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AIN Flies the HondaJet

Now that the HondaJet has received FAA and EASA certification and deliveries have begun ramping up, **AIN** traveled to Honda Aircraft headquarters in Greensboro, N.C., to fly the new jet (**see page 44**). Our overall impression after flying both the full-flight simulator and the new jet is that the HondaJet is a strong performer with excellent handling characteristics and an intense focus on single-pilot ergonomics and safety.

The cockpit and the Garmin G3000 flight deck are well thought out for both highly experienced jet pilots and pilots who are transitioning into the HondaJet from smaller airplanes. Cockpit procedures follow an ideal logical flow, with comprehensive yet simplified checklists helping pilots manage their flying efficiently and safely.

The HondaJet feels like a larger jet: its firm and positive handling characteristics are not too light but well harmonized and just right for this size airplane. Performance is better than originally projected by Honda Aircraft, and we saw a maximum cruise speed of 423 ktas at FL330, three knots above the previously published 420-knot max cruise number (and the number that gave the HondaJet its HA-420 model designation).

The GE Honda Aero HF120 engines deliver smooth and rapid acceleration on takeoff and a climb rate of nearly 4,000 fpm through 4,000 feet. We climbed to the maximum altitude of FL430, although not directly, and fuel flow was just 610 pph and speed settled at 332 ktas.

During landing, the HondaJet again felt like a larger airplane, with little tendency to float and a firm touchdown and smooth rollout, with no need to engage the anti-skid braking. *–M.T.*

ICAO emissions scheme likely coming later this year

by Kerry Lynch

With a general agreement hashed out earlier this year on a basic CO_2 emissions standard for aircraft, the International Civil Aviation Organization (ICAO) is now turning to one of the most politically difficult issues surrounding the implementation of such a standard: the use of market-based measures.

In February ICAO's Committee on Aviation Environmental Protection (CAEP) formally recommended the emissions standard, paving the way for adoption by the full ICAO Governing Council and General Assembly later this year.

The standard itself has captured mostly support from aviation groups, which said it underscores the industry's commitment to addressing climate change. But debate surrounding market-based measures (MBMs), or levies on emissions output, largely remained quiet during the development of the CO_2 standard. With a standard on the cusp of being finalized, ICAO recently assembled a "High Level Meeting" to begin the dialog on how to use MBMs to implement the CO_2 standard.

The meeting, held just before EBACE, did not result in a specific solution; working groups are expected to hash out details over the summer in time for a fall meeting, said NBAA COO Steve Brown.

During the meeting, Europe's controversial EU-ETS plan continued to draw support from European representatives. But individual states within Europe also acknowledged the need for a global approach. Numerous other nation participants also backed a global approach, as did the aviation community.

On the eve of the meeting, industry groups gathered for a Global Sustainable Aviation Forum where they collectively agreed to a statement on the global approach. "The minimization of market distortion is a key issue for operators and states and, as such, any offsetting mechanism must have a globally agreed set of

Continues on page 74 ▶

Special Report

Completions and Refurbishment

Owners of business aircraft always want newer and better, even if that means refreshing an existing aircraft. Completion centers are more than happy to oblige, using new tech to streamline projects for aircraft of all sizes. **page 20**

Unmanned Aircraft

Commercial Operation of Drones

An analysis of the exemptions requested to allow commercial operation of small unmanned aircraft in the NAS hints at the largest sector for growth–precision agriculture–followed by more conventional uses. **page 34**

Safety

Phenom crash sheds light on ice

In addition to calling for an automatic system to warn pilots when icing protection should be activated, the NTSB shined a light on the fact that the pilot did not follow established written procedures. **page 6**

Regulations

Changes coming for overtime rules

The new U.S. labor law essentially doubles the minimum salary for employees exempt from overtime pay. The changes will affect nearly everyone in the industry and the time to prepare is now. **page 16**

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SPECIAL REPORT

Completions and Refurbishments

Our annual take on the cabin completion industry reveals some new approaches to the perennial quest for ever more comfort, flexibility, onboard productivity and utility. **Page 20**

