georgia Institute of Technology's Veterans Education Training and Transition (VET2) program, which lays claim to being the first of its kind in the nation.

VET2 began in August 2013 as a pilot program designed to help service members who had already left the military transition to the civilian workforce. "It took about a year to get corporate sponsors to fund the program and work out the details," Dr. James Wilburn, military program director for Georgia Tech Professional Education, told **AIN**.

Wilburn, an Army Aviation Officer who separated from the service in 2012, was contacted by the university and asked to help develop and lead the program because of his background.

The purpose of VET2 is to teach veterans how to transition from a military environment to a civilian organization and its own unique culture. "We're not technology specific; we're about teaching them to transition their existing military skills to a civilian purpose. We have companies that are looking for a wide diversity of skills, from information technology to hands-on mechanical work," he said.

The Department of Defense recently approved a significant change to the program that allows active-duty personnel who will be separating from the service in the near future to participate. The first three active-duty personnel, all rotary-wing mechanics stationed at Hunter Army Airfield, began the program on January 12 and will be doing an internship with Gulfstream Aerospace.

"Gulfstream is pleased to be the first corporate sponsor for Georgia Tech's VET2 active-duty military internship program," said Don Moore, military outreach manager at Gulfstream. "As a Military Friendly Employer, Gulfstream appreciates the sought-after characteristics veterans bring to the civilian workforce, including 'can do' attitudes, global perspectives, punctuality, the ability to remain calm under pressure and proven leadership skills."

VET2 carries no costs for service members. After completing the first week of academic training, veterans have the chance to demonstrate their skills in a three-week placement opportunity with an employer. At the end of the course, participants will not only earn a professional certificate from a world-renowned academic institution but will also be well positioned for landing a civilian job.

Wilburn said the next phase currently in the planning stages is to work with service members who have skill sets that are more challenging to find in the civilian market. "We're looking at putting some of our professional education courses into play, such as marrying a Lean Six Sigma Green Belt program with VET2. Our students are appreciative, hard charging and enthusiastic about moving into the next phase of their lives," Wilburn said. ❑

## NEWS UPDATE

### No LOA for Asia-Pac ADS-B Ops

In a bit of good news for operators flying in flight information regions (FIRs) controlled by Hong Kong, Vietnam and Singapore, the regional ICAO office in Bangkok eliminated the requirement for operational approval for ADS-B OUT, according to NBAA. Before this action, operators planning to fly above FL290 in these regions had to carry a letter of authorization from their regulatory authority. "In the guidance," NBAA noted, "ICAO acknowledged that some states have no or insufficient operational approval processes, and the operational approval itself does not contribute to safe operations." Although Indonesia is planning to require operational approval for FIRs that it controls, NBAA v-p of regulatory affairs Doug Carr explained, "This new ICAO letter will allow Indonesia and other states to relax their ADS-B [operational approval requirement] mandates."

### Pilot to FAA: Change ADS-B Mandate

John Collins, a pilot based in Charlotte, N.C., has submitted a petition to the FAA "to eliminate the ADS-B equipage requirement for aircraft certified with an electrical system to operate within the mode-C veil, while below 10,000 feet msl as long as they remain clear of all Class B and C airspace." The FAA mandate for aircraft to meet the ADS-B OUT equipage requirement takes effect after midnight on Dec. 31, 2019, and generally applies to airspace where a transponder is currently required. Aircraft certified without an electrical system, gliders and balloons are exempt.

The benefit of this change to the ADS-B rules would encourage owners of lower-cost aircraft flown for recreation to keep flying, instead of balancing the cost of ADS-B equipage against no longer flying. "This rule change will eliminate the unnecessary financial burden to the owner and the community and not adversely impact safety or access to these valuable airports," Collins wrote.

### Garmin ADS-B OUT STC'd for G150

The FAA STC'd a Garmin ADS-B OUT solution for the Gulfstream G150 that pairs a Garmin GTX 3000 mode-S extended-squitter remote transponder with the GDL 88 ADS-B datalink and three antennas. The GTX 3000 and GDL 88 provide DO-260B-compliant ADS-B OUT, with Waas/SBAS position provided by the GDL 88 and position information broadcast on both U.S. ADS-B OUT frequencies (1090 and 978 MHz), ensuring visibility to all ADS-B IN-equipped aircraft. ADS-B OUT equipment is available for in-production Gulfstreams (G280, G450, G550, G650) and out-of-production models (GIV, GIV-SP, G400, GV) and will be available for the G200 this year.

### Pro Star STCs Change 7.1 AML

The FAA issued an approved model list (AML) STC to Pro Star Aviation, Londonderry, N.H., for upgrade of the BendixKing CAS 67A Tcas II Change 7.0 to CAS 67B Change 7.1. This unit is installed in a variety of aircraftmade by Boeing, Beechcraft, Bombardier, Cessna, Dassault Falcon, Gulfstream, Hawker, Learjet, Lockheed and Sabreliner and meets the European Dec. 1, 2015 mandate. The upgrade is a software change and is available from authorized BendixKing and Honeywell dealers. *–Matt Thurber*

*The Astronautics Nexis EFB adds modern touchscreen avionics to older cockpits.*

# Virgin America chooses Nexis EFBs for A320 fleet

by Matt Thurber

Although tablet-based electronic flight bags (EFBs) are replacing paper charts in many business aviation and airline cockpits, there is still a robust market for Class 3 certified EFBs, and these are especially important for displaying new features that are part of the NextGen transformation of the National Airspace System. Many cockpits still are equipped with older avionics that cannot display NextGen features such as ADS-B IN Cockpit Display of Traffic Information (CDTI) and other applications, and certified EFBs remain a viable solution for these aircraft.

Milwaukee, Wis.-based Astronautics Corp of America has been manufacturing Class 3 certified EFBs since its first-generation system flew on Boeing's 777 in 2003 for launch customer KLM. That EFB's LCD was lit by cold-cathode fluorescent bulbs, but Astronautics soon fielded its generation-2 EFB with modern LED backlighting. These systems are installed on Boeing 737s, 777s, 747-8s and the 787.

More than 1,000 aircraft fly with Astronautics EFBs, according to Jason Shuler, product line manager for airborne servers and computing. The latest system is the Astronautics Nexis Flight Intelligence System, which features a touchscreen and solid-state data storage instead of a rotating hard drive. Virgin America's Airbus A320 fleet is the launch customer for Nexis.

The first installation took place last August, and the entire 50-plus A320 fleet will be fully equipped with Nexis systems in March next year.

"Our EFBs not only have intuitive user interfaces using the latest technology such as touchscreens [and] high-contrast LCDs but also have the benefit to fully integrate into the aircraft's avionics," said Astronautics president Chad Cundiff.

#### NextGen Applications

The key NextGen features that play on the Nexis EFB are SafeRoute applications, which Astronautics developed in partnership with Aviation Communication & Surveillance Systems (ACSS), a joint venture of L-3 Communications and Thales. SafeRoute software supports NextGen features enabled by ADS-B IN capability, such as the CDTI display of aircraft broadcasting their positions via ADS-B OUT. Other NextGen features include In-trail Procedures, which allow properly equipped aircraft to fly with closer spacing over areas without radar coverage; Merging & Spacing, which adjusts speed instructions to aircraft to maintain optimum spacing and prevent conflicts when flight paths merge near fixes or when approaching airports; and Surface Area Movement Management, which displays own-ship position and positions of other aircraft on airport diagrams.

"[Nexis] is bringing CDTI to the cockpit," Shuler said, "with own-ship position on en route charts and maps, and support for NextGen and [Europe's] Sesar. It allows operators to move in those directions without large-scale changes to the aircraft."

Astronautics is taking advantage of the processor power available in the Nexis system by developing experimental features that could be a great benefit for pilots. Shuler demonstrated a wind-shear display that depicts the location and likely effects of wind shear. He also demonstrated an experimental wake vortex display, which warns the pilot about danger zones in relation to nearby vortex-generating aircraft.

The Astronautics EFB system is an open-architecture design, which means that developers can create their own applications to run on Nexis. "We provide the full software development kit for third parties and operators to develop their own apps," Shuler said. "We don't know everything people are going to want to do five years from now, and we have the capability to be flexible." ❑

# ADS-B ground stations can be built at home

For less than $100, you can build a tiny receiver called PiAware that gives you a front-row seat to the automatic dependent surveillance-broadcast (ADS-B) landscape. The PiAware ground station setup employs a Raspberry Pi computer running the Linux operating system. On its website FlightAware has published complete build instructions with the parts needed, and once hooked into the FlightAware network, participating users have free access to the company's Enterprise account, which normally costs $89.95 per month.

I ordered all the parts from Amazon and spent about a day assembling my PiAware receiver and downloading and installing the software. Now my ground station is busy scanning the slim volume of sky viewable from my Los Angeles home office and helping FlightAware keep its data current and accurate.

The receiver was easy to put together. The parts include the Raspberry Pi B+ ($39), ADS-B USB dongle and antenna ($22), Raspberry Pi power supply ($9), SD card (8 GB minimum), Ethernet cable or Wi-Fi adapter ($9) and enclosure ($13). Because I don't have an Ethernet connection in my office, I used the Wi-Fi adapter to connect to the Internet. And I had to hook the ground station to a TV with an HDMI cable to set up the programming. The small antenna that I purchased works fairly well, but those with access to a roof with a clear view of the sky can get better reception with an outdoor antenna ($150).

Once the receiver is set up, there isn't much to do except make sure the ground station is online and that the software is current. There are occasional disruptions when my receiver drops offline, but switching it off then back on restores the connection.

The data provided by my PiAware receiver is viewable via two web pages. One is a user statistics

# Airport LED lighting

▶ Continued from page 1

light systems. In a situation where incandescent approach lights are comfortably viewable by pilots, LED runway and taxiway lights can emit much brighter light, according to NBAA, "causing pilots to be blinded by the brighter LEDs."

Pilots' reports about relative brightness in the NASA Aviation Safety Reporting System database, though few in number, confirm that there is a problem. **AIN** was able to find three such reports, one of which was filed before the new law was enacted. In this 2006 report, the pilot wrote, "I feel there are [problems] with the new LED [taxiway] lights. In ATL, they are replacing the old incandescent lights with new LED lights. They are very bright, making it difficult to taxi. Please look into this as it is a big human-factors event waiting to happen."

A 2011 report by an airline pilot using Albuquerque (N.M.) International Sunport complained about LED runway, taxiway and airfield marking lights. "When I landed, the lights throughout the airfield were on low, and they were exceptionally bright. The excessive brightness, particularly in the approach and flare, can lead to a lack of depth perception and could lead to very poor landings and touchdowns. The lights are so bright it leads to a loss of night vision not unlike a light being flashed directly in your eyes. The turnoff taxi lights are also disorienting as they reduce depth perception due to 'flash' blindness." This pilot recommended "a thorough test of the effects of LED lights on pilots' vision needs to be accomplished. The LEDs are not good…[and] could lead to a disorienting situation."

Two years ago, the captain of an Embraer EMB-135 wrote a report about taxi lights at Richmond International Airport in Virginia. "The problem is these lights aren't able to dim. When it is pitch black outside, it is very annoying and difficult to taxi with extremely bright taxi lights. The green taxi centerline lights are the worst. I have asked controllers numerous times if they could dim them and have always been told that they are either not able to dim or they are already on the dimmest setting. The bright taxi lights are an unnecessary hazard. While they might not directly cause an accident they are more than capable of being another link in the accident chain. Is there any way that these lights can be dimmed?"

### FAA Response

The FAA asserts that its William J. Hughes Technical Center in Atlantic City, N.J., and Airport Engineering Division (AAS-100) have addressed pilots' issues with runway lighting. The solution involves replacing three-step regulators with a five-step version, as specified in Advisory Circular 150/5340-30H. "This upgrade allows better control of the step (brightness) level," according to the FAA. The agency also issued Engineering Brief 67D, which redefined "the dimming curves for white and color (red, yellow, blue and green) LED light fixtures based on pilot inputs, which has the effect of lowering the light intensity of LED runway lighting." After making these changes, the FAA said, "We have not received any further brightness complaints from pilots on runway or taxiway lighting."

*This through-the-windshield view at Atlantic City shows the relative brightness of the LED approach lights.*

Approach lighting systems haven't yet been switched to LEDs. It turns out, according to NBAA, that two different FAA departments control airport lighting. Runway, taxiway and surface lighting falls under the jurisdiction of FAA airport personnel, NBAA explained, while FAA technical operations personnel control approach lighting systems and visual approach path indicators. So far, LED approach lights have been installed at only one U.S. airport, the FAA's Hughes Technical Center in Atlantic City, where testing continues. Green LED threshold lights have been tested at two public airports–Phoenix Sky Harbor and Grand Forks International in North Dakota–with encouraging preliminary results, according to the FAA.

Last October, the FAA invited industry representatives to a symposium on LED lighting. "The agency said it intends to sponsor the development of an LED flight-test plan, which will include all the appropriate FAA services and offices, as well as input from those in the aviation industry who wish to participate," NBAA explained after the meeting. NBAA also reached out to pilots, asking for feedback about LED lighting problems at airports. Airports are supposed to report installation of LED lights to the FAA to provide information for an FAA LED database.

### LED and Enhanced and Night Vision Systems

While LED lights last longer, are more reliable and use less electricity, they are not visible by infrared enhanced vision systems (EVS) or night-vision imaging systems (NVIS).

According to a 2009 FAA Safety Alert for Operators, "Aviation Red light ranges from about 610 to 700 nanometers (nm), and NVGs approved for civil aviation (having a Class B Minus Blue Filter) are sensitive only to energy ranging from 665 to about 930 nm. Because LEDs have a relatively narrow emission band and, unlike incandescent lights, do not emit infrared energy it is possible for them to meet FAA requirements for Aviation Red but be below the range in which NVGs are sensitive." LED lights used to illuminate obstacles may be below the range detectable by NVGs. "Crews that fly using NVGs are warned to use extra caution when flying near obstacle areas and to report any hazardous sites to the nearest Flight Standards District Office (FSDO) or the appropriate military Safety Officer."

The issue of how LEDs in approach lighting systems could affect pilots was brought up in a 2009 letter to the FAA from avionics manufacturers Elbit (Kollsman) and CMC Electronics, airline Federal Express and aircraft manufacturers Gulfstream and Bombardier. They noted that to be effective for EVS users, LEDs "must maintain a minimum requirement of 48 Watts of irradiance per emitter in the [1,300 to 2,400 nanometer] spectrum."

With regard to EVS, the SAE G-20 committee was formed in 2010 to study interoperability issues with LEDs. The committee is involved in the testing at the Hughes Center. The NVIS efforts have been combined with the work being done by the Operational Flight Test Group formed at the October symposium. "We expect to see recommendations and results from this group this calendar year," the FAA noted.

One solution to the incompatibility with EVS is to embed an infrared emitter in the LED bulb that makes the bulb visible to pilots using EVS or night-vision goggles (NVG).

Rockwell Collins has taken a different approach and developed the multi-spectral EVS-3000, which has two sensors, one for heat-emitting infrared sources and one for LED lights, ensuring that pilots can see LED runway lighting in EVS displays.

Meanwhile, NBAA is working with the FAA and other industry stakeholders to resolve issues related to LED airport lighting, both on runways and taxiways and for the approach. John Kernaghan, member of the NBAA Access Committee's airspace, air traffic and flight technologies subcommittee, explained that the next step is flight-testing at the Atlantic City installation. This will involve all types of operators, from airlines to charter and Part 91 corporate and light aircraft, including some equipped with enhanced flight vision systems. The testing will include seemingly arcane issues such as aircraft with and without windshield wipers. "There are lots of variables going into this," he said. "Right now we're coming up with the flight-test protocols."

"Everything and anything is on the table," he said. Solutions could involve separate LED and incandescent lighting that could be switched when necessary, or adding infrared emitters to LED bulbs. It all comes down, he said, "to what is the most effective equivalent."

NBAA will place a link to an online survey on its website to seek more input from pilots on LED lighting issues. "If somebody experiences an issue with LEDs, whether positive or negative, we want feedback," Kernaghan said. "It's truly a team effort between the FAA and industry stakeholders to come up with a viable system that offers one level of safety." ❑

page that shows a summary of information for my receiver and those operated by other FlightAware ADS-B participants in my region. Bret Aguilar near El Monte, Calif., is the local champion, with a daily average of more than 1,600 flights and 174,000 positions received. This compares to my 344 flights and nearly 5,000 positions, likely because my receiver's antenna can't see much of the sky. My FlightAware page also lists aircraft currently and recently viewed by my receiver. Another page shows live data in the form of a map with little moving aircraft symbols. I can see the ICAO ID, flight number, squawk code, altitude, speed and track of these targets.

According to FlightAware founder and CEO Daniel Baker, by the end of last year about 2,000 ground stations were delivering data to the company every day, and that number grows by about 100 per week. About a third are PiAware receivers. Third-party ADS-B receivers and FlightAware's own FlightFeeder account for the remainder. The FlightFeeder is free for locations where there is no existing ground station delivering data to FlightAware, or users can buy a FlightFeeder, beginning this month.

The data that FlightAware is processing are ADS-B signals being transmitted on the worldwide 1090 MHz frequency, mode-S transponders and mode-C transponders.

MATT THURBER

*The PiAware receiver occupies minimal space and needs only a clear view of the sky and a reliable supply of electricity.*

"We receive tens of gigabytes of data per day and we automatically de-dupe and rate-limit the data," Baker explained. "We have intelligent rate limiting that lets us use more positions at low altitude or when the airplane is moving than when at cruise. We use the mode-S data to determine takeoff/landing times, tail numbers and approximate airplane positions. We use the ADS-B data to determine takeoff/landing times, tail numbers, exact aircraft locations. The data is seamlessly fused into existing FlightAware interfaces." *–M.T.*

## NEWS UPDATE

### First Heavyweight A330 Takes Flight

The first Airbus A330-300 designed to take off at 242 metric tons has flown, landing at Toulouse-Blagnac Airport following a 3.5-hour maiden flight, the European airframer announced on January 12. Launched in November 2012, the program introduces drag-reducing aerodynamic changes and engine improvements that combine to extend the A330's range by 500 nm and cut fuel consumption by up to 2 percent. With the improvements, the A330-300 could fly missions of up to 13 hours, while the reach of the smaller A330-200 would extend to 15 hours.

Airbus bills the heavier A330 as the basis for the A330neo, launched at last year's Farnborough airshow and scheduled for first delivery to Delta Air Lines in the fourth quarter of 2017. Delta plans to take the first 242-metric-ton machine during this year's second quarter.

### Mitsubishi Runs Engines on First MRJ

Mitsubishi Aircraft has started what it calls full-scale testing of the Mitsubishi Regional Jet (MRJ) ahead of first flight scheduled in the second quarter, most recently running for the first time the starboard-side engine of the MRJ flight-test aircraft at Nagoya Airport on January 13. The first engine run verified the "total operations" of the aircraft's various systems, including hydraulic, fuel, air conditioning, electrical systems and power systems, said Mitsubishi in a statement.

The company also performed wing up-bending test on the static strength-test aircraft at the facility adjacent to MHI's Nagoya Aerospace Systems Works Komaki South Plant on December 25. During testing, engineers applied the maximum load they expect the aircraft to encounter during flight.

First flight will mark the start of a planned two-year test program employing five flying prototypes and two ground-test aircraft. Function tests of various systems on the first flight-test airplane began in September, and testing on the static strength-test aircraft started on October 10.

The company expects simultaneous Japanese and FAA certification to require some 2,500 flight-test hours.

### PW1100G Wins FAA Nod

Pratt & Whitney received FAA type certification for its PW1100G-JM PurePower geared turbofan, the manufacturer announced on December 19. Destined to power the Airbus A320neo, the engine at the time had completed more than 50 flights on the airframer's flight-test aircraft. Airbus conducted the first flight of the MSN6101 test aircraft on September 25 from Toulouse-Blagnac Airport in France.

The flight-test campaign will involve eight aircraft, encompassing all three A320neo models and both new engine options–the PW1100G and CFM International's Leap 1A. CFM, the joint venture of GE Aviation and France's Snecma, first flew the Leap engine on a Boeing 747 flying testbed on October 9. Airbus expects the Pratt & Whitney-powered A320neo to become the first Neo variant to gain type certification, followed by entry into service with Qatar Airways during this year's fourth quarter.

Pratt & Whitney has now gained certification for two PurePower engine programs. Transport Canada granted type certification of the PW1500G engine for the Bombardier CSeries in early 2013. *–Gregory Polek*


*The first production A350-900 entered service on a Qatar Airways route from Doha to Frankfurt on January 15.*

# *First A350 goes to Qatar, enters service to Frankfurt*

by Gregory Polek

Airbus delivered the first production A350-900 to Qatar Airways on December 22 during a ceremony at the manufacturer's production facility in Toulouse, France. The airplane–the first of 43 A350-900s and 37 A350-1000s on order by Qatar–entered service on the airline's Doha-Frankfurt route on January 15. The state-owned airline placed its A350 order, which it valued at $16 billion, at the 2007 Paris Air Show.

"The arrival of this new generation of aircraft type represents a moment of great symbolic national pride for the State of Qatar," said Qatar Airways CEO Akbar Al Baker. Qatar Airways has seen rapid growth during its 17 years of operation, to the point where today it flies 142 aircraft to 145 destinations across Europe, the Middle East, Africa, Asia-Pacific, North America and South America.

The A350-900 gained European Aviation Safety Agency (EASA) certification on September 30 and U.S. Federal Aviation Administration (FAA) approval on November 12. The respective awards came after a fleet of five test aircraft accumulated more than 2,600 flight-test hours since first flight on June 14, 2013. The aircraft product line, which also includes the A350-1000 and A350-800, had drawn firm orders for 778 airplanes from 41 customers by the end of November.

In preparation for last month's launch of A350 operations, Qatar Airways used Airbus's recently certified three-tier full type-rating course that combines the new Airbus Cockpit Experience (ACE) laptop-based familiarization with a new Airbus Pilot Transition (APT+) CAE flight training device, and the new CAE full-motion flight simulator (FFS). Qatar plans ultimately to perform its pilot training for the A350 at its own training center, as will other large airlines that have ordered the type. However, Airbus plans three new regional centers of its own; construction on Airbus Asia has started in Singapore, and plans call for operations to start in this year's first quarter.

The transition to the A350 from the A330 takes eight days of differences training, requiring no line flying under supervision and no initial line check, although the EASA requires two sectors of "familiarization" flying. The common type rating allows for the use of the APT+ and no need at all for the FFS. More than 80 percent of A350 customers already operate A330s.

#### Engine Testing Continues

Powered by a pair of Rolls-Royce Trent XWBs, the A350-900 can carry 315 passengers 7,750 nm. Total Trent XWB testing exceeded 17,360 cycles during 8,000 hours' bench and rig running in Europe and North America. Rolls-Royce plans a further Trent XWB endurance test early this year, noted program director Simon Burr during a press briefing some three weeks ahead of delivery to Qatar. "In-service engines [incorporate] lots of changes, so we'll run another sample [which will lead to] more maturity and the latest configuration," he said. The company is preparing a new test facility in Dahlewitz, Germany, where it plans to test an "enhanced" Trent XWB fan that weighs about 100 pounds less than the fan installed on existing engines, according to Burr.

On Bed 60 at the John C. Stennis Space Center in Mississippi, extended-range operations involving more than 3,000 cycles approached 900 hours and included three 420-minute diversion cycles and a test performed when the three engine shafts ran continuously out of balance. Burr said he doubts that the Trent XWB's "demonstrated eligibility" for 420-minute clearance–405 minutes at maximum continuous thrust, plus 15 minutes at hold thrust–"will ever be passed." The initial A350-900 production variant has gained approval for 370-minute diversions.

The engine manufacturer has logged almost 150 hours of ground running of the more powerful Trent XWB-97, which achieved 99,000 pounds thrust during the first week of testing and has provided "a huge amount of learning," said Burr. By the beginning of December, the first XWB-97 underwent assembly and two others had "come off build," but the company still had "a huge amount to do" associated with certification work, he added. Rolls-Royce expects the XWB-97 to fly for the first time in this year's third quarter. ❑

*Ian Goold and Thierry Dubois contributed to this article.*

### LIBYAN STARTUP GETS ITS FIRST A319s

New Tripoli-based airline Libyan Wings took possession of its first two Airbus A319s at Malta's Luqa International Airport in late December as investors prepared to announce an official launch of services "soon." Executives expect the airplanes to remain in Malta until they obtain final clearances and approvals to fly out of Tripoli's Mitiga International Airport.

Privately funded by Libyan investors, the airline plans to operate as a full-service carrier, flying the pair of Airbuses configured for 12 business class passengers and 108 economy seats. It intends initially to serve "a number" of destinations in the Middle East and North African region (MENA); future ambitions include service into Europe and markets on the Arabian Gulf.

A newly signed agreement with Lufthansa Technik calls for the German MRO to provide engineering and planning services, including preparation of a comprehensive maintenance program, compliance assessment, airworthiness directives and service bulletins.

Libyan Wings maintains a wet-lease deal with Dubai Aerospace Enterprise (DAE) to operate the pair of seven-year-old A319s. During the 2013 Dubai Air Show, Libyan Wings signed a memorandum of understanding covering three A350-900s and four A320neos and announced plans to launch passenger charter and freight services in early 2014. However, political instability in Libya and that country's stalled banking system prompted it to delay plans until it could secure Islamic financing from local and international institutions. *–G.P.*

# *Airbus sets priorities for 2015 campaign*

by Ian Goold

Airbus's priorities this year suggest a period of consolidation, as the company limits its new product offerings to the long-range variant of the A321neo launched on January 13. Other tasks include validating announced design plans, meeting delivery schedules, establishing new final-assembly lines and adjusting production rates, Airbus executives explained during the company's annual press conference last month in Toulouse.

With deliveries of 629 jetliners to 89 operators, including eight new customers, the European manufacturer reported beating its targets for last year. The 629 jetliners consisted of 490 A320-series narrowbodies, 109 widebodies (108 A330s and one A350) and 30 A380s. It values its year-end 2014 order backlog for 6,386 airliners at almost $920 billion. Airbus logged net orders for 1,321 single-aisle jets and 135 twin-aisle jets from 67 customers, including 14 new ones.

For Airbus president and chief executive Fabrice Bregier, a top priority lies with delivering the first A330 certified to take off at 242 metric tons in May, while Airbus prepares A350-1000 final assembly lines in Hamburg; St. Nazaire, France; and Broughton, UK, ahead of assembly beginning early next year.

Airbus also must validate the re-engined A330neo design before moving into detailed development by year-end. Another critical target centers on smoothing entry into service for the A320neo; Airbus plans to deliver 15 this year and to accelerate production to 10 per month next year.

AIRBUS

*Speaking during his company's annual press conference on January 13 in Toulouse, Airbus CEO Fabrice Bregier named delivery of the first A330 certified to take off at 242 metric tons in May as a top priority for this year.*

Overall, Bregier hopes to deliver "around 650" aircraft as new A350s begin to roll out and Airbus adjusts production of established models; single-aisle manufacture remains "more or less" stable ahead of 2016 plans for 46 per month, but widebody production will shrink to "close to" 100 A330s and "close to" 30 A380s this year, he said.

Asked about the effect of falling crude-oil prices on aircraft demand, Bregier responded philosophically. "Nobody knows what the oil price will be in 2018, 2019, 2020," he said. "Airlines buy aircraft for a minimum of twelve years. You can't bet on the fact that the fuel [price] will remain low for the next ten [or] fifteen years…so [airlines] need to buy aircraft with the lowest fuel burn. We have [about] 6,400 aircraft in the backlog… so we could, in principle, sustain no orders for three, four years." Nevertheless, Airbus has raised catalog prices by 3.27 percent, effective January 1.

Meanwhile, the manufacturer is moving ahead with development of its "New Beluga" very-large transport aircraft designed to ferry major Airbus sub-assemblies from local manufacturing sites to Toulouse and Hamburg. It plans to build five A330-based machines in a project costing almost €1 billion ($1.18 billion) to replace the current fleet of A300-derived capacity. It expects to place the first new aircraft into service in 2019. ❑

## THAI NEWCOMER SHAKES UP LOW-COST SECTOR

Thai VietJet Air (TVJA), the Thai offshoot of Vietnamese no-frills carrier VietJet Air, is preparing to launch in the first quarter this year, joining the country's highly competitive low-cost carrier market.

The new start-up, 51 percent owned by Thailand's Kannithi Aviation and 49 percent by VietJet Air, obtained its air operator certificate on December 20 from the Thai Civil Aviation Department. TVJA will initially operate one Airbus A320-200 on domestic routes from Suvarnabhumi Airport before adding three to five more Airbus jets annually. Plans are afoot to launch international services in the near future.

TVJA's entry has some airlines worrying whether the market can sustain another low-cost carrier.

"Thailand has an extreme case of overcapacity, and everyone is suffering at the moment," said Narudh Cheramakara, a consumer intelligence manager with Nok Airlines. "The main problem is the competition. I think someone has to go, and possibly in four to five years."

Indeed, three of the country's top airlines–Thai Airways, Thai Air Asia and Nok Air–saw a sharp decline in profits last year. Only Bangkok Airways remained profitable thanks to its diversified partnerships.

Meanwhile, the political instability of last year further exacerbated an already precarious situation for the industry, which has seen a slump in passenger numbers.

Nowhere is this felt more than at Thai Airways, which has been in the red since the second quarter of 2013.

The national flag carrier, which has traditionally banked on long-haul routes to North Asia, Europe and Australia, is being pushed out of the market by the rise of Gulf carriers in the region. "We have Etihad, Qatar Airways and Emirates all serving Thailand. Emirates has about four flights per day, while Bangkok is the largest destination for Etihad in terms of capacity," said Cheramakara. "Effectively, Thai Airways' long-haul markets are done."

Blaming political instability, Thai AirAsia plans to expand in the domestic market this year to make up for losses in international markets. The carrier is expected to post the most precipitous drop in profit in its 10-year history, to $6.1 million in 2014 from $57.7 million in 2013.

Meanwhile, Nok Air, which relies heavily on domestic demand, will remain under siege from price wars. The carrier faces heightened competition, especially from Thai Lion Air, which recently began operating on some of Nok's most important routes.

With the pace of recovery in Thailand's economy and tourism sectors slower than expected as TVJA enters the fray, Thai carriers are in for a turbulent year. *–J.M.*

# Transaero boosted by Russian government

by Charles Alcock

Russia's second largest carrier, Transaero Airlines, received a 9 billion ruble ($164 million) credit guarantee granted by the Russian government on December 25. In a December 29 statement, Transaero specifically thanked Russia's finance and transport ministries, as well as the Federal Air Transport Agency and Vnesheconombank, for supporting new guarantees for loans it has with government-backed JSC VTB Bank.

Transaero also indicated that it has agreed to a government demand that it freeze domestic air fares for the duration of this year and reduce them by between 5 and 7 percent on routes where it is the sole operator. However, the airline did not make it clear whether the price freeze is a condition of the government's financial support. The company said "JSC VTB Bank will assign the necessary credit funds to the airline during this period of drastically changing macroeconomic conditions." The funds are to be used to cover operating costs at the discretion of Russia's transport ministry.

The Russian government's intervention comes against a backdrop of unofficial reports that several Russian airlines might be facing financial difficulties. One likely challenge is the rising cost of meeting aircraft lease obligations, a result of the collapse of the Russian ruble against the U.S. dollar.

The Transaero statement also indicated that the airline has begun to implement unspecified measures "aimed at enhancing its operational efficiency." These measures were recommended in November by management consultancy McKinsey, and the operator said that all would be implemented within three to six months. The carrier said it would focus its business plan on services to destinations in the South and Far East of Russia.


*"Drastically changing macroeconomic conditions."*

Before the acknowledgment of the loan guarantees, Transaero CEO Olga Pleshakova denied media reports that cash-flow difficulties might force the airline to cancel services. "We have overcome the crises of 1998 and 2008.

"We have great experience of finding a way out," she told Russian news agency RIA. "As then, all our actions are aimed at safe and reliable transportation, as well as increasing the availability of air travel, which is affected by the current exchange rate."

Transaero currently has 103 aircraft, mainly a mix of Boeing 747s, 777s, 737s and 767s but also some Tupolev Tu-214s and Tu-204-100Cs. It has ordered a number of Airbus A380s, A320neos and A330neos, as well as four Boeing 747-8is. However, in September last year the airline canceled orders it had placed for four 787-8s. ❑

# U.S. aerospace industry gets lift from airliners

by Bill Carey

U.S. aerospace industry sales were expected to grow by about 4 percent, to $228.4 billion, by the end of last year, with large airliner sales setting the pace. Overall sales of civil aircraft, the largest segment of an industry that counts military aircraft, missiles, space and related products and services in its results, were expected to climb to an estimated $75.3 billion from $69.7 billion in 2013, according to the Aerospace Industries Association (AIA) in mid-December.

The industry was expected to ship 725 transport-category aircraft worth $57.5 billion last year compared with 648 worth $53 billion the previous year, the AIA said. Civil aircraft orders grew for a sixth consecutive year, with foreign orders representing 72 percent of the aircraft backlog.

In its year-end review and forecast, the AIA called out Boeing's net orders (1,274 aircraft) and $40 billion in orders and commitments for 201 aircraft at the Farnborough Airshow in July as driving sales growth.