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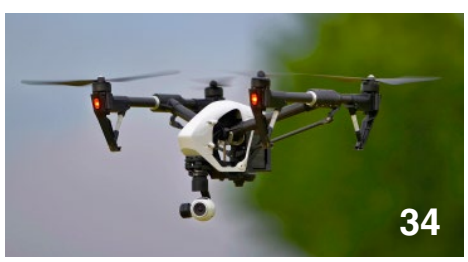

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As we go to press

GULFSTREAM TAKES G600 CABIN ON TOUR

As the first G600 continues to come together, Gulfstream is taking a full-scale cabin mockup on tour this summer around the U.S. The road show will give customers a look at some of the design concepts incorporated in both the G600 and its sister G500, Gulfstream said, and provide the company with feedback on the cabin and cockpit. Gulfstream took the wraps off the redesigned G600 cabin at the NBAA Convention last year in Las Vegas. The tour will make nearly a dozen stops through September.

BOMBARDIER SETS UP SHOP AT BIGGIN HILL

Bombardier will establish a fully owned heavy maintenance service center in a former Rizon Jet hangar at London Biggin Hill Airport. Set to begin operations by this year's fourth quarter, the facility will have 32,991 sq ft (3,065 sq m) of space and will be equipped to perform both scheduled and unscheduled maintenance as well as modifications, avionics installations and AOG support for Learjets, Challengers and Globals. The location will also boost Bombardier's parts availability in Europe.

EASA RELEASES CS-23 PROPOSAL

The European Aviation Safety Agency issued its proposed rewrite of certification rules governing light aircraft, putting the new European CS-23 regulation on pace for release later this year. The EASA Notice of Proposed Amendment (NPA) 2016-05 was issued a little more than three months after the U.S. FAA had published its own proposed rewrite of Part 23 certification rules and more than a year after the European agency had issued an advance notice of proposed amendment to gather initial industry comment. The NPA anticipates a final decision in the fourth quarter.

DELTA PRIVATE JETS TO ADD GOGO BIZ 4G

Delta Air Lines subsidiary Delta Private Jets will become the first business aviation charter/management provider to implement fleet-wide installation of Gogo Biz 4G, the high-speed airborne connectivity system that Gogo is bringing to the business aviation market. Gogo's 4G service has been available to its airline customers since 2012, and Gogo Business Aviation's 4G service will enter service in next year's second quarter. Delta Private Jets plans to install Gogo Biz 4G on more than 70 airplanes.

HELICOPTER EMS COMING TO INDIA

U.S.-based Air Medical Group Holdings (AMGH) is partnering with Aviators Air Rescue of India to provide the first dedicated helicopter EMS (HEMS) operations in that country. The program will use a trio of specially equipped Airbus Helicopter H130 singles beginning later this year. Aviators Air Rescue will operate the service with technical expertise and standards provided by AMGH, the parent company of Air Evac Lifeteam. The helicopters and pilot and crew training will be supplied by Airbus Helicopters in Grand Prairie, Texas. Support in India will be provided by Airbus Helicopters India. The service's rollout follows the recent release of Indian Directorate General of Civil Aviation (DGCA) regulatory guidelines permitting operation of single-engine, dual-pilot EMS helicopters.

VIKING TO ACQUIRE AMPHIB PROGRAM

British Columbia-based Viking Air has agreed to acquire Bombardier's amphibious water bomber program (the turbine-powered CL-415 and CL-215T and the original piston-powered CL-215). Once approved, the deal will transfer the type certificates for all variants of Bombardier amphibians to Viking, ending a chapter for the Montreal-based OEM that stretches back nearly a half-century. Bombardier built its last CL-415 last December before pausing the program.

NEW JERSEY TAX PROPOSAL DRAWS IRE

Aviation industry leaders are waging a campaign against a New Jersey measure to more than double the state tax on aviation fuels and eliminate an exemption for airlines from taxes on fuel purchased in the state but burned beyond state borders. The measure would raise the tax of 2.75 percent of gross receipts to 7 percent. Companion bills containing the tax changes were introduced in the New Jersey House and Senate, generating substantial opposition from industry groups, with letters sent to state lawmakers from NATA and NBAA, along with Airlines for America, International Association of Machinists and Aerospace Workers, Teamsters and individual airlines.

PRE-OWNED BIZJET INVENTORY GROWS

The inventory of pre-owned business jets on the market continues to creep up, according to analyst UBS. In its latest Business Jet Update, UBS notes that the inventory of available business jets rose by a percentage point in May, approaching 11.5 percent of the installed base. However, it is still below the historical average of 13 percent. The inventory of young aircraft (those from zero to 10 years old) was up 2 percent, while "very young" aircraft (from zero to five years old) grew by 4 percent in May. Over the past year, the very young inventory has inched up 3 percent while the six- to 10-year-old segment has jumped 21 percent.

The FAA awarded type certification for the Piper M600 on June 17.

Piper ready to begin deliveries of M600

by Matt Thurber

The FAA awarded type certification for the M600 turboprop single during a ceremony on June 17 at Piper's headquarters in Vero Beach, Fla. In attendance were 700 guests, among them Piper employees, dealers and suppliers and local community leaders. FAA ODA administrator Eric Wright presented the type certificate to Piper Aircraft president and CEO Simon Caldecott.

The $2.853 million M600 is a more powerful and redesigned version of the M500 with Garmin G3000 touchscreen-controlled avionics. Both share the same Pratt & Whitney Canada PT6-42A engine, but the M600's is flat-rated to 600 shp, up from the M500's 500 shp. The boost in power provides a significant increase in performance, and the M600's final performance numbers showed improvements from the originally projected figures.

Three flight-test M600s logged more than 1,850 hours in the test campaign. First delivery is scheduled for this month, although flight-into-known-icing certification remains pending and is expected in December.

According to Piper, the M600's maximum range (NBAA IFR) is now 1,484 nm (at intermediate power settings), up from the projected 1,200 nm (and 1,000 nm for the M500), and max cruise speed climbed to 274 ktas from the M500's 260 ktas. The M600's mtow is 6,000 pounds, up from the M500's 5,092 pounds, and this helps accommodate the M600's greater fuel capacity: 260 gallons versus 170 gallons in the M500.

Upgrades from M500

The M600's standard equipped weight is a little more than 200 pounds higher than the M500's. Full-fuel payload for the M600 is 645 pounds compared to 550 for the M500, and the M600's larger fuel capacity allows more loading flexibility, especially when flying a trip distance equal to the M500's maximum range.

The G3000 flight deck in the M600 features two GTC 570 touchscreen controllers mounted just below the center MFD and forward of the throttle console. The avionics in the M600 are a major upgrade from the G500's G1000 suite and add 60/40 split-window capability on the PFDs, which allows display of synthetic vision in one 60-percent pane and a chart or other information in the 40-percent pane. The G3000 package also adds the enhanced map HSI feature, which allows overlay of information on the HSI such as map, SafeTaxi, flight plan, Metars, Nexrad, weather radar and more. Other avionics features include emergency descent mode, electronic stability protection, level mode button and underspeed/overspeed protection. An Aspen Evolution backup display is mounted to the left of the pilot's PFD.

The M600's seats have been redesigned for more comfort, and passenger side panels improved with a new passenger interface, according to Piper. Other interior features include USB charging ports, folding executive tables and folding seats.

"We are delighted to announce the certification of the M600 by the FAA," said Caldecott. "With unique and innovative safety features for the single-engine turboprop segment, the competitiveness of the M600 is further enhanced by the aircraft's performance and industry-leading operating and acquisition costs." ❑

The Piper M600 has an mtow of 6,000 pounds and a range of 1,484 nm.

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NEWS BRIEFS Compiled by Chad Trautvetter

North American Bizav Flying Regroups

Business aviation activity in North America rebounded in May after an unexpected 0.6-percent drop in April, according to data released by business aviation services group Argus International. Flying during the month was up 2.2 percent from a year ago—a full percentage point above the firm's forecast. For last month, Argus expected a 1.9-percent year-over-year gain. All operational categories saw gains in May, with the Part 135 segment activity leading the pack, climbing 2.6 percent over last May. Part 91 flying jumped by 2.1 percent, while fractional activity rose by 0.9 percent from a year ago. Flight activity by aircraft categories was largely positive during the month, with only midsize jets recording a slide, of 0.8 percent year-over-year.