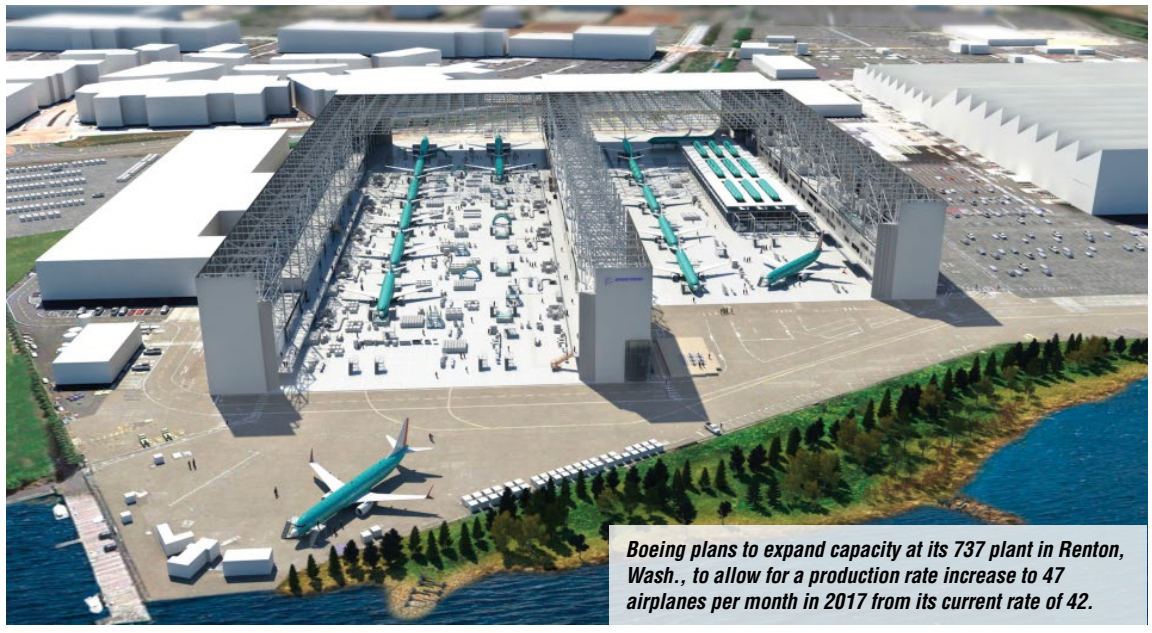
Transport aircraft backlog in December was estimated at 5,552 aircraft worth $429 billion, improving from 5,080 aircraft worth $373 billion the previous year. Boeing's backlog was 5,492 aircraft, of which 4,004, or 73 percent, were ordered by foreign airlines.

Overall aerospace industry exports were up by $8.1 billion, to $119 billion, helping the industry maintain a positive balance of trade of exports versus imports of $61.2 billion–roughly the same as in 2013. Exports of civil aircraft, aero engines and parts represented 88 percent of aerospace exports.

The Obama administration's ongoing export control reform initiative helped with the trade differential, the AIA said. Last year the initiative shifted dual-use items installed in military aircraft and engines from the U.S. Munitions List to the Commerce Control List. Since the reform started, there has been a 64-percent reduction in the number of licenses submitted to the State Department for aircraft and engine parts that were previously controlled under International Traffic in Arms Regulations (ITAR), the association said.

The AIA also credited Congress for extending through June the charter of the Export-Import Bank, which provides foreign buyers with financing to purchase U.S.-manufactured aircraft. In remarks she made during the association's year-end luncheon, president and CEO Marion Blakey vowed to lobby hard for a long-term reauthorization of the bank.

"This past year, even though we were told the Ex-Im deck was stacked against us on Capitol Hill, we took the attitude of 'Game On,'" Blakey said. "You can count on AIA carrying forward the fight for a full reauthorization until a decisive victory is obtained." ❑



*Boeing plans to expand capacity at its 737 plant in Renton, Wash., to allow for a production rate increase to 47 airplanes per month in 2017 from its current rate of 42.*

## AIRBUS TAKES AIM AT 757 MARKET WITH A321neo

Airbus officially launched a long-range version of the A321neo designed to carry a maximum takeoff weight of 97 metric tons with an announcement last month that Air Lease (ALC) had signed a memorandum of understanding for 30 of the airplanes. The Los Angeles-based lessor has now committed to ordering 90 A321neos, including the 60 for which it had already signed at the Farnborough airshow last year.

Designed to fly 206 passengers as far as 4,000 nm, the A321 neoLR now ranks as the longest-range single-aisle airliner on the market, capable of flying transatlantic routes and potentially opening long-haul markets inaccessible by any other single-aisle airplane in production or in development.

The latest A321neo variant draws on the Airbus Cabin-Flex (ACF) concept, which in this case incorporates an additional fuel tank in the forward under-floor hold of the aircraft and minor improvements to the wing and fuselage. Airbus expects deliveries of the new variant to start in 2019.

Airbus hopes to sell at least 1,000 examples of the airplane, according to chief operating officer for customers John Leahy. About half of the demand would come from the Boeing 757-200 replacement market, he said, while Airbus draws the balance from growth requirements.

Leahy cited transatlantic operations as well as other single-aisle routes between North and South America and segments within Asia as new market opportunities not economically viable with the 757. "We [will be] burning 25 to 30 percent less fuel, depending on how many seats you put in," he said. Under the assumption that its MOUs for 30 A321neos and 25 A330neos become firm orders, ALC would account for the sale of 258 Airbus airplanes, including 53 A320 and 140 A320neo-series airplanes, 15 A330s, 25 A350s and 25 A330neos. *–G.P.*


*A new MOU covering 30 long-range examples of the A321neo brings to 258 the number of Airbus airplanes to which Air Lease has committed.*


*After a 12-year effort, the Commercial Aircraft Corporation of China obtained a type certificate for the ARJ21-700.*

# Comac's ARJ21 wins Chinese type certificate

The Civil Aviation Administration of China (CAAC) issued a type certificate on December 30 for the Comac ARJ21-700 regional jet, China's first domestically produced airliner.

The program has been more than 12 years in development and started the certification effort in 2012."The certification of the ARJ21 demonstrates that China's independently developed and manufactured airplanes have already boasted the conditions for safe flying," Vice Premier Ma Kai declared while inspecting the jet at Beijing Capital International Airport, China's official Xinhua News Agency reported.

### 'Monumental' Achievement

GE Aviation, which is supplying the jet's CF34-10A engines, issued a press release to mark the occasion. "This certification is a monumental achievement for Comac, and GE is honored to play a significant role in the ARJ21 aircraft program," said David Joyce, GE Aviation president and CEO.

"Our team is proud to be more than a strategic participant in the development of China's aviation industry."

Comac reported completing function and reliability flight-testing of the ARJ21 on December 18, the last major step toward obtaining type certification.

The AC105 flight-test aircraft conducted 83 flights, accumulating 174 hours on routes between 10 airports, the company said.

The ARJ21-700 seats 90 passengers in economy configuration. Its launch customer, Comac subsidiary Chengdu Airlines, expects to place the airliner into service in the spring. Comac reports orders for 278 aircraft, according to Xinhua. *–B.C.*

# Bristow takes long view of current oil price slide

by Mark Huber

The tumbling world price of crude oil is not expected to make a significant impact on operations at OGP helicopter service company Bristow Group, maintains the company's senior vice president and chief financial officer. Other companies, manufacturers and industry analysts expressed opinions ranging from optimism to cautiousness *(see below)*.

John Briscoe told **AIN** in early December that the current oil slide is not causing "any impact on our operations." However, Briscoe said that Bristow is "being proactive in this environment, working with our customers trying to find ways to help them through this situation by helping them control their costs." Briscoe emphasized that this did not mean that Bristow is discounting existing or future contracts, but rather working with customers to consolidate or reduce labor "and other third-party costs." On average, Bristow's OGP contracts earn 65 percent of their revenues without flying. Even in the current oil environment, the company expects to be flying $4.3 billion worth of contracts starting in 2016 and that will continue over future years.

*The current low prices for oil have not affected Bristow's operations, and the company sees no slowdown ahead.*

Bristow is the world's largest OGP helicopter services company as measured by fleet size, accounting for nearly one-third of the total worldwide OGP fleet. It currently has major helicopter transportation operations in the North Sea, Nigeria and the U.S. Gulf of Mexico, and in most of the other major offshore oil- and gas-producing regions of the world, including Australia, Brazil, Canada, Russia and Trinidad.

### Opportunities Ahead

Briscoe said Bristow is proceeding with its commitments to buy and lease new helicopters. "We are not deferring deliveries and we haven't canceled any orders. In fact, we still have demand for more equipment. Our customers are still seeing additional opportunities and they are still talking to us about those, even within the framework of a challenging crude oil price," he said.

*Continues on page 58* ▶

## Industry Input

Falling oil prices seem to be of little concern for the operators, analysts and manufacturers that spoke to **AIN** about the issue, expressing unfazed optimism to cautiousness.

Teal Group analyst Richard Aboulafia has seen limited consequences of the plummeting oil price so far. "It certainly has an impact but not particularly hard," he told **AIN**. He even stopped short of establishing a clear relationship between the market losing some robustness and oil price levels.

So far, Aboulafia has not heard anything like "we are deferring deliveries because of oil prices." Moreover, those helicopters that are the workhorses of the industry continue to sell well. For example, the AgustaWestland AW139's production rate is 80 per year and it is not picking down, Aboulafia noted. The final reason to rest assured, he suggested, is that leasing companies do not seem to have reacted.

Airbus Helicopters experts predict some sort of minimal downturn. "We can expect that cost-control measures at international and national oil companies will cause a contraction," Thierry Mauvais, Airbus Helicopters' head of oil and gas market development, told **AIN**. Cost-control measures will most likely first affect the exploration segment, such as in the Arctic, while in production the focus will be on adopting lower-cost methods, Mauvais went on. With such a solid foundation, offshore helicopter sales will probably stay at a sustained level despite the impact on exploration activities.

For a couple of years, Christopher Grainger, in charge of oil and gas sales and customer relations at Airbus Helicopters, has seen a few postponements but no cancellations. The bulk of the helicopters Airbus sells for offshore applications are EC225s. Combined annual orders for the civil EC225 and the military EC725 average 50.

Exploration will probably pick up again in two to three years, Mauvais believes. This will notably happen in frontier countries such as Senegal, Namibia, Madagascar, Mauritius and Morocco. Airbus Helicopters experts concur with Aboulafia in saying another reason for optimism is that lessors are not withdrawing. Lessors may even take advantage of the slowdown to reinforce their position and be ready for the next upturn, Grainger suggested.

David Martin, responsible for sales and support of Sikorsky's worldwide energy customers, says he has seen no change to his business that could be attributed to the price of oil. "The issue of oil price has just started, whereas this industry is a long-cycle one," he emphasized. In other words, customers place orders with an eye on the long term, and Martin has seen the exercise of options as evidence of this strategy.

The market has "plateaued since 2011," but Martin says Sikorsky expected it. He predicts a flat or slightly down market until 2018. *–T.D.*

### Heavy Hitters

Of the 2,300 helicopters serving the offshore and onshore oil-and-gas industry, 600 are heavies (Sikorsky S-92, Airbus EC225/AS332 Super Puma, Mil Mi-8/17). Three out of four of those heavies are operating to support production; the remaining 25 percent support exploration.


*Source: Airbus Helicopters*

## NEWS UPDATE

### Beef Deal To Spur Activity

A massive beef export deal in the final phase of negotiation between Australia and China may spur helicopter activity Down Under, according to the Australian Helicopter Industry Association, as the use of helicopters for mustering is widespread there. This could facilitate a return to expansion after a period that has seen the growth of CASA's helicopter register "flat line." Before that, Australia's rotorcraft industry had experienced several decades of steady 6 to 8 percent annual growth.

### Universal Graduates 260

U.S. civilian flight school Universal Helicopters awarded pilot certificates and ratings to 260 students and conducted 28,000 hours of flight training last year. Universal posted its 10th year of operations without a single accident or incident. The company operates from seven locations in five states–Arizona, Utah, Kansas, California and Texas–and flies Robinson R22s primarily.

### Precision Flight Controls Developing FTDs

Sacramento, Calif.-based Precision Flight Controls signed an agreement with Australia's Ryan Aerospace to develop and build flight training devices (FTDs) for the Robinson R22, R44 and R66 as well as the Bell 206 and 407.

### ExecuJet Launching Helicopter Charter in Cape Town

ExecuJet Aviation Group is launching helicopter charter services at its Cape Town International Airport FBO, in partnership with Acher Aviation. ExecuJet will operate a Bell 407 single. It will also be the official helicopter operator for the Absa Cape Epic mountain-bike race, which will take place from March 15 to 22 in the Western Cape.

### GE To Provide Hums for AC313

GE Aviation will supply the health usage and monitoring system (Hums) and related components for the new AC313 heavy tri-engine helicopter. The AC313 is designed to carry up to 27 passengers and two crew and has an mtow of 28,660 pounds.

### Turbomeca Introduces 3-D Printing

Turbomeca has started production of parts using an additive manufacturing (3-D printing) process. Arrano test and production engines will feature fuel injector nozzles made using "selective laser melting" techniques with a nickel-based super alloy. The Arrano, which is to power the still-under-wraps Airbus Helicopters X4, will thus feature a single-piece nozzle, while a conventional injector nozzle is made from dozens of different pieces. This technology will also be used to manufacture Ardiden 3 combustor swirlers.

### Onboard Supplying 429 Cargo Hook

Bell Helicopter has selected Onboard Systems International to provide its Talon LC hydraulic-release external cargo hook system for the Bell 429 light twin. Bell requested the system to fulfill an order for 15 Bell 429s with external cargo hook systems for the Canadian Coast Guard. The hook will include an onboard weighing system with an NVG cockpit display and be available for Bell factory installation this year. *–T.D., M.H.*

# NEW ROTORCRAFT

SPECIAL REPORT

## The civil market continues to slow, but OEMs look to the future

by Thierry Dubois and Mark Huber

In early January oil traded below $50 per barrel for the first time since 2009 and the U.S. dollar was wiping the floor with most of the competitive currencies around the globe. Just one month earlier, most industry analysts were putting a brave face on all of this relative to its impact on the world civil helicopter market, while the OEMs themselves remained sanguine or speechless or a little of both. The euphoria surrounding the new helicopter market a year ago has degraded to nervous optimism amidst the discovery of coughing canaries in the coal mine. The party might not be over, but the attendees are nursing their cocktails and speaking more softly. And nobody is dancing.

About the time helicopter lessor Milestone Aviation was being acquired by Gecas last October, Bell was acknowledging that the first flight of its new super-medium 525 twin would be delayed into 2015. Meanwhile, much of the forward number-crunching related to the assumed price of oil is out the window, as could be the helicopter services demand forecasts by the offshore energy industry. Fortunately, many new deep-water projects are still profitable at $50 per barrel, but not much less than that. Unfortunately, a good bit of that activity is off the Brazilian coast and controlled by majority state-owned Petrobras, already the world's most indebted oil company ($139 billion) and currently mired in a multibillion-dollar corruption scandal. Petrobras's murky finances could limit its access to needed global capital for further exploration, while it continues to struggle to meet production targets.

Overall, recent sales numbers already are declining. New civil helicopter sales collectively attributed to AgustaWestland, Airbus, Bell, Enstrom and Robinson by the General Aviation Manufacturers Association (GAMA) for the first nine months of 2014 were down 32.4 percent compared with the same period a year earlier. "It was brutal all over," one OEM spokesman said of 2014 sales. Perhaps more interesting is to see what is selling the best in this down market: legacy products. AW's best-seller remains the AW139 medium twin; at Airbus it's the AS350B3e and EC130 singles and the EC135 light twin; at Bell it's the 407 heavy single and 429 light twin. Industry billings for the first nine months of last year dropped more than 20 percent compared with the same period in 2013, according to GAMA.

And it could be worse if not for a combination of some heavy discounting and cost containment going on, reflected in lower margins at both Airbus and United Technologies' (UTC) Sikorsky, with the former posting a thin profit margin of just 6.4 percent, down half a point from 2013. The latter's margins have dipped below 10 percent for the first time in recent memory, rekindling speculation that UTC is getting ready to cut it loose. New UTC CEO Greg Hayes gave stock analysts a mixed message in December, telling them, "We're not going to sell Sikorsky…but the fact is, we're going to take a hard look at the portfolio [of UTC companies] and do what's right."

For Sikorsky and for other OEMs, "doing what's right" in the short-term for the civil market could involve lowering expectations, slowing new programs in progress, shelving more long-term ambitions until the world energy demand and markets stabilize and/or recover, taking on more partners and even looking at consolidation down the road. Meanwhile, do not be surprised if some schedule adjustments are announced before or at Heli-Expo in March as eroding oil prices send a chill through the new helicopter market.

### Piston Singles

#### Enstrom TH180

Enstrom planned to fly its new two-seat piston-powered trainer last month.

The company is using the common type certificate held by all its other models to speed the TH180's development. Powered by the naturally aspirated Lycoming IO-390, the two-seat TH180 is expected to be able to use unleaded aviation fuels–when they are approved for the engine–and deliver relatively lower direct operating costs on fuel burns of less than 12 gallons per hour. The TH180 is designed to compete with the Robinson R44 and the Sikorsky 300C, with a delivered price in the range of $400,000.

### Turbine Singles

#### Bell 505 Jet Ranger X

Bell announced its five-seat Short Light Single (SLS) at the 2013 Paris Air Show and later christened it the 505 Jet Ranger X. The aircraft first flew on November 14 last year and has already logged substantial orders; certification is expected late this year or early next.

Performance goals for the 505 include a speed of 125 knots, a range of 360 to 420 nm, a useful load of 1,500 pounds


Enstrom TH180


BARRY AMBROSE

Bell 505 Jet Ranger X

and a ceiling of 11,000 feet. Power will come from a Fadec Turbomeca Arrius 2R (rated at 450 to 550 shp), and Garmin will provide the G1000H glass-panel avionics. The 505 also features a fully flat-floor cabin and rear clamshell loading doors for cargo or medevac. Bell is adapting proven drivetrain elements from the 206L4 LongRanger to contain costs. The 505 will be certified initially by Transport Canada, and production models will then be built at a new Bell facility in Lafayette, La.

A price has not yet been set, but Bell CEO John Garrison told **AIN** last year that hitting near a $1 million price was viewed as critical to the 505's market success and achieving that number hinged on Bell's success in applying cost pressure on its suppliers. "We're using suppliers' capabilities to get to the price point. The 505 is designed to cost this much. The price elasticity is very clear," he said.

### Enstrom 480B-G

Enstrom's 480B five-seat light turbine single is now available with Garmin G1000H glass-panel avionics. The basic price for the 480B-G this year will be $1.415 million. The 480B-G was certified in July last year and the first customer delivery was made in October 2014. The G1000H system in the 480B features a stacked configuration that mimics the aircraft's original instrument panel and allows the display screens to be equally accessible from both pilot positions.

### Marenco Swisshelicopter SKYe SH09

The Marenco Swisshelicopter SKYe SH09 performed its first two flights–in hover mode and totaling less than 40 minutes–in the fourth quarter of 2014. In Molis, Switzerland, the start-up company has slated EASA certification of its Honeywell-powered single for late this year. With a 5,842-pound mtow, it is designed to carry one pilot and seven passengers, which positions it at the higher end of the single-engine helicopter market. Marenco says it has received orders for more than 50 copies of the SKYe since its unveiling in 2011. At the time, the first flight was pegged for 2012. The composite construction enables, for a given weight, a higher level of performance and a greater cabin volume, according to Marenco. The SH09's list price is $3 million, which includes basic avionics and two sliding doors. Preliminary data indicate 140 knots high cruise speed, 430 nm range and five hours endurance.

### Robinson R66 Turbine Marine

Robinson Helicopter is making its R66 turbine single available with pop-out floats similar to those on the piston-powered R44 Clipper. The floats add approximately 65 pounds to the helicopter's empty weight, are activated by a lever on the pilot's collective, inflate within two to three seconds, and allow a swift water landing if necessary. The R66 Turbine Marine is also approved for water takeoffs at reduced operating weights, allowing for water operations training or limited amphibious use. The base price for the Robinson R66 Turbine Marine is $875,000.

### Scott's-Bell 47, Model 47GT-6

Scott's acquired the Model 47 type certificate from Bell in 2009 and announced its intention to put the iconic ship back into new production with a Rolls-Royce RR300 engine in 2013. It took delivery of its first test engine last year and expects to make deliveries of the new, $820,000 Model 47-GT6 next year at an eventual production rate of two per month. The GT6 will be based on the 47G-3B-2A widebody design (3,200-pound max gross weight with external load, 1,400-pound internal useful load, and external load 1,650 pounds). It features a host of modern upgrades beyond the Rolls-Royce engine (300 shp for five minutes, 240 shp maximum continuous) that will enable the helicopter to hover in and out of ground effect at better than 12,000 feet at 2,750 pounds on a standard day and post direct operating costs of less than $400 per hour.

The GT6 is being fitted with an upgraded interior, LED lighting, new composite main rotor blades and a new drivetrain. The GT6 will feature Sagem digital avionics glass panel displays, including primary flight display (PFD) and engine monitoring system, split map/engine screen mode, display of an externally mounted camera, and VGA inputs and custom user databases such as display points for the moving map. The system will feature back-up flight instruments and will also function as an engine indication and crew alerting system (Eicas) with a multifunction display (MFD) for items such as pilot checklists. A variety of options will be available, among them interfaces to GPS and transponders.

Scott's is offering three levels of warranty for the 47GT6: two years/2,000 hours, pro-rated after the first 200 hours; two years/1,000 hours, non-prorated; and three years/500 hours, non-prorated. The warranty on spare parts will be for one year/1,000 hours, pro-rated after the first 200 hours.

## Twins

### Airbus Helicopters EC135 T3/P3

The first Airbus Helicopters 6,560-pound-mtow EC135T3 light twin was delivered to Italy-based Aiut Alpin Dolomites shortly after EASA certification, in October. What looks, technically, like a minor set of modifications yields a major boost in performance, especially in critical conditions. As a result, mountain operators can expect a valuable reserve of power when at altitude with a full team of rescuers and one or two victims. The Turbomeca Arrius 2B2 Plus features new Fadec software and new air intakes that reduce so-called installation losses. The main rotor blades have been lengthened by four inches and the empennage has been shrunk. All this boosts the payload by 440 pounds in hot-and-high conditions. The EC135P3, powered by Pratt & Whitney Canada PW206B3s, is slated

*Continues on next page* ▶

Enstrom 480B-G


Marenco Swisshelicopter SKYe SH09

Robinson R66 Turbine Marine


Scott's Bell 47GT-6

THIERRY DUBOIS

Airbus Helicopters EC135T3/P3

Bell 429WLG

Airbus Helicopters EC145T2


Russian Helicopters Ka-226T

AgustaWestland AW169


Russian Helicopters Ansat

# NEW ROTORCRAFT

▶ *Continued from preceding page*

for certification in this year's first quarter. Retrofits are offered for in-service EC135P2/T2s.

### Avicopter AC3X2

At the Zhuhai airshow, Avicopter exhibited a full-size mockup of a new helicopter, the AC3X2, targeted at EMS, law enforcement and offshore oil-and-gas operations. The aircraft is understood to be at the detailed design stage.

The manufacturer is considering applying for FAA certification since it believes the AC3X2 may have a competitive edge in price on the global market. The intellectual property behind the helicopter is entirely domestic, a company representative emphasized.

### Bell 429WLG (wheeled landing gear)

Bell received certification for the retractable wheeled landing gear variant of its 429 light twin last year. The WLG option adds 250 pounds and nearly $400,000 to the price of a new 429 but gives the helicopter a five-knot speed advantage over a 429 with skids. Bell expects the wheeled variant to boost the type's appeal to corporate and private customers who need to taxi or maneuver in tight spaces on the ground.

Bell expects the wheeled variant to boost the type's appeal to corporate and private customers who need to taxi or maneuver in tight spaces on the ground.

### Airbus Helicopters EC145T2

Airbus Helicopters on July 31 delivered the first EC145T2 light twin to air rescue operator DRF Luftrettung at the manufacturer's factory in Donauwörth, Germany. Airbus Helicopters says it has orders for more than 100 copies of the upgraded version of the EC145.

The helicopter has been well received for police, corporate transportation and offshore oil-and-gas support operations. The enhanced, 8,047-pound-mtow EC145 features a shrouded Fenestron tail rotor, improved engines and new avionics. The Helionix suite also equips the recently certified EC175 and the four-axis autopilot is included as standard. The Turbomeca Arriel 2E turboshaft is more powerful, at 894 shp, and has Fadec.

### Russian Helicopters Ka-226T

Russian Helicopters did not answer **AIN**'s repeated requests for an update. The certification schedule has moved many times over the years and the status of the program is thus uncertain. Last year Russian Helicopters said it is reassessing four programs, including this 7,900-pound light twin.

### Russian Helicopters Ansat

In December Russian Helicopters announced that its redeveloped Ansat light twin received Russian certification for passenger transport operations, although it was previously understood that the 2013 certification already included this capability. The Ansat passenger variant has an upgraded stability augmentation system. As certified earlier, it uses conventional flight controls in lieu of the original fly-by-wire controls. The 7,900-pound-mtow helicopter is powered by two Pratt & Whitney Canada PW207Ks and can carry eight passengers at a cruise speed of 119 knots.

### AgustaWestland AW169

AgustaWestland announced the 4.5-ton-class AW169 medium twin in 2010. Designed for single-pilot IFR operations, the eight- to 10-passenger helicopter first flew in May 2012 and is slated for certification later this year. AgustaWestland holds orders for more than 100 copies of the $10- to $12 million AW169 and anticipates a market for 1,000 over the next 20 years. The helicopter will be produced at AgustaWestland's main plant in Vergiate and at AgustaWestland Philadelphia, with major components manufactured at the company's facility in Yeovil, UK. Approximately 30 percent of all orders to date are from North and South America.

The AW169 is intended to compete with the S-76D and uses a variant of the same Pratt & Whitney Canada Fadec-controlled PW210-series engines (1,000 shp each) that power the Sikorsky. The AW169 features a Rockwell Collins large three-screen glass-panel avionics system that includes dual FMS; a 222-cu-ft flat-floor cabin; a 45-cu-ft baggage hold; and low noise signature. It is expected to offer good high/hot performance. The cabin is large enough to accommodate transverse-loaded stretchers. AgustaWestland plans to offer military, search-and-rescue, EMS, offshore and corporate variants.

### Airbus Helicopters AS365N3e

In a surprise move, Airbus Helicopters terminated the 10,000-pound-class AS365N3e upgrade program for the Dauphin last year. "We'd rather focus on short delivery lead times and competitive prices for the AS365N3+ and EC155B1–the current Dauphin models–and the development of the X4," a spokesperson told **AIN**. A protracted program, the N3e was to be certified by year-end, an Airbus Helicopters official had said in January 2014. Demonstration flights with prospective customers had begun.

The medium twin was to get an upgraded rotor head and reinforced main gearbox, cutting direct maintenance costs by 10 percent and helping with handling the increased power from the Turbomeca Arriel 2Ns. Airbus is carrying on with the military version, the AS565 MBe Panther, the first delivery of which is planned for 2017.

### Airbus Helicopters X4

In December the X4 prototype achieved "power on," which involved a number of systems but not the engines. Speaking at an investor forum in London, CEO Guillaume Faury also confirmed the Dauphin successor will be unveiled at Heli-Expo next month and fly this year.

The X4, destined to replace the AS365/EC155 Dauphin series, will compete in the 9,000- to 12,000-pound category. It will feature fly-by-wire controls and the house-developed Helionix avionics suite (in service on other types), rather than the previously envisioned, radically new man-machine interface. Customers will choose between two 1,100-shp

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VLADIMIR KARNOZOV
Russian Helicopters Ka-62

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# NEW ROTORCRAFT

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engine options: the Turbomeca TM800 and the Pratt & Whitney Canada PW210.

### Russian Helicopters Ka-62

Russian Helicopters did not answer **AIN**'s repeated requests for an update. The certification schedule has moved many times over the years and the status of the program, which has not yet reached first flight, is thus uncertain. In 2014, Russian Helicopters said it is reassessing four programs, including this 14,300-pound medium twin.

### AgustaWestland AW189

AgustaWestland gained EASA approval for its new AW189 medium twin on February 7 last year; FAA approval remains pending but is expected shortly. More than 130 AW189s have been sold, in addition to a major order announced last month for 160 over the next 10 years to Russian oil company Rosneft; those helicopters will be assembled at the HeliVert joint venture at Tomilino, Moscow.

The AW189 is being marketed as a lower-cost alternative to the Sikorsky S-92A and Eurocopter EC225. With 12 passengers, the 17,900-pound (mtow) AW189 has the range to reach and return from energy platforms as far as 200 nm offshore. In high-density configuration, the AW189 can transport 18 passengers. The manufacturer is offering the AW189 in offshore, private, maritime search-and-rescue and parapublic variants. The AW189 is expected to be certified with a variety of options and kits and approved for single-pilot IFR. Power comes from a pair of 2,000-shp, Fadec-controlled GE CT7-2E1 turboshafts. The helicopter has a Rockwell Collins glass-panel avionics suite that is NVG-compatible, a four-axis autopilot and optional rotor ice-protection system.

### Airbus Helicopters EC175

Airbus Helicopters delivered the first two EC175s to NHV last December and one of them entered North Sea service the following week–nine years after the program was formally launched, five years after the EC175 first flew and 10 months after type certification. Designed with the oil-and-gas market in mind, the 16,500-pound EC175 is seen as a gap filler between the AS365/EC155 Dauphin and Super Puma. Russian and U.S. certifications are expected early next year. The firm order backlog covers close to 40 EC175s. The Chinese parts (fuselage, tailboom, intermediate gearbox and tail gearbox) are now said to be available on time and on specs, although some delays did emanate from partner Avicopter. Another impediment was the development of the house-designed Helionix avionics suite.

### Avicopter AC352

Avicopter is developing the AC352, the Chinese counterpart of the Eurocopter EC175. The two airframers have shared the program 50-50 (*see above*). However, the certification effort, customer support networks and marketing areas are distinct.

The status of the AC352 program is largely unknown, except for the engine. The Turbomeca/Avic Engine Ardiden 3C/WZ16 made its first run at the French firm's test facility in Bordes, southwest France, late in 2013. Chinese certification of the 1,800-shp turboshaft is expected in September. The AC352 has yet to fly and the program is understood to be targeting certification in 2017.

### Bell 525 Relentless

Bell announced its most ambitious civil helicopter program at Heli-Expo 2012 and has begun assembly of the first prototype for first flight early this year. In late 2014 the company completed power-on testing of the 525's avionics. The 525 Relentless is a 19,300-pound (max takeoff weight/7,400 pounds useful load) machine with an expected range of more than 500 nm (six passengers/two crew), a speed of better than 155 knots and a ceiling of 20,000 feet, aiming it squarely at the oil-and-gas market. However, Bell plans to offer SAR, law enforcement, medevac, VIP and executive variants as well.

The helicopter will be powered by a pair of GE CT7-2F1s (1,800 shp each) driving an all-composite five-blade main rotor and a four-blade tail rotor. The aircraft will incorporate a triple-redundant fly-by-wire flight control system with a BAE flight computer that incorporates lessons learned on the Bell/Boeing V-22 and AW609 (formerly Bell/Agusta 609) tiltrotors. The 525 will feature the Garmin G5000H touchscreen-controlled glass panel integrated avionics suite with four main displays and Telligence voice-command capabilities, two key components of Bell's new ARC (awareness, reactive and control) Horizon cockpit. The ergonomic cockpit features pilot seats that J-track, pushing back and swiveling outward, for ease of egress. Right-hand, fly-by-wire sidesticks replace the conventional cyclics.

The 525's tailboom has been designed to provide less resistance and more lift for a higher hover out of ground effect altitude than conventional designs. Bell claims the boom's aerodynamic shape will allow 88 more horsepower to be directed to the main rotors, compared with conventional designs, by directing downwash to provide countertorque. The five-blade main rotor is a commercial first for Bell, but its design is conventional.

Entry to the 525's 4.5-foot-tall cabin is through a pair of hinged doors located between the cockpit and the first row of four seating areas or through a pair of large aft sliding doors. Each seating area offers comfortable four-abreast seating for a total of 16 passengers or 20 in a five-abreast, high-density configuration.

### Airbus Helicopters EC225e

The 25,000-pound-class EC225e, an upgrade from the in-service EC225, is in the flight-test phase. Notably thanks to more powerful Turbomeca Makila 2Bs, the upgraded medium twin will offer a 300-nm radius of action with 10 passengers. Airbus also promises a new cabin layout for improved passenger comfort and updated avionics.

Certification of the EC225e is targeted for late this year, followed by the first delivery in the middle of next year. Lessor LCI is a launch customer.

### Russian Helicopters Mi-38

Russian Helicopters is proceeding with the development of the Mi-38 heavy twin, as the fourth prototype has recently made its maiden flight. It differs from the third prototype (which first flew in November 2013) in having a shock-resistant fuel system and larger windows. Klimov TV7-117V turboshafts–2,800 shp each at takeoff–power the 34,400-pound rotorcraft, which has capacity for 30 passengers. The protracted program is now eying certification this year under Russian AP-29 standards.

## Tiltrotor/Compound

### AgustaWestland AW609

AgustaWestland is still aiming to certify the world's first commercial tiltrotor in 2017. The aircraft will be certified initially by the FAA under Parts 23, 25, 29 and a new category called powered lift. Two more prototypes are scheduled to join the test fleet. AW successfully completed autorotation testing of the 609 last year. AgustaWestland is currently promoting four interior configurations for the aircraft, including a standard two-pilot, nine-passenger layout; a six- and seven-passenger executive cabin; a two-litter medevac interior; a search-and-rescue design that includes hoist, basket, litter and four single seats; and a patrol/surveillance variant. A new flush opening cabin door with a retractable hoist is being designed for later models. Much speculation remains as to pricing but sources close to the program think it will be less than $30 million in current dollars.

Announced aircraft performance includes a maximum forward speed of 275 knots, a ceiling of 25,000 feet, a hover out of ground effect of 5,000 feet, hover in ground effect of 10,000 feet, and a useful load of 2,500 pounds. Short-takeoff capability will be added to the certification basis to increase the helicopter's maximum takeoff weight to 18,000 pounds from 16,800 pounds. The extra weight could be used to boost fuel capacity and range, now estimated at 700 nm. The AW609 will be assembled in Europe and the U.S.

### AgustaWestland CTR

AW is developing a larger commercial tiltrotor expected to seat 25 to 50 passengers. It is partially funded by the European Union's Clean Sky 2 environmental initiative and AW is currently recruiting risk-sharing partners. If the program progresses, the machine could fly in 2020 and enter production in 2025. ❑

BARRY AMBROSE
Bell 525

Airbus Helicopters EC175

AgustaWestland AW189

AW609 Tiltrotor

# NTSB faults pilot, culture in Alaska trooper crash

by Mark Huber

The March 2013 fatal crash of an Alaska State Troopers (Alaska Department of Public Safety or DPS) Airbus Helicopters AS350B3, otherwise known as Helo-1, near Talkeetna was the result of the pilot's decision to continue flying into deteriorating weather conditions as well as the department's "punitive culture and inadequate safety management," according to the NTSB's final report, issued on November 5 last year.