New Airman Cert Standards in Place

The FAA rolled out new airman certification standards (ACS) aimed at applicants for the private pilot airplane certificate and instrument rating. The ACSs replace practical test standards. The agency expects to make similar transitions for other certificates and ratings in the future. Developed in collaboration with industry experts over the past five years, the ACSs are designed to provide pilots, instructors and evaluators a single-source set of "clear, logical standards that tell them what they need to know, consider and do to qualify and pass both the knowledge and practical tests for airman certification and ratings," the agency said.

Airbus To Divest All Shares in Dassault Aviation

Airbus Group announced plans on June 9 to dispose of all its remaining 1.33 million shares of Dassault Aviation, with 830,000 shares, or 62 percent, being sold to institutional investors and 502,282 shares bought back by Dassault Aviation. The private placement to institutional investors is via an issuance of bonds exchangeable into Dassault Aviation shares in five years. Simultaneously with this placement, Dassault acquired the more than half a million shares for €477 million ($536.6 million), equating to €950 ($1,069) per share. The offering to institutional investors was also priced at €950 per share, but the €1.078 billion ($1.21 billion) zero coupon bond issued, due in 2021, is exchangeable into Dassault Aviation shares at a 37.5-percent premium above the sale price of the shares.

Signature Expands at Biggin Hill

With the recent closing of the Rizon Jet FBO at London Biggin Hill Airport, Signature Flight Support signed an agreement with the airport authorities to expand its operations into the 140,000-sq-ft facility, starting June 20. Built in 2011 at a cost of $48 million, the location and its hangar can accommodate bizliners. The 20,000-sq-ft four-story FBO terminal has a boardroom, several more conference areas, a children's area and a prayer room. It also provides a dedicated crew briefing area and a quiet lounge area.

FAA Grilled on Controller Hiring

The FAA's inability to find enough qualified applicants to replace retiring air traffic controllers was in focus during a June 15 hearing before the House aviation subcommittee, with much of the discussion centered on the efficacy of recent changes to the agency's hiring process. Since 2014, initial testing for ATC applicants has used a multiple-choice "biographical assessment" that replaced questions about work experience relevant to the position. Rep. Randy Hultgren (R-Ill.) termed that change an "unnecessary social science experiment" that limits the pool of qualified trainees.

Icing accident prompts call for alerting system

by Kerry Lynch

Pointing to a failure to turn on the de-ice system in the December 2014 crash of an Embraer Phenom 100, the NTSB is recommending that the FAA and industry groups work together to develop a system to alert pilots when ice-protection systems should be activated and to develop improved training guidelines for winter weather operations.

The Safety Board, which met June 7 to discuss the accident, determined that the probable cause of the Dec. 8, 2014, Phenom crash in Gaithersburg, Md., was "the pilot's conduct of an approach in structural icing conditions without turning on the airplane's wing and horizontal stabilizer de-ice system, leading to ice accumulation on those surfaces." The NTSB also cited the pilot's failure to use landing speeds appropriate for the weather conditions and airplane weight.

"Pilots must rely on checklists and procedures because relying only on memory can have deadly results," said NTSB chairman Christopher Hart. "The pilot's failure to turn on the de-icing system in icing proved to be disastrous."

The Phenom, N100EQ, crashed on approach to Runway 14 at Montgomery County Airpark (GAI) in Gaithersburg. Operated by Sage Aviation, the aircraft ran into three houses about three-quarters of a mile from the approach end of the runway, killing the pilot, two passengers and three people in the houses.

Data from the airplane's cockpit voice and data recorder indicated that 15 minutes after taking off from Horace Williams Airport in Chapel Hill, N.C., the pilot turned on the aircraft's engine anti-ice and de-ice systems manually for about two minutes, but then manually turned them off.

Procedures Not Followed

About six minutes later, the pilot received a transmission from the automated weather observing system at GAI that the NTSB said contained "sufficient information to indicate that conditions were conducive to icing during the approach to GAI." However, the CVDR did not record any further activity involving either ice protection systems, "indicating the pilot did not turn the system back on," the agency said.