The NTSB principal investigator's report reveals a web of overlapping circumstances that all served as potential contributing factors to the crash. They included the pilot's lack of actual instrument experience and currency; the role of lucrative overtime pay in motivating pilots to accept flights and fly long hours; the continued difficulties Alaskan pilots face in obtaining accurate weather data; gaps in emergency responder communications; and a failure to use safety management processes and procedures uniformly.

Helo-1 crashed and burned following a brief period of uncontrolled flight in marginal weather conditions after rescuing a stranded snowmobiler at night. The pilot, Trooper observer and rescued civilian were all killed. Data and images from cellphones, the onboard GPS and an Appareo Vision 1000 video recording system were used to reconstruct the accident.

### Seven-minute Flight

In its final minutes, Helo-1 engaged in dramatically erratic pitch, altitude and heading changes indicative of pilot spatial disorientation after inadvertent flight into instrument meteorological conditions (IMC). Helo-1 picked up the snowmobiler, took off at 11:13 p.m. and followed a true course of 209 degrees; at 11:14 p.m. the helicopter turned left to a heading of about 139 degrees. One minute later it turned right and flew south for about 30 seconds. It then turned right to a heading of about 190 degrees and continued on this heading for about two minutes. At 11:17 it was at an altitude of 1,060 feet (a height of about 200 feet agl) with a groundspeed of 16 knots. The helicopter then entered a climbing left turn that continued through 360 degrees; this was followed by a series of erratic turns, climbs and descents.

The helicopter crashed at 11:20 p.m., three miles south of the point from which it had taken off. The duration of the flight was seven minutes.

The NTSB could not find corroborating evidence that the pilot obtained a weather briefing before making the flight. The forecast for Talkeetna Airport issued at 8:08 p.m. local expected calm wind, visibility greater than six miles, light rain, a broken ceiling at 1,000 feet agl, broken clouds at 1,800 feet agl and overcast at 2,800 feet agl. The reported weather conditions at Talkeetna Airport at 7:53 p.m. were wind calm, 10 miles visibility, light rain, a broken ceiling at 1,000 feet agl, broken clouds at 1,800 feet agl, overcast at 2,800 feet agl, temperature of 2 degrees Celsius (C), dew point temperature of 1 degree C, and an altimeter setting of 30.20.

Citing weather conditions at the time, Talkeetna-area residents contacted by the State Troopers declined to search for the stranded snowmobiler before Helo-1 was dispatched. One resident within six miles of Talkeetna reported overcast sky with rain and snow at 7:50 p.m.

Continues on next page ▶

## Brazil's Petrobras Flying into Headwinds

The oil price slump is just the latest headwind confronting Brazil's largest and majority state-owned oil company, Petróleo Brasileiro, commonly known as Petrobras. While some analysts believe that Petrobras's deepwater offshore wells will continue to be profitable even if oil prices were to fall as low as $50 per barrel, that might be a moot point. The company currently finds itself embroiled in an international corruption scandal that could limit its future access to capital markets and retard those deepwater energy exploration projects. If that happens, it could have serious implications for international OGP (oil and gas production) helicopter companies, which have already bet heavily on the aggressive expansion of Brazil's energy sector, and the leasing firms and OEMs that support them.

The amount of international investment required to develop Brazil's offshore wells is substantial; before the recent oil price collapse Petrobras planned to invest $237 billion between 2014 and 2017 to develop deepwater resources in several areas generically referred to as the "pre-salt," 200 to 300 miles out into the Atlantic off Brazil's coast. The pre-salt accounts for 7 percent of Brazil's daily output of 2 million barrels of oil; by 2020 that is forecast to climb to 50 percent of total production, itself expected to more than double to 4.2 million barrels per day. And that does not include activity in Brazil's newly discovered Libra deepwater offshore fields, which could hold as much as 12 billion barrels and generate $1 trillion over the next 30 years.

### Foreign Investments in Doubt

To develop this, Petrobras is taking on massive debt, estimated to hit $170 billion this year. Petrobras needs to raise as much as $20 billion of this from foreign capital markets this year to continue its scheduled exploration activities. According to Bloomberg, Petrobras has relied on foreign capital markets for $44.5 billion worth of investment just since 2011. But access to those markets may be in doubt as Brazilian law enforcement and the U.S. Justice Department and U.S. Securities and Exchange Commission (SEC) continue wide-sweeping criminal investigations of corruption at the oil company involving kickbacks and money laundering worth nearly $4 billion, according to the Brazilian federal police. Petrobras acknowledged receiving SEC subpoenas in late November last year. One former Petrobras senior manager is alleged to have skimmed more than $100 million from the company, another more than $20 million. Altogether, dozens of former company executives and contractors are either under arrest or formal subjects of investigation.

The scandal already has exacted a heavy price. The company's outside auditors have refused to certify Petrobras's latest financial results, a serious blow to any publicly traded company and a solid roadblock to floating more bond debt on international markets. Petrobras's stock has dropped sharply and rapidly, sliding from $23.95 per share on Sept. 3, 2014 to $6.79 on January 13. Moody's Investors Services has downgraded Petrobras's debt twice recently in as many months, saying the corruption investigation and its results could "significantly increase the company's financing risk." The price of Petrobras's bonds has already taken a major hit, trading at deep discounts and hurting its financing costs substantially; the yield on Petrobras's 2023 bonds has jumped 38 percent from September to early December 2014, a tangible sign of investor nervousness.

Even before news of the corruption scandal broke, senior Petrobras executives publicly admitted that the company was substantially behind schedule with its offshore development plans and oil-production targets. Petrobras's crude oil production declined by 2.5 percent between 2012 and 2013. These missed targets and low production numbers are fueling speculation that Petrobras could default on $6 billion worth of bond debt payments due next year and another $5.4 billion due in 2017. Some analysts argue that Petrobas is already in technical default by failing to release its latest audited financial results.

Petrobras controls 90 percent of the OGP helicopter demand in Brazil, and several helicopter OGP service companies have major Brazilian exposure. They include the Bristow Group, which owns 42.5 percent of Brazil-based Lider, which includes an OGP helicopter division. Erickson acquired Brazil-based OGP helicopter company HRT in 2013. Other OGP helicopter companies invested in Brazil include Era (Aeroleo), CHC (Brazilian Helicopter Services) and Greenwich Aero Group (Helivia Aero Taxi). *–M.H.*

## Bristow on oil prices

▶ *Continued from page 51*

"We think of our order book in terms of future opportunity, but [firm] orders never match up exactly with future opportunities; it's actually less than what future opportunities we think will mature. We think our orders are conservative. We use our [order] options to bridge what the actual opportunities are and in that way have the flexibility to be able to move up or down with the order book to meet the actual demand," Briscoe said.

As of December, Bristow had identified 246 "qualified aircraft opportunities" over the next three years: 146 of them are for medium helicopters and 100 for large; of these it classified 129 as "realistic" and said it expects 50 of those to result in new contracts. Bristow has 24 new helicopters on firm order, the majority of them large machines. It also has options on another 48. Of the 246 opportunities, 79 are in North America, primarily the Gulf of Mexico, and another 55 in South America and the Caribbean.

Bristow takes the long view with regard to unique dislocations in specific energy markets such as Brazil and Nigeria, according to Briscoe. In Brazil, new exploration and output by the majority state-owned oil company, Petrobras, has habitually run behind schedule.

"We think there is actually a tremendous amount of long-term opportunity for [OGP lift] in Brazil," Briscoe said. "Petrobras is working hard to meet its goals and targets and we think it is going to be focused on that. Some projects might get delayed but we actually think that those projects become even more important in a low-price environment and that those projects will continue. We don't see any of the projects in Brazil being canceled. Could there be delays? Absolutely. Those are always hard to predict. But eventually everything moves forward, and perhaps with a greater sense of urgency than we have had in the past. But it is hard to predict."

### Long-term Opportunity

The political instability and actual or possible armed conflict caused by falling oil prices in countries where governments are overdependent on oil revenues has not affected Bristow so far and Briscoe thinks that the security Bristow has in place in countries such as Nigeria is up to the challenge. "We're not making any changes to our security arrangements around the world at this time. We believe that we have good security arrangements in each of the jurisdictions in which we operate. But we will continue to reassess and revisit the issue," he said.

Finally, Briscoe noted that falling oil prices have not prompted Bristow to focus on non-energy sectors beyond its normal balanced business plan. "It was already part of our strategy to pursue non-energy-related business. Right now there is an active tender for the [UK territory] Falklands [Islands] for search-and-rescue. We think the search-and-rescue and other government outsourcing opportunities are going to be three-, five-, 10-, 20-year opportunities and not all governments are going to move forward at the same pace. The tendering and bid process could be longer than we would see for some other commercial opportunities. That's fine, given the scope and scale of the important service that is currently being provided by military or other government agencies." He contends that the outsourcing model raises quality–bringing new equipment and technology to bear–while reducing costs.

One area Bristow is not currently pursuing is the market for supplying supplemental military airlift in combat hot spots, particularly in the Middle East. But Briscoe didn't rule it out, either. "That's not something front and center for us right now. It's not something we wouldn't do, but we would risk-assess those types of missions or opportunities closely before we would move forward," he said. ❑

## *Alaska Trooper crash*

▶ *Continued from preceding page*

The accident pilot had logged 10,693 flight hours, 8,452 hours of them in helicopters. From October 1984 to January 1985, he attended a U.S. Army Rotary Wing Qualification Course at Fort Rucker, Ala., and received a helicopter instrument rating on the basis of this military training in 1985. The pilot's logbooks revealed 38.3 hours total instrument time, of which only 0.5 hours was actual instrument time. He had last logged helicopter instrument time in 1985 in a Bell 47G2A and had not received any helicopter instrument training since joining the Troopers in 2000. His last check ride was on March 18, 2013, in a Robinson R44. The instructor said that instrument maneuvers were not part of it.

### Previous Incident

The pilot's failure to use instrument procedures was cited as a factor in a prior helicopter accident in 2006 during an attempt to take off during whiteout conditions caused by blowing snow at night. The DPS's investigation of and communications with the pilot after that accident in part triggered the NTSB's remarks about "punitive culture." While the pilot attempted to perform the takeoff and regain visual reference, the helicopter's tail rotor guard and vertical stabilizer struck the surface of a lake. The takeoff was aborted and there were no injuries, but the helicopter sustained significant damage. The NTSB determined that the probable cause of that accident was "the pilot's failure to maintain adequate altitude/clearance from terrain during an aborted takeoff in whiteout conditions, which resulted in an in-flight collision with terrain. A factor associated with the accident was whiteout conditions."

A separate DPS investigation found, among other things, that the pilot "did not execute an instrument takeoff when confronted with a blowing snow condition and choose to hover and use a reference point" and "did not use a cross-check method and monitor his radar altimeter to verify his height above the ground."

The investigation resulted in a DPS memorandum in the pilot's personnel file. It read in part, "You are hereby warned. Any future occurrence of a similar incident may result in more severe disciplinary action. A copy of this memorandum will be placed in your personnel file for consideration at your next evaluation. You are hereby advised of your rights under your Collective Bargaining Agreement."

At the time of the 2006 accident, the pilot had worked for 18 straight days without a day off. The NTSB found that the pilot relied on overtime pay for nearly 40 percent of his gross compensation from DPS. The NTSB found that this overtime pay structure likely contributed to the pilot's "exceptionally high motivation to complete search-and-rescue missions," which increased his risk tolerance and adversely affected his decision-making with regard to the 2013 crash.

The NTSB also faulted the DPS's investigation of the 2006 accident for being "too narrowly focused on the pilot and not enough on underlying risks that could have been better managed by the organization." The Board said this contributed to a "punitive culture that impeded the free flow of safety-related information and impaired the organization's ability to address underlying safety deficiencies relevant to this (2013) accident."

NTSB acting chairman Christopher Hart noted, "Public agencies are not learning the lessons from each other's accidents and the tragic result is that we have seen far too many accidents in public helicopter operations." ❑

*Jet Aviation Basel's 12-person design team is honored among the world's leading designers, according to a new list issued by design magazine* **Design et. al.**

## JET AVIATION BASEL AMONG TOP 25 DESIGNERS AND ARCHITECTS

*Design et. al.*'s hardback design publication *The World's Leading Design Names 2015* includes Jet Aviation Basel Design Studio. The company was one of 25 selected from a field of more than 600 names submitted for consideration. The coffee-table book from the UK-based design magazine depicts and describes the work, ideas and inspiration of design and architectural visionaries, including the Jet Aviation Basel Design Studio.

"We are honored to be named amongst the world's most esteemed design and architectural authorities," said Elisabeth Harvey, head of the Design Studio at Jet Aviation Basel. "We strive to remain ahead of the design curve in designing unique VIP cabin interiors, and our inclusion in *The World's Leading Design Names* commends our dedication to the creative process."

## ARSA SCORES VICTORY WITH AVIATION SECURITY LEGISLATION

The U.S. Congress has approved the Aviation Security Stakeholder Participation Act, which establishes an Aviation Security Advisory Committee (ASAC) within the Transportation Security Administration (TSA) to offer greater feedback on the development and implementation of policies, programs, rulemaking and security directives. The Aeronautical Repair Station Association, working with Rep. Richard Hudson (R-N.C.), secured an amendment to the legislation during committee consideration, mandating "aeronautical repair stations" as ASAC members.

Daniel Fisher, Arsa vice president of legislative affairs, told **AIN**, "Ensuring the aviation maintenance industry's seat on the Aviation Security Advisory Committee is a huge victory for repair stations. With the TSA's implementation of the new repair station security rule continuing, repair station engagement with the agency is more important than ever. Inclusion on the ASAC is also indicative of the growing acknowledgment on Capitol Hill of the significant economic growth, job creation and safety contributions of the aviation maintenance industry."

Before the amendment, many aviation stakeholders were given representation on the new ASAC, including labor unions, manufacturers, air carriers and the aviation technology security industry. Until now, however, the aviation maintenance industry had been omitted.

## LANDMARK AVIATION OAKLAND OK'D AS PART 145 REPAIR STATION

The FAA awarded Landmark Aviation's FBO/MRO at Oakland (Calif.) International Airport Part 145 certified repair station status. Under the terms of the certificate, the MRO added limited airframe, engine and accessories ratings to its service offerings. Chris Lijesen, Landmark's aircraft services manager, told **AIN** that the MRO operation has 6,000 sq ft dedicated to back shop support, material storage, inspection department and administration offices, with access to 60,000 sq ft of hangar space to support the operation. There are seven employees, six of them technicians dedicated to maintenance; one focuses on avionics support.

"We also offer AOG support using a Mercedes-Benz 3500 Sprinter van equipped with a full complement of tools, nitrogen, oxygen, fluid-servicing equipment, basic parts, light bulbs and hardware," Lijesen said. The service van is outfitted with a computer, printer and hotspot to allow technicians to access OEM technical data, along with technical data through ATP. An 18-foot dual-axle tilting trailer is used to transport larger support equipment when necessary. The MRO also has a dedicated avionics support vehicle.

## DOLPHITECH AND BARFIELD ANNOUNCE DISTRIBUTION PACT

Barfield signed an agreement with DolphiTech to distribute its new mobile advanced 3-D ultrasound cameras, which produce high-resolution images thanks to its ultrasound transducer design. The DolphiCam camera system

*Continues on next page* ▶

# MRO PROFILE: JET CENTER MFR

## OREGON MAINTENANCE FACILITY HAS DEEP ROOTS IN MEDFORD

Finding technicians, and then holding onto them, is a challenge all MROs face these days. Medford, Oregon-based Jet Center MFR has developed a solution to cope with both. "We are involved with our community, we strive to be an integral part of it and we give to numerous charities," Gary Hudnall, the MRO's Part 145 general manager, told **AIN**. "We also work with other aviation industry businesses here in the Rogue Valley to our mutual benefit."

Jet Center MFR, in collaboration with Erickson (formerly Erickson Air-Crane), has partnered with the local community college to train technicians. "Working with Erickson, we have entered into a partnership with Rogue Community College to develop an A&P apprenticeship program. We evaluated our needs, then modified the FAR Part 147 curriculum accordingly," Hudnall said.

The underlying principles of the partnership are to recruit students with roots in the area to maximize worker longevity and to train them specifically to meet the needs of Jet Center MFR's MRO operation. Under the terms of the program Jet Center hires the student as a mechanic apprentice who will also attend class two nights a week at Rogue Community College for two years. At the end of the program students take the FAA A&P exams and practical, obtain their A&P certificate and are promoted to the position of full-time mechanic.


*In addition to MRO services, Jet Center MFR provides interior work, aircraft management, crewing, ground handling and sales.*

"There are two significant advantages to this type of program. First, we are able to train our apprentices on up-to-date technology [rather than] outdated technology [commonly] offered by Part 147 schools," Hudnall said. "Second, it immerses the student in our corporate culture so we are developing the kind of employee who fits our operation."

Hudnall also stressed the importance of hiring from the community. "We're hiring employees with local roots, which translates into long-term commitment," he said.

Under Hudnall's guidance, community involvement is more than just supporting local charities such as the donations they make to high-school programs. "We provide contract maintenance to local airlines even though it isn't a money maker for us. We do it because it keeps our community connected to the world. Having scheduled airline service is a significant factor in the economic wellbeing of the community and we work to keep that viable."

Hudnall has worked for the company for about 34 years. "I started working here in 1981, right after graduating from Spartan with an A&P certificate. I heard about a job in a little town called Ashland, Oregon, applied and got accepted as a line mechanic. It was a Part 135 operation and we had two mechanics working on turboprops and light jets. The maintenance operation was open to the public but our primary work was supporting our own fleet," he said.

In 1982 the company bought an FBO in Medford and asked Hudnall if he'd take the director of maintenance position. By the end of that year Jet Center closed the Ashland Airport operation and moved everything to Medford, where they operated an FBO, charter operation and the new Part 145 repair station. In 1991 the company purchased its competitor on the field and ran two facilities until 1998, when it was decided to consolidate everything into the new location.

"The new facility almost doubled the physical space of the old facility and it allowed us to accommodate larger aircraft. We began a steady growth period and the staff grew from the two mechanics we had in Ashland to just over 50 employees, most of whom were in maintenance and support. In 2008, when the economy tanked, our staff decreased but for the last three years we've again experienced a steady growth and we're up to 26 employees with 22 directly involved with the MRO operation," Hudnall said.

Jet Center MFR's maintenance operation holds FAA CRS Airframe Class 1 and 3, Radio Class 1 and 2, Accessory Class 2 and Limited Airframe. The maintenance complex operates from a 20,000-sq-ft climate-controlled facility. There is also a 7,200-sq-ft area dedicated to avionics; a 6,000-sq-ft area to paint and repair; and an on-site parts department.

The company has experience on all King Airs; Learjet 25, 28, 35, 45 and 60; Citation 500, 525, 550, 560, 650; Falcon 50, 900; Challenger 600, 601; and the Legacy. The MRO also works on the P&WC PT6, PW305, GE CJ610 and CF34, Honeywell TPE and TFE and the Williams FJ44.

Hudnall said the MRO is considering adding a second location and is exploring the possibilities in Portland and Salt Lake City. "Our business is in the Pacific Northwest; we have clients from Washington, Oregon, Idaho, Nevada and California. We are definitely in growth mode." *–D.A.L.*

▶ *Continued from preceding page*
can inspect carbon-fiber reinforced plastic (CFRP) up to 16 mm (0.63 inches) thick, with very-high-resolution 2-D and 3-D images, and provides a solution to assess damage in any aircraft using carbon-fiber reinforced plastics (CFRP) structures.

"The use of composite materials is increasing on aircraft, opening up the need for new advanced technologies," said DolphiTech CEO Jan Olav Endrerud. "Barfield has a significant presence worldwide and complements our strategy of distribution."

The agreement with DolphiTech "will give NDT operators easy global access to purchase a comprehensive solution to assess damages in CFRP structures, which will benefit the aerospace industry," noted Barfield CEO Johann Panier. DolphiTech also provides team-based NDT, making inspection solutions available to non-experts.

## BOEING APPROVES MNG JET FOR BBJ LINE

MNG Jet of Istanbul was recently approved to perform line maintenance on Boeing Business Jets and has received its first customer aircraft into its hangar at İstanbul Atatürk Airport. The range of services includes AOG response, line and heavy maintenance, fuselage inspections, major structural repairs, engine services, interior work (including cabin upgrades and refurbishment), airframe and engine maintenance and landing-gear work.

The MRO also performs aircraft modifications specified by Bombardier and Hawker service bulletins and STCs.

The company operates around the clock at its new 43,560-sq-ft hangar and has 130 employees.

MNG Jet is approved to work on Bombardier, GE and Honeywell equipment, including Honeywell's MSP and GE's On-Point engine programs. The MRO holds approvals from the EASA, Turkey, Aruba, Bermuda, Cayman Islands, Iraq, Turkmenistan and the United Arab Emirates.

## LUFTHANSA, ROLLS-ROYCE LAUNCH TRENT PROGRAM

Rolls-Royce and Lufthansa Technik are to explore closer cooperation in the technical care of "mature" engines. The agreement follows a year-long pilot project intended to reduce the maintenance costs of mature Trent 500s, which power the Airbus A340-500/600.

The pilot project combined Rolls-Royce's expertise as the engine manufacturer and Lufthansa Technik's experience as an engine maintenance provider to determine how Trent 500 maintenance costs could be reduced as the engines age.

The work plays a significant role in ensuring Rolls-Royce has the capabilities to introduce TotalCare Flex, a concept that addresses the service needs of customers with older engines, including the Trent 500.

"This successful pilot project shows that a close partnership between a manufacturer and a maintenance organization offers advantages for customers and both partners. Mature engines remain competitive for longer and the costs of operating them can be reduced," said Bernhard Krueger-Sprengel, senior vice president of engine services for Lufthansa Technik. ❑

TORQUED by John Goglia

# U.S. must retain leadership in aviation safety

The beginning of the year presents a good opportunity to reflect, and I took the chance to consider what I would like to see happen in aviation in the new year. Some are new issues and some are perennial issues that I refuse to abandon. We have an enviable safety record in aviation in the U.S. and around the globe; but safety records don't just stand on their own. Sustaining them requires constant attention and refinement. Zero accidents may be unattainable, but it's a goal still worth striving toward.

My two wishes for 2015 harken back to my early days in aviation. When I was growing up, aviation was a career that students wanted because of the excitement of flying or working in the industry, and the jobs paid well enough to support a family properly. We need to get back to aviation being that kind of career.

**So these are my wishes for 2015:**

With shortages in virtually every aviation specialty–including pilots, mechanics and air traffic controllers–employers need to renew their focus on creating the working environment and pay structure that attracts the best and the brightest–and retains them for the long term. The airlines need to lead the trend. After all, airlines are making record profits after years of suffering from economic downturns and bankruptcies. According to the International Air Transport Association's December 2014 Economic Report for the airline industry, global airline profits are predicted to be $19.9 billion in 2014 and set to rise to $25 billion this year.

With these record gains, the airlines need to begin to undo the employee givebacks that were necessitated by the financial crises of years past. This is not just to benefit the employees but also the safety of the system. Young people are not entering aviation the way they used to. The military pipeline has pretty much dried up. The industry has to make it attractive once again to work in aviation or our safety gains over the years will surely evaporate.

In many aviation jobs today, turnover is too high to guarantee the level of experience necessary to provide for the kind of workforce needed to safely meet the challenges of today's operations, not to mention those in the future. The increased attention to worker hiring and retention needs to trickle down to every level, including the ramp, where many workers hold two and even three jobs to make ends meet. Improving pay and benefits on the ramp is not just good for employees: it could likely decrease the hundreds of millions of dollars spent each year on ground damage.

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

### Drones in the NAS

I've written a lot about drones lately. I participated in a project many years ago that involved cargo operations of unmanned aircraft. When the FAA shot down that idea, I stopped following the situation until my students' enthusiasm about the future of unmanned aircraft technology re-ignited my interest.

And now, it is dismaying to me to see that in the years that passed between my unmanned cargo project that went nowhere and today, little has changed to bring the promise of unmanned aerial technology–especially the very small UAVs–to commercial use in the U.S.

While the FAA has made some progress on drones, a December report from the Government Accountability Office (GAO) notes that it's been slow and is not complete by a long stretch. According to the GAO report, the FAA is unlikely to meet the 2015 target date for the safe integration of UAVs into the national airspace. Most disturbing are the GAO's comments on where the U.S. stands in relation to other countries in the commercialization of drone applications. The GAO cites a study done for the FAA last year that reveals four countries that have progressed further than the FAA in regulating commercial uses of drones: Japan, Canada, Australia and the United Kingdom. In Japan, UAS technology has been used in agricultural applications for more than 10 years. Both Canada and Australia have created regulatory exemptions from certification requirements for UAVs weighing less than 4.4 pounds (albeit with strict requirements for safe operation) which would cover the vast number of out-of-the-box drones being used today by commercial photographers, real estate agents and others for commercial operations that with a handful of exceptions are illegal in the U.S. today. ■

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

## FBO and Airport News

### LUX AIR UPGRADES AT GOODYEAR

Privately owned Lux Air, the lone service provider at Phoenix Goodyear Airport, marked a 25-year lease extension by breaking ground last month on a new $10 million FBO complex. For the past seven years the Arizona company, which recently began operating 24/7, had occupied the formerly city-run location, which offered customers minimal hangar space. That will change with the anticipated October opening of the new facility. Among the improvements will be 37,500 sq ft of hangar space capable of sheltering

*Lux Air expects to open its new FBO at Phoenix Goodyear Airport in October.*

aircraft up to a G650 and 18,000 sq ft of adjoining tenant offices. A dedicated third-party aircraft maintenance provider will occupy one of the new hangars. The new terminal, which at 13,000 sq ft nearly triples the current space, will provide an upgraded pilots' lounge with snooze rooms and shower facilities, and current plans call for an onsite restaurant.

### JET AVIATION EXPANDS IN GERMANY

Switzerland-based Jet Aviation has added an FBO to its roster of bases serving neighboring Germany, with the opening of a facility at Munich International Airport. It joins locations in Berlin and Dusseldorf. "We are pleased to add Munich to our FBO network because of its importance to business aviation in Germany," said Frank Kusserow, the company's managing director in Germany. "There are a number of major stock-listed companies in the region for which access to business aviation is essential."

Services offered include fueling, cleaning and de-icing, in addition to passenger handling, on-site immigration and customs service, ground transportation, and hotel and catering coordination. The facility has an executive lounge and conference room, a crew lounge with snooze room, showers and flight-planning facilities. The company lists 17 FBO locations worldwide, six of them in the U.S.

### LANDMARK'S OCALA FBO SET TO JOIN SHELTAIR NETWORK BASE

Service provider chain Sheltair has an agreement in place with Landmark Aviation to purchase the latter's FBO at Florida's Ocala International Airport, pending approval by local authorities. The 30-year agreement on the 17-acre property will expire in early 2018, and Sheltair is hoping to receive another 30-year lease.

According to airport manager Matthew Grow, terms were still under negotiation as of press time, but the airport board is looking to approve the assignment and then in the same motion end the current lease. "We want to get rid of that lease; we don't want to extend it," he told **AIN**. "It was not very favorable to the airport so if we go forward with the deal it will be with a brand new lease agreement."

If the lease reassignment is approved, the airport will forego the RFP process in awarding a new lease, which will incorporate several changes from the one that was signed in 1988. "The old lease didn't account for escalations in anything, and that really put us behind the eight ball when inflation went up, so we're looking to fix that," said Grow. In addition, the terms under consideration will call for approximately $4 million in capital investment for a new general aviation terminal at the airport, which saw approximately 50,000 operations last year.

While Ocala has 13 privately owned corporate hangars, the FBO, the lone service provider at the airport, has four aged 10,000 sq ft hangars that are unable to accommodate the latest top-of-the-line business jets, leading the airport to seek new hangar development as well.

### OIL WORKER FACES STIFF PENALTIES AFTER 2012 AIRPORT SPILL

A former Shell Pipeline employee is facing up to 15 years in prison and $19 million in restitution costs after pleading guilty in federal court to negligence that caused a 9,000-gallon jet fuel spill in 2012 at Milwaukee General Mitchell International Airport. The worker, who had been with the company for two decades, was responsible for checking the integrity of pipelines that delivered fuel to the airport in accordance with the Pipeline Safety Act.

Lacking functioning monitoring equipment, which he apparently never sought to have replaced, he neglected to perform his bimonthly examinations and later, upon learning of a pending federal audit of the pipeline, falsified data suggesting the testing had been conducted and that the pipeline was in good condition. In fact, the pipeline was suffering from dangerous levels of corrosion. For six months in 2012, repairing the pipeline caused sporadic disruption in operations from the airport's nearly 10,000-foot-long Runway 1/19.

### WORKER COMPENSATION INSURANCE AVAILABLE FROM NATA

The National Air Transportation Association (NATA) has once again partnered with aviation insurance brokerage AirSure on a new Workers' Compensation Insurance program, to replace the previous plan, which ended in December. "In designing an effective new program for our members, we wanted to create a meaningful incentive to reward good safety practices," said NATA president and CEO Thomas Hendricks. The new plan will allow participating members to enjoy an annual return on insurance payments whenever annual premiums collected for the program exceed the administrative and claims costs for the entire year.

### ALABAMA AIRPORT WRAPS MAJOR IMPROVEMENT PROJECTS

Huntsville International Airport in Alabama last month wrapped up a nine-month improvement project that saw the reopening of 10,000-foot Runway 18L/36R and adjacent taxiways after they were strengthened and their paved shoulders widened. The $16.5 million construction effort–which also included upgrades to LED lighting and signage–was financed mostly by an FAA discretionary fund grant. Intended to allow the airport to support Group VI aircraft such as the 747-8 freighters operated by cargo hauler Panalpina, the project came on the heels of a similar year-long $30 million upgrade to 12,600-foot Runway 18R/36L, completed in July 2013.

"We have a 10-year plan for total investments of $85 million to our runways and taxiways, because it is critical for our region's economy and to stay competitive in the global marketplace," said Huntsville Madison County Airport Authority chairman Mark McDaniel.

### ATLANTIC AVIATION'S HOBBY FBO SET FOR MAJOR RENOVATION

Atlantic Aviation has broken ground on a $24 million upgrade of its current FBO at Houston Hobby Airport. Since 1972, the Texas-based service provider had operated a 12,000-sq-ft terminal there from a former Eastern Airlines maintenance hangar. The project will provide a new-build 15,000-sq-ft terminal, a new fuel farm and a pair of 32,000-sq-ft hangars capable of sheltering the latest generation of long-range, large-cabin business jets. An existing 34,000-sq-ft hangar will also be renovated, giving the location nearly 100,000 sq ft of hangar space. Once the current construction plan is complete around the beginning of 2017, just in time for the city's hosting of Super Bowl LI, the old terminal and a 43,000-sq-ft hangar will be demolished to restore lost ramp space and make way for a possible third modern 32,000-sq-ft hangar later.

*Atlantic's upgrade of its Hobby facility will include a new-build FBO as well as a hangar renovation.*

### LOYALTY PROGRAM REWARDS EXECUJET'S FREQUENT FLIERS

ExecuJet has launched its first customer loyalty program. Starting from the beginning of the year, operators and routing agents will earn a free handling service for every 50 landings at any of the company's 19 FBOs in the Middle East, Africa, Asia, Australasia and Europe. "By visiting our FBOs worldwide, our clients have always been guaranteed a high-quality consistent service, and now they will receive an extra value added discount," noted Mark Abbott, ExecuJet's group FBO director. "Aside from the financial advantage our clients will receive, this program further demonstrates our approach to recognize customer loyalty."

### SEVERAL AIRCRAFT DAMAGED IN BRAZIL HANGAR COLLAPSE

A hangar roof at São Paulo Congonhas Airport collapsed during a summer storm that closed the airport last month, damaging a Challenger 300 and crushing a King Air, with unconfirmed damage to several other Bombardier aircraft. The 2014 Challenger had been delivered to the customer in June. Since 2000 Target Aviação has operated the 24,400-sq-ft hangar, which dates back to at least the 1980s and was formerly the maintenance hangar for defunct airline Transbrasil. Metal roof trusses bridge a 147-foot span between masonry side walls, and post-accident photos show that the south end of the truss over the hangar door fell onto the King Air; two trusses came to rest on the Challenger, raising the front landing gear off the floor. A second Target hangar next door was undamaged. Hangars at the airport are public property, held on lease. Federal airport administrator Infraero told **AIN**, "Maintenance is the responsibility of the aviation company," but could not immediately confirm the age of the hangar or its roof. No workers at Target were authorized to comment on the situation. The structure had previously survived wind stronger than the reported 53 mph, including a 2007 storm that took the roofs four other hangars at the airport.

### MAINE AIRPORT ROLLS OUT NEW SOFTWARE PLATFORM

Bangor International Airport has become the first North American customer to install FBO One aircraft handling and fuel management software. The airport, the closest U.S. facility to Europe, operates its own FBO, as well as a 2.9-million-gallon fuel farm.

"With the new program we will be able to accept airside credit-card payments for fuel using hand-held tablets on which the FBO One system is accessible," said assistant airport

director James Canders about the platform, developed by Dutch information technology designer Amsterdam Software. "This will save pilots the hassle of waiting while we process their payment in the office before returning it to them. This will now be a simple 'gas and go' operation," he said.

FBO One can factor in variables such as fuel temperature volume conversion as it integrates with the airport's existing fuel truck meters. Flight reservations to the FBO are kept up to date centrally, allowing access from multiple locations, and when aircraft arrive and remain overnight the software tracks their current position and automatically applies any ramp fees to their invoice based on the individual customer's contract rates as well as aircraft type.

*With FBO One, uploading fuel will become a 'gas and go operation,' according to the developer.*

## FLORIDA AIRPORT JOINS PHILLIPS 66 NETWORK

Suncoast Air Center, the lone FBO at Florida's Venice Municipal Airport, is the latest service provider to sign on with Phillips 66 as an aviation fuel dealer. The location recently acquired a brand-new fleet of fuel trucks with digital flow equipment. The FBO offers six acres of aircraft parking and 30,000 sq ft of hangar space and is home to Suncoast Maintenance, a Cessna-authorized service facility. Its two-story terminal has a restaurant and onsite car rental.