The Phenom 100 Pilot Operating Handbook calls for the pilot to perform a descent checklist before descending through 10,000 feet. For operating in normal icing conditions, the checklist would have included turning on the ice protection systems. But before beginning the descent, the pilot set the landing reference speed at 92 knots, indicating that he used performance data for operating with the ice protection systems turned off and for an airplane landing weight less than the aircraft's actual weight.

"Based on available evidence, the NTSB could not determine why the pilot did not turn on the wing and horizontal stabilizer de-ice system during the approach to GAI," the Safety Board said, noting the pilot's instructors reported that use of both ice-protection systems was covered during initial and refresher training.

The NTSB said it believes that pilots involved in single-pilot operations would benefit from an automatic alert when ice protection systems should be activated. The agency further believes that pilots would benefit from training beyond that required for a check ride.

The Board called on the FAA to work with the General Aviation Manufacturers Association (GAMA) to develop such an automatic alert for aircraft that require a type rating and are certified for single-pilot operations and flight in icing conditions. A similar recommendation was issued to GAMA to work with the FAA on the alert.

Noting that "significant work" has taken place over the past decade to mitigate icing risks, GAMA president and CEO Pete Bunce said that the industry will review the recommendations. Bunce added that efforts to get such new safety technology into aircraft will be advanced by the Part 23 rewrite and the associated F44 general aviation ASTM standards committee. "The new Part 23 framework lends itself to taking safety actions in a more timely and efficient manner to enable the fielding of new technologies in new and legacy fleet aircraft that will enhance aviation safety, including for icing conditions," he said.

Training Improvements

In addition to the icing alert, the Safety Board also focused on training. The agency recommended that NBAA work with members to develop enhanced pilot training guidelines on risk management in winter weather operations and on adherence to checklists.

"This crash demonstrates the importance of training, proficiency and professionalism for all pilots, professionals and non-professionals alike," Hart said. "General aviation pilots must take every precaution to prevent accidents. Their calculations must be as precise as possible, and they must follow required procedures applicable to their aircraft. Pilots can never safely skip a checklist or cut a corner, even once—because any flight can turn deadly." ❑

FAA RELEASES PART 107 RULE FOR COMMERCIAL DRONE USE

On June 21 the FAA released its long-awaited final regulation allowing for the commercial use of small unmanned aircraft systems (UAS) weighing less than 55 pounds. The Part 107 regulation, which takes effect late next month, permits daylight-only flights that remain within the visual line of sight of the drone operator. Beyond visual line-of-sight operations and flights over people will require waivers to the rule.

"This is a major milestone for safely integrating unmanned aircraft systems into our nation's airspace," declared Transportation Secretary Anthony Foxx during a teleconference. "These aircraft truly have the potential to transform the way we fly and they offer many potential benefits to society."

Under Part 107, the pilot of a small drone must be at least 17 years old and hold a "remote pilot" airman certificate with a small UAS rating. Qualifying for the certificate requires that a person pass an initial aeronautical knowledge test at an FAA-approved testing center, or earn a pilot certificate other than student pilot under Part 61. Those already holding a Part 61 certificate can complete an online training course for the small UAS rating.

Drone flights in all classes of airspace below 18,000 feet—other than in Class G uncontrolled airspace—require ATC permission.

The rule document explains that the FAA has been working to incorporate unmanned aircraft into the national airspace system since 2008. But former FAA executives have told **AIN** that the effort to draft the rule went through several iterations dating to the early 2000s. *–B.C.*

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NEWS BRIEFS Compiled by Chad Trautvetter

FAA OKs Williams FJ33-5A Turbofan

Williams International received FAA Part 33 type approval for the FJ33-5A last month. The turbofan employs aerodynamic and structural enhancements similar to those developed for the previously certified FJ44-3AP and -4A, giving the FJ33-5A more than 2,000 pounds of thrust, improved fuel economy and a thrust-to-weight ratio greater than 6:1. Since the new FJ33 has been selected to power the Cirrus SF50 Vision and Flaris LAR1, it also includes sensor suite redundancy and software revisions needed for use in a single-engine jet.