## FUEL SUPPLIER ADDS TO ROSTER

Shell Aviation has expanded its branded FBO network with the addition of six Landmark Aviation facilities. The half dozen locations include Chester County G.O. Carlson Airport in Coatesville, Pa.; Rocky Mountain Metropolitan Airport in Denver, Colo.; Laredo International and Midland International Airports (Texas); Jacqueline Cochran Regional Airport in Thermal, Calif.; and Santa Fe Municipal Airport in New Mexico, all of which were among those acquired by Landmark in last year's purchase of the Ross Aviation chain. "We have a mutually beneficial relationship with Landmark that began eleven years ago," said Mike Allen, vice president of Eastern Aviation Fuels, Shell's exclusive U.S. distributor of aviation fuel. "We are happy that our two companies have continued to grow together."

## AIR BP EXPANDS AFRICA NETWORK

Air BP has installed the first 30,000-liter (7,925-gallon) avgas refueling tank at Nampula International Airport, its seventh location in Mozambique and its 16th in Sub-Saharan Africa, where it will serve the agriculture, mining, tourism and air charter sectors. The company is now working to complete the installation of a similar jet-A tank.

## FRENCH AIRPORT TAPS SHELL

Lille Airport in the north of France has named Shell Aviation its sole fuel provider. Shell's Avitair subsidiary was awarded a 10-year contract to operate the airport's fuel storage facilities and provide into-plane services at the airport. "This is an important milestone for our business in Europe as we aim to expand at key locations with high growth potential such as Lille," said Melanie Lane, Shell Aviation's general manager for Europe. ❑

## PRELIMINARY REPORTS

### PHENOM 100 CRASHES INTO HOUSES

**Embraer Phenom 100, Gaithersburg, Md., Dec. 8, 2014**–Initial findings from the aircraft's flight data recorder showed that with both the landing gear and flaps down, "automated stall warnings began about 20 seconds before the end of the flight" and continued until impact with the first of three houses. The flight recorder also tracked large changes in pitch and roll beginning about the time the aircraft reached its lowest airspeed, approximately 88 knots. An NTSB spokesperson said, "Two seconds after the aircraft reached its lowest speed, the throttles increased power and the engines responded."

The Phenom, registered to and operated by Sage Aviation, was on an instrument flight plan on the day of the accident, which claimed the lives of all three people on board and three more in one of the houses. The aircraft was destroyed.

Initial investigation of the wreckage did not indicate a pre-impact engine fire or failure. The Board said weather did not appear to have been a factor. The Phenom 100, manufactured in 2009, was certified for and being operated with a single pilot and a passenger in the right seat, according to the NTSB. The pilot held an ATP and a type rating in the aircraft as well as a CFI certificate and had logged approximately 4,500 total flying hours before the accident. The NTSB said the pilot was also involved in a 2010 aircraft accident but offered no specifics.

### LONGRANGER CRASH CLAIMS TWO

**Bell 206L, Benson, Ariz., Dec. 31, 2014**–Two Cochise County Sheriff's employees–a pilot and a mechanic–died when their helicopter crashed during a maintenance flight from a repair station at Sierra Vista Airport in Glendale back to Benson, approximately 30 miles north. The helicopter, used by the Cochise County Sheriff for law enforcement and safety missions, crashed in rough terrain just before 7 p.m.

### U.S.-REGISTERED LEARJET CRASHES IN MEXICO

**Learjet 25D, near Champotón, Mexico, Dec. 18, 2014**–Both pilots aboard the U.S.-registered aircraft died when it crashed into a rice field and burst into flames at approximately 6 p.m. under as-yet-unknown circumstances. The aircraft was a 1978 model registered to T-Air of Adelanto, Calif.

### CARAVAN SUBSTANTIALLY DAMAGED IN RUNWAY OVERRUN

**Cessna 208B Grand Caravan, Belize City Municipal Airport, Belize City, Belize, Dec. 4, 2014**–The Caravan, operating as Tropic Air Flight 281, was completing a flight from San Pedro to Belize City at approximately 2:20 p.m. when it overran the 1,825-foot runway and came to rest in the waters of the Gulf of Mexico. The excursion caused the right main landing gear to collapse. None of the six people aboard was injured but the turboprop single was substantially damaged.

### LEARJET DESTROYED IN SUSPECTED ILLEGAL FLIGHT

**Learjet 35A, near San Fernando de Apure, Venezuela, Nov. 30, 2014**–The jet was impounded upon landing at a remote strip after illegally entering Venezuelan airspace. The aircraft bears an N registration but local sources who recognized the aircraft claimed it was more likely a Brazilian airplane. Military personnel seized and destroyed the aircraft near San Fernando de Apure. Reports gave no details on the fate of the crew.

### ASTAR COLLIDES WITH FIRE BUCKET

**Airbus Helicopters AS350B3, Pertica Bassa, Italy, Jan. 6, 2015**–On a firefighting mission, the helicopter was returning to base when the bucket it was carrying contacted the tail rotor. The pilot was able to maintain control of the helicopter and safely executed an emergency landing on the front lawn of a home. The pilot was unhurt but the helicopter's tail was substantially damaged.

### TWIN OTTER DESTROYED IN MEXICO CRASH

**De Havilland Canada DHC-6 Twin Otter 300, Tequesquitengo Airport, Mexico, Dec. 22, 2014**–The right wing of the Mexican-registered Twin Otter collided with a number of shipping containers alongside the small airstrip, and the tail separated from the fuselage. The number of injuries aboard the aircraft was not reported. ❑

## FINAL REPORTS

### MECHANICAL CITED IN RUNWAY EXCURSION

**Gulfstream GV-SP, Appleton (ATW), Wis., Feb. 14, 2011**–As the jet approached Appleton following a maintenance test flight, the left hydraulic system failed. The aircraft was unable to stop before the end of 6,501-foot Runway 30 and incurred substantial damage after the left main landing gear collapsed. Neither pilot nor the single passenger was injured. The airplane, registered to and operated as a Part 91 maintenance flight by Gulfstream Aerospace, was on an IFR flight plan and flying in VFR conditions.

After recording a number of relatively minor anomalies with the aircraft, the flight crew set up for an Rnav/GPS approach for a full stop at ATW, where the aircraft was based. As the airplane approached the virtual glideslope, the pilot flying called for landing gear down and the landing checklist. The gear extended normally. The pilot not flying completed the before-landing checklist to "include arming ground spoilers, warning inhibit, pumping up brakes/hydraulics/brake accumulator to 3,000 psi" except for "selecting full flaps," which would be upon the pilot flying's call.

After the pilot not flying selected landing mode on the cabin pressure controller, an amber LEFT SIDE HYDRAULIC QUANTITY LOW crew alerting system (CAS) message illuminated; the airplane was inside the FAF approximately 5.8 nm from the end of the runway. The pilot flying selected the hydraulic synoptic page and noticed the hydraulic quantity dropping. He then called for full flaps but no movement was detected so the pilot not flying reselected flaps 20. Shortly after that an amber LEFT HYDRAULIC SYSTEM FAIL CAS message appeared.

The pilot not flying ran the appropriate checklist but suggested a go-around. At the beginning of the checklist, there is a note that indicated, in part, "Select a runway that is at least 7,000 feet (2,133 m) long and 150 feet (45 m) wide." According to the operator's report, the pilot flying chose to land, a decision driven by the significant hydraulic leak on an airplane already configured for landing and at less than 1,000 feet agl. The pilot not flying continued the left hydraulic fail checklist and turned on the auxiliary pump at approximately 500 feet agl to comply with the manufacturer recommendation to verify the availability of the auxiliary system fluid. According to the operator's report, both the pilot flying and the pilot not flying thought before landing that they had a good auxiliary hydraulic system with normal spoilers, brakes and nosewheel steering. The pilot flying had pulled the throttles to idle as the airplane touched down but indicated he "felt it took a long time to get the nose down."

The pilot flying selected right thrust reverser but felt no resistance when he began applying the brakes. He then reached for the emergency brakes, saw the 3,000 feet remaining sign and decided there was insufficient distance in which to stop. He attempted to go around by advancing power to the maximum continuous thrust setting. The pilot not flying felt there was not enough runway remaining to get airborne and saw the airspeed stable at 100 knots with no acceleration. He pulled the throttles back with approximately 1,000 feet of runway remaining, reporting later that he made this decision to avoid the worst case of a runway overrun at an even higher speed just as the engines were spooling up. The pilot flying again deployed the right thrust reverser and began steering to the right to avoid obstacles. The aircraft exited the runway at approximately 95 kias, veered right and came to a stop after the left main landing gear collapsed.

Post-accident examination of the airplane revealed that the nose landing gear swivel assembly, which had passed an acceptance test procedure before being installed, had seized, and the hydraulic fluid had leaked from a fracture on its inboard connecting tube. The swivel assembly had galling scars on the outside diameter of the spool and the inside diameter of the housing. Both the spool and housing were made from similar aluminum alloys that have a propensity to gall and adhere to each other when rubbed together. Further examination showed the nose landing gear hydraulic system did not have a required volumetric hydraulic fuse designed to minimize the loss of hydraulic fluid in the event of a line break downstream of such a device.

The NTSB determined the probable cause to be the pilot flying's decision to land on a shorter-than-recommended runway with a known left hydraulic system failure rather than go around as suggested by the pilot-not-flying. The Board also cited the flying pilot's failure to apply emergency brakes immediately after the primary brakes were found to be inoperative, as well as the late go-around attempt with insufficient runway remaining.

Contributing to the accident was the nose landing gear swivel assembly failure; the lack of a hydraulic fuse before this critical failure point; and the design of the swivel, made of two similar alloys inclined to bind when rubbed together. Finally, the NTSB cited the lack of a disciplined cockpit environment as a contributing factor.

### PILOT FAILED TO MAINTAIN ROTOR CLEARANCE

**MD500E, near Elverta, Calif., Feb. 4, 2011**–The helicopter was being operated under Part 133 by Wilson Construction on a power line installation mission when the rotor became entangled with a sock line rope used to string new lines. The main rotor blades made contact with the sock line rope, which then wrapped around the mast as the blades pulled it in.

The pilot lost control of the helicopter as it began an uncontrolled descent to the ground, coming to rest upright about 10 feet south of the power line structure. The lineman who had been riding on the skid was lying on the ground but still attached to the helicopter by her fall restraint and positioning belt. The pilot extricated himself safely from the helicopter. Both reported only minor injuries.

The helicopter operator reported the aircraft was working on a project to construct 30 miles of high-power electrical lines oriented north to south. Because it is not possible to pull the conductor wire through bundled travelers unless the sock line is actually in contact with a roller, construction crews install a hold down, a temporary block they secure to a ground anchor. They adjust the anchor rope on the sock line to maintain the proper tension.

A lineman was positioned on the skid of the helicopter to install a hold down at the power line structure as the pilot positioned the helicopter about 30 to 50 feet south of the structure. The pilot believed he was properly positioned near the sock line so that they could perform the task safely. The lineman on the skid placed the larger of the two hold-down ropes over the sock line and allowed it to fall. The lineman allowed the hold-down block to hang by the large rope just below, but the large rope tangled as it fell to the ground. The lineman on the ground tried unsuccessfully to clear the tangle. The lineman on the skid, with one hand on the hold down, was preparing to release the second smaller rope downward on the other side of the sock line when the rotor blades first made contact.

The NTSB determined the probable cause to be the pilot's failure to maintain rotor-blade clearance from an installation rope while maneuvering to install power lines. ■

*The material on this page is based on the NTSB's report (preliminary, factual or final) of each accident or, in the case of recent accidents, on information obtained from the FAA or local authorities. It is not intended to judge or evaluate the ability of any person, living or dead, and is presented here for informational purposes.*

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# Compliance Countdown by Gordon Gilbert

## Within 6 Months

▶ **Feb. 18, 2015** NEW

**Halon Phaseout Schedule Proposed by EASA**

The European Aviation Safety Agency has proposed a phase-out schedule for the use of halon fire-extinguishing agents in lavatory waste receptacles and portable handheld fire extinguishers in large private and commercial airplanes and rotorcraft. Comments are due by February 18. The agency says there are currently or soon will be two alternative fire-extinguishing agents available. The proposed schedule calls for the replacement of halon in lavatories on newly built aircraft starting Jan. 1, 2016, and in handheld extinguishers on newly built aircraft starting Jan. 1, 2019. End dates for the use of halon on current and new type-certified aircraft are already in effect under EU regulations.

▶ **Feb. 22, 2015** REVISED

**Dispatcher Training Comment Period Extended**

Supporting documents have been added to the proposed revised policy for dispatcher certification courses and the proposal's comment period has been extended to February 22 this year from December 22 last year. The agency says there is a need to establish a formal policy related to the operation and oversight of FAA-approved Aircraft Dispatcher Certification Courses because the current lack of a policy "has led to a wide range of inconsistencies with respect to individual course approvals." According to the agency, the proposed guidance, contained in a revision of FAA Order 8900.1, and a new AC will "clarify the requirements currently found in FAR Part 65, Subpart C."

▶ **March 6, 2015** NEW

**Carriage of Musical Instruments**

A final rule from the DOT sets revised rules, effective March 6, for carrying musical instruments as carry-on baggage or checked baggage. This rule, which responds to difficulties musicians have encountered when transporting their instruments during air travel, applies to all U.S. airlines and commuter carriers, as well as air-taxi operators providing transportation to the public directly regardless of the size of the aircraft they operate.

▶ **March 18, 2015** NEW

**Fuel Tank Lightning Protection**

Newly certified Part 25 airplanes are the subject of an FAA proposal and draft advisory circular to upgrade lightning protection standards for fuel tanks and related systems. This proposal would establish design and maintenance requirements to prevent fires and explosions from lightning strikes. The requirements would apply to type certification of new or significantly modified transport-category airplanes, as well as to applicants for STCs dealing with modifications to fuel tanks structures and systems. Comments are due by March 18. The FAA identified only four instances of fire and/or explosions of fuel tanks from suspected lightning strikes since 1959, with the last one occurring in 1976.

▶ **April 22, 2015**

**Corrections to New Helicopter Operating Rules**

On Feb. 21, 2014, the FAA published a final rule upgrading helicopter private, commercial and air ambulance operations, effective April 22, 2015. The FAA has corrected Part 91.155 and removed duplicative flight visibility requirements for operations in Class G airspace. Also, the agency fixed Part 135.609 to delineate VFR and IFR operations. Finally, the agency corrected Part 135.621(b) by clarifying the intended list of topics that must be included in the certificate holder's FAA-approved medical personnel training program.

▶ **April 23, 2015**

**Approvals Required for Extended Ops in WATRS Airspace**

Revised OpSpec/MSPec/LOA B045, *Extended Overwater Operations Using a Single Long-Range Communication System*, will require certain operators to obtain a mandatory new approval by April 23, 2015. The approval applies to Part 91K, 121, 125 or 135 operators using a single long-range com system in the West Atlantic Route System, Caribbean or Gulf of Mexico. The current template for B045 is combined for Parts 121, 125 and 135, causing "confusion with respect to operational control organizations," the agency said. "The new templates are tailored to the operational control organization and communication requirements of each part."

## Within 12 Months

▶ **Dec. 1, 2015 and Jan. 1, 2017**

**European Union Tcas Version 7.1 Directive**

Turbine aircraft that are approved to carry 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**

About 10 months remains to the Dec. 31, 2015 deadline after which jets with an mtow of 75,000 pounds or less 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 affects 457 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. Of the 17 models of airplane affected by this ban, hushkits are currently available for at least seven: the Dassault Falcon 20; Learjet 23, 24 and 25; Sabreliner 80; and Gulfstream II and III.

## Beyond 12 Months

▶ **June 8, 2016 and June 7, 2020**

**Europe Delays ADS-B OUT Mandate**

The earliest ADS-B OUT requirement in Europe was Jan. 8, 2015, for new aircraft, with retrofit installations due Dec. 7, 2017. The new dates are June 8, 2016, for new aircraft and June 7, 2020, for retrofit. The revised date for retrofits is more closely aligned with 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. ❑

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**David Longridge** was tapped to be the next president of *Boeing Business Jets*. Longridge succeeds **Steve Taylor**, who recently was named chief pilot of Boeing Flight Services. Longridge was an original member of the BBJ team, serving as sales director for BBJ when the group was founded. Most recently, he was sales director for Boeing managing the British Airways, Finnair, Iberia and TUI accounts.

*Airbus Group* selected **Tom Williams** as Airbus COO, succeeding **Günter Butschek**, who is leaving the company. Williams also was named a member of the Airbus Group Executive Committee. **Didier Evrard** will move over from his role as head of the A350 XWB program to replace Williams as Airbus executive vice president for programs. Also, **Klaus Richter**, chief procurement officer for Airbus and Airbus Group, was promoted to become a member of the Executive Committee and is also becoming the national representative for Airbus in Germany.

The *Thales* board of directors selected **Patrice Caine** and **Henri Proglio** new directors. Caine initially will serve as chairman and CEO, but Proglio will become chairman long-term. Proglio, a director of Dassault, most recently was chairman and CEO of EDF. Caine had been Thales senior executive v-p and COO.

**William Ayer** was named to the *NBAA* board of directors. Ayer, former CEO and chairman of Alaska Airlines, is on the board of directors for Honeywell and a member of the FAA's Management Advisory Council. *NBAA* named **James Buchanan** and **Rick Mrkacek** to its Certified Aviation Manager Governing Board. Buchanan, who was named chairman, is director of flight operations and administration for AT&T. Mrkacek, who was named secretary/treasurer, is flight operations manager at Country Financial. **Mark Larsen**, senior manager of safety and flight operations at NBAA, was named to the board of governors of the *Air Charter Safety Foundation*.

*Jet Aviation* named **Gary Dempsey** senior vice president of customer care worldwide. Succeeding Dempsey as senior vice president and general manager of U.S. Aircraft Services is **Dave Paddock**. Along with his new duties, Paddock will continue to oversee Jet Aviation's Group Business Development & Strategic Planning organization.

**Aoife O'Sullivan**, a London-based partner at international law firm Kennedys, has joined the board of directors of *Aerion*. O'Sullivan specializes in aircraft finance and regulatory issues.

*Gulfstream Aerospace* named **Mark Knall** vice president and general manager of the company's facility in Appleton, Wis. Knall previously spent nearly 20 years at Pratt & Whitney in East Hartford, Conn.

**Chris Hand** joined management and charter specialist *Key Air* as vice president, director of operations. Hand brings a background in Part 91 and 135 operations.

*Crownair Aviation* appointed **Rich Klunk** aircraft sales manager and Eclipse Aerospace authorized sales representative, Western region.

*Bell Helicopter* named **David Bond** regional sales manager, covering the UK and northern Europe. Bond previously steered sales and business development activities in the UK for helicopter operator Bond Air Services.

**Muhammad Shakeel** was named Pakistan manager for *Euro Jet Intercontinental*.

**Ken Hylander** was named board chairman of the Flight Safety Foundation. A former Delta Air Lines executive, Hylander has been serving as chair-elect since November 2013.

*Inmarsat* named **Mary McMillan** v-p of aviation safety and operational services. She was most recently senior v-p for aerospace safety and environment at Tetra Tech AMT.

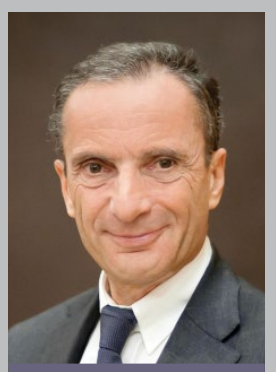
**Christian Venuto** was named charter sales executive at *GrandView Aviation*. She was previously a SEO content writer for creative marketing company Groove and an aeronautical information specialist for Lockheed Martin.

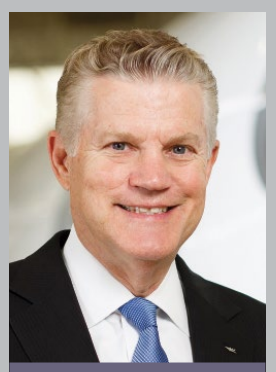
**Meredith Siegfried**, Nordam CEO, was appointed to the board of directors of the *Smithsonian National Air and Space Museum*.

**James Kilmetis** joined *Private Jet Services* as business development executive. Previously he worked for Air Charter Service.

**Ni Jiliang** was promoted to general manager of *Ameco Beijing*. Ni joined Ameco Beijing in 1988.

**Mike Marie** has joined *Sandel Avionics* as North American sales representative. He has held various avionics roles with Ryan International, Avidyne and DAC International. ❑


Henri Proglio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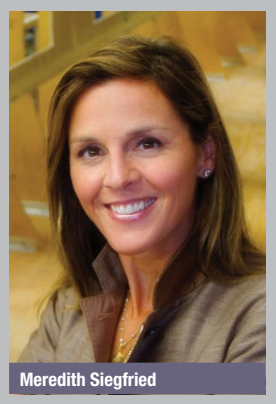
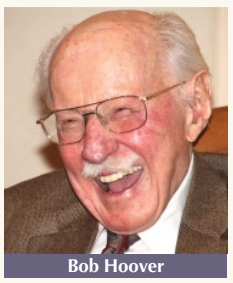
Chris Hand


Meredith Siegfried


Mike Marie

## Awards & Honors

**Bob Hoover** received the 2014 Wright Brothers Memorial Trophy. The National Aeronautic Association presented the Wright Trophy in recognition of Hoover's more than 50-year career in aviation. Hoover entertained audiences for decades, flying in more airshows than any other pilot. Jimmy Doolittle once called Hoover the "greatest stick-and-rudder man who ever lived." During World War II he flew 58 combat missions before he was shot down over Germany and taken prisoner. After spending 16 months in a prisoner-of-war camp, he stole a German Focke-Wulf Fw-190 and escaped to the Netherlands. He served as a test pilot for the U.S. Air Force and later was a corporate test pilot for North American. He flew the chase plane when Chuck Yeager broke the sound barrier.


Bob Hoover

The late **Robert Hartzell**, a neighbor of Orville Wright known for his pioneering work in aircraft propellers, was among four leaders named to the National Aviation Hall of Fame. Announced in December, the four will be enshrined on Oct. 2, 2015. Also to be enshrined are B-29 mothership and XB-49 pilot **Brig. General Robert L. Cardenas**, USAF; Apollo 13 mission flight director **Eugene (Gene) Kranz**; and the late **Abe Silverstein**, credited as the "Father of Apollo."

**Dr. Simon Mitchell** was awarded The British Helicopter Association's Eric Brown award. The award is given to the individual considered to have made the greatest and most significant contribution to the British helicopter industry during the past year. Mitchell is a director of Starspeed and visiting fellow at Cranfield Safety and Accident Investigation Centre. He has been a helicopter pilot for more than 27 years, a career that has included stints as a commercial pilot flying for the offshore oil-and-gas industry and onshore with the London Metropolitan Police Service.

**Jerry Johnson**, a former chief pilot at PlaneSense, was presented with the Wright Brothers Master Pilot Award from the FAA. The award recognizes pilots who have contributed and maintained safe flight operations for 50 or more consecutive years. Johnson started his career as a Marine Corps A-4 attack pilot in Vietnam. Later, he flew O-1 Bird Dogs in a close air support tour. After leaving the military, Johnson joined Northwest Airlines and retired as a 747 captain after 34 years. He joined Alpha Flying, which later became PlaneSense, where he served as chief pilot. He finished his career flying for a non-government contractor in Africa.

**Richmond Nettey**, associate dean at Kent State University's College of Applied Engineering, Sustainability and Technology, has received the University Aviation Association's William A. Wheatley Award. The award is presented to a professional educator who is involved in the University Aviation Association and has made significant contributions to aerospace education over the course of at least 10 years. Nettey received the award for his work at Kent State and on aviation committees at the National Research Council and the Transportation Research Board of the National Academy of Sciences in Washington, D.C. ■

## Final Flight

Gulfstream contract pilot and outspoken industry advocate **Jeff Beck** passed away January 6 in Houston, where he was undergoing treatment for leukemia. Beck, 66, had more than 22,000 hours total time flying Gulfstreams, Learjets and Citations and had served as a captain for numerous operators, including Eagle Jet Charter, Martin Aviation, Casper Air Services and Air Bahia Airlines. He also was the aviation manager for Hotel Hacienda Cocoyoc in Mexico City. For the past two decades, he served as a contract pilot, a career path he had championed, helping mentor numerous other contract pilots and striving for a high level of standards.


JETWHINE
Jeff Beck

He also served in the U.S. Army, 101st Airborne, from 1965 to 1968. He served in the Vietnam conflict from 1966 to 1967 and was awarded a Purple Heart and Bronze Star. He called his military service the most valuable education experience of his life in that it shaped his professional attitude toward mission, passengers, crew and safety. *–K.L.*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**– Cherie-Lee Forrester**
***Operations Manager***
***Chopper Worx, South Africa***


Helicopter Association International

# Calendar Compiled by Jane Campbell

## FEBRUARY

**AIRCRAFT INTERIORS MIDDLE EAST…**Feb. 2-3, Dubai World Trade Center, Dubai, United Arab Emirates; Info: (971) 0 4 603 3300; www.aime.aero.

◆ **SCHEDULERS & DISPATCHERS CONFERENCE…**Feb. 3-6, San Jose McEnery Convention Center, San Jose, Calif. Info: (202) 783-9000; www.nbaa.org.

**AVIATION SYMPOSIUM ON AIRCRAFT FINANCING AND LEASING IN ASIA…**Feb. 5, Singapore. (305) 767-4707; www.aeropodium.com.

**INTRODUCTION TO MACHINERY AND EQUIPMENT VALUATION TRAINING COURSE…**Feb. 5-8, Farnborough, England. Info: (800) 272-8258; www.appraisers.org.

**ABU DHABI AIR EXPO…**Feb. 8-10, Abu Dhabi Air Expo, Al Bateen Executive Airport, Abu Dhabi, United Arab Emirates. Info: (971) 0 2419 2714; www.abudhabiairexpo.com.

**PACIFIC NORTHWEST AEROSPACE ALLIANCE CONFERENCE…**Feb. 10-12, Lynwood, Wash. (425) 885-0290; www.pnaa.net.

**REGIONAL FORUM…**Feb. 19, Palm Beach International Airport, West Palm Beach, Fla. Info: (202) 783-9000; www.nbaa.org.

**LEADERSHIP CONFERENCE…**Feb. 24-26, Loews Ventana Canyon Resort, Tucson, Ariz. Info: (202) 783-9000; www.nbaa.org.

## MARCH

**BUSINESS AIRCRAFT FINANCE, REGISTRATION AND LEGAL CONFERENCE…**March 1-3, Hyatt Regency Coconut Point Resort, Bonita Springs, Fla. Info: (202) 783-9000; www.nbaa.org.

◆ **HELICOPTER ASSOCIATION INTERNATIONAL HELI-EXPO…**March 3-5, Orange County Convention Center, Orlando, Fla. Info: (703) 683-4646; www.rotor.com.

**WOMEN IN AVIATION INTERNATIONAL CONFERENCE…**March 5-7, Hilton Anatole, Dallas. Info: (937) 839-4647; www.wai.org.

**AIR CHARTER SAFETY SYMPOSIUM…**March 10-11, NTSB Training Center, Dulles, Va. Info: (888) 723-3135; www.acsf.aero.

**INTERNATIONAL OPERATORS CONFERENCE…** March 23-27, Grand Hyatt, San Antonio. Info: (202) 783-9000; www.nbaa.org.

**CORPORATE AVIATION SUMMIT…** March 25, Hill Dickson law firm, London. Info: (305) 767-4707; www.aeropodium.com.

**OPPORTUNITIES IN BUSINESS JETS CONFERENCE…**March 25, Westin Dragonara Resort, Malta. +44 20 3560 8154; www.quaynote.ca.

## APRIL

**AIRCRAFT ELECTRONICS ASSOCIATION CONVENTION…**April 8-11, Dallas. Info: (816) 347-8400; www.aea.net.

**AIRCRAFT INTERIORS EXPO…**April 14-16, Hamburg Messe, Germany. Info: +44 (0) 20 8271 2174; www.aircraftinterirosexpo.com.

◆ **ASIAN BUSINESS AVIATION CONFERENCE & EXHIBITION…**April 14-16, Shanghai, China. Info: (202) 783-9000; www.nbaa.org.

**AERO FRIEDRICHSHAFEN…**April 15-18, Friedrichshafen, Germany. Info: +49 7541 708-367; www.aero-expo.com.

**INTERNATIONAL AIRCRAFT REPOSSESSION CONFERENCE…**April 21, Dublin, Ireland. Info: (305) 767-4707; www.aeropodium.com.

**SUN 'N' FUN FLY-IN & EXPO…**April 21-26, Lakeland, Fla. Info: (863) 644-2431; www.sun-n-fun.org.

**TWIN COMMANDER UNIVERSITY…**April 23-25, Savannah, Ga. Info: (919) 956-4300; www.twincommander.com.

**REGIONAL AIR CARGO CARRIERS ASSOCIATION CONFERENCE…**April 28-30, Hilton Scottsdale Resort, Scottsdale, Ariz. Info: (508) 747-1430; www.raccaonline.org.

## 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.

◆ **REGIONAL AIRLINE ASSOCIATION CONVENTION…**May 11-14, Cleveland. Info: (202) 367-1170; www.raa.org.

**BUSINESS AVIATION SAFETY SUMMIT…**May 13-14, Bonaventure Resort and Spa, Weston, Fla. Info: (703) 739-6700; www.flightsafety.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.

## JUNE

**SAFETY AND AUTOMATION IN AVIATION FORUM…**June 2-3, Eurocontrol headquarters, Brussels, Belgium. Info: +32 2 729 90 11; www.eurocontrol.int.

**AMERICAN ASSOCIATION OF AIRPORT EXECUTIVES ANNUAL CONFERENCE AND EXPOSITION…**June 7-10, Philadelphia, Pa. Info: (703) 824-0500; www.aaae.org.

◆ **PARIS AIR SHOW…**June 15-21, Le Bourget Airport, Paris. Info: www.siae.fr.

**PAN AMERICAN SAFETY SUMMIT…** June 22-26, Medellin, Colombia. Info: (786) 388-0222; www.alta.aero.

**INTERNATIONAL CONFERENCE ON ICING OF AIRCRAFT, ENGINES AND STRUCTURES…** June 22-25, Prague, Czech Republic. Info: (703) 684-4646; www.vtol.org.

**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.

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▲ Indicates events for which **AIN** will provide special online coverage and e-newsletter.

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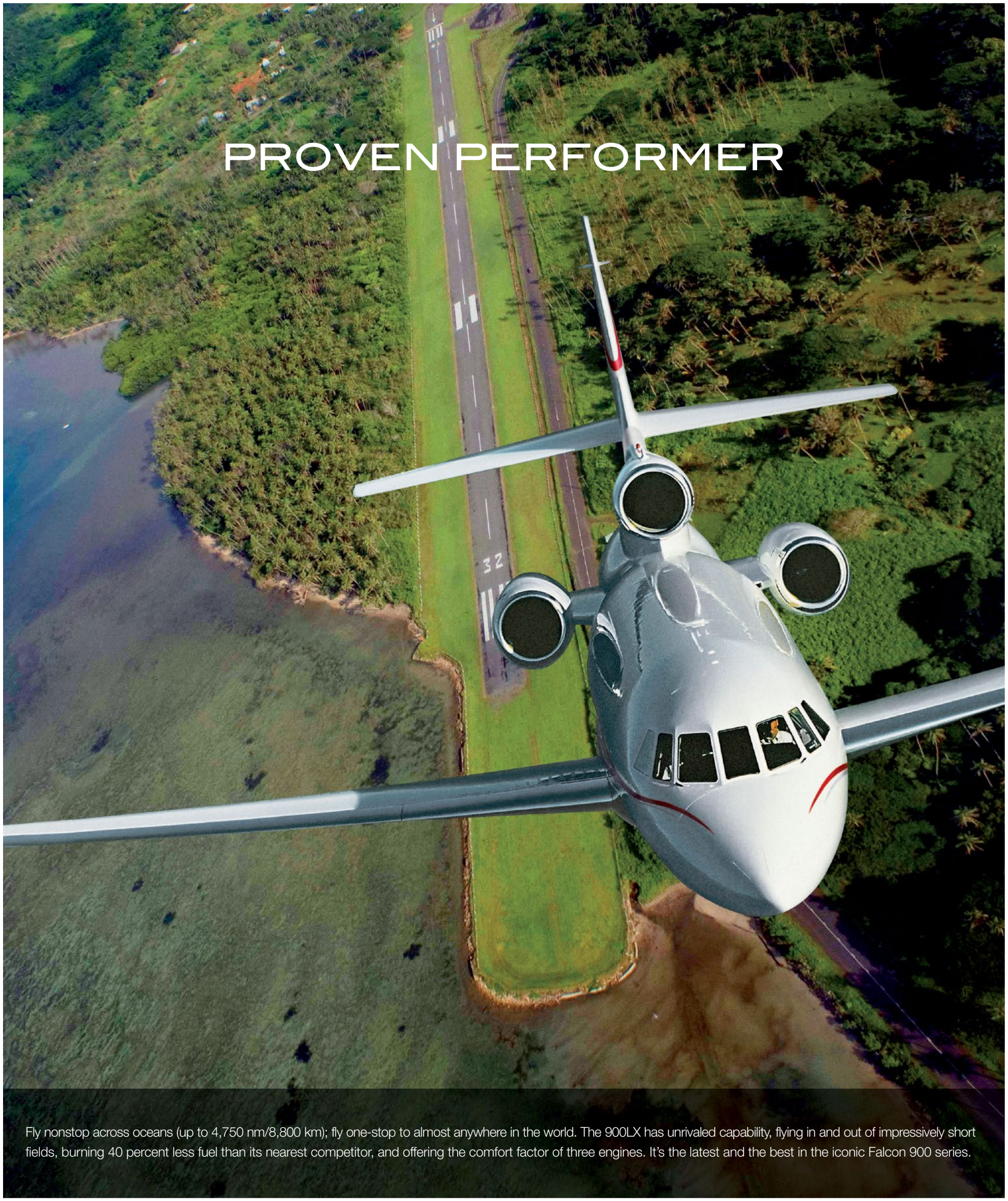


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