European Bizav Flying Dips in May

A 2-percent surge in business jet activity in Europe in May was not enough to lift overall business aircraft departures in the region, according to WingX Advance. In total, there were 73,687 business aviation departures in Europe that month, for a year-over-year decline of 0.1 percent. Weak growth was reported in Western Europe, buoyed by a 6-percent climb in flights from France. WingX said that most of the slide in the top markets came from falling turboprop activity, with jet activity rising slightly in the UK, Switzerland and Italy. Countries with the highest growth in all business aviation activity were Sweden, Greece, Belgium and the Netherlands, it noted. Dips in Russia and Turkey are trending at more than 10 percent.

Gulfstream Opens New Parts Center

Gulfstream Aerospace's new 405,868-sq-ft product-support distribution center (PSDC) in Savannah, Ga., started to ship and receive parts last month. The Leed Silver-certified building has 300 employees and houses $1.6 billion in parts for Gulfstreams. The distribution team manages 500,000 unique part numbers for 18 aircraft models at 11 warehouses and service centers worldwide, with the PSDC as the hub of this network.

FAA: Auto Detailers Not for Aircraft

The FAA is warning aircraft operators about using auto detailing companies to perform this task, since they cannot ensure compliance with maintenance-related procedures that are part of the washing process. Aircraft preparation tasks include covering static ports; post-wash procedures and maintenance checks/inspections; lubrication and other preservation tasks; replacement of defective environmental gaskets and sealant materials; and documentation. Thus, the agency recommends that "appropriately authorized" or certified personnel perform or supervise the work.

GE Relocates Flight Department

As General Electric moves its headquarters from Fairfield, Conn., to Boston over the next several months, the company has leased hangar space from Rectrix Aviation at Hanscom Field in Bedford, Mass., to be the new location for its corporate flight department. In September, GE expects to have its full complement of 70 department employees, as well as two AW139s and two Challenger 605s, occupying the 60,000-sq-ft hangar.

Van Nuys Hosts NBAA Forum

A record crowd turned up for NBAA's Van Nuys Regional Forum on June 9, with about 2,000 people attending, as well as 145 exhibitors, 21 aircraft and five vehicles on display. NBAA president and CEO Ed Bolen gave an update on recent developments in FAA reauthorization. There were also sessions on business aviation advocacy, aircraft transactions, public-private partnerships and IS-BAO/IS-BAH. The next NBAA Regional Forum is scheduled for September 15 at Westchester County Airport in White Plains, N.Y.

An artist's rendering shows Million Air's plans for a new facility in White Plains, N.Y. The company is securing approval for the construction of an Adirondack-style terminal. It already holds approval for construction of a hangar and plans to begin that project late this summer.

Million Air embarks on HPN expansion project

by Curt Epstein

With a new 30-year lease at New York's Westchester County Airport (HPN) in its pocket, Million Air is set to launch a major FBO construction project there this summer. Last year, the company acquired the franchise location in full, exercising its contractual right of first refusal, despite a purchase offer from Signature Flight Support parent BBA Aviation, which currently controls two of the five FBO properties there.

In May, the Houston-based service provider, which has 23 locations in its U.S. network, plus another six in foreign lands, received unanimous contract approval by the Westchester County Board of Legislators. "Million Air has ambitious plans to expand its operations and gear its operations toward a growing segment of the general aviation business in our region," said Mary Jane Shimsky, county legislator and chairwoman of the infrastructure committee. "I think it will be a good thing for the airport."

"That means we will have a good solid FBO at that location for the next 30 years that's going to take care of our business and corporate aviation along with our light general aviation," echoed Peter Scherrer, manager of the airport, which sees 400 operations a day, the vast majority of them general aviation.

The former franchise location was one of two properties on the airport operating under a lease restriction dating from the late 1990s, initially intended to protect small general aviation aircraft from being squeezed off the airport. It artificially limited the weight of aircraft that could be serviced on the FBO's ramp to 50,000 pounds, and the facility was not permitted to conduct refueling away from its ramp.

The new lease, which took effect on June 1, was the culmination of nearly eight years of negotiations with the county legislators to remove those restrictions on the leasehold, leaving the former Panorama Flight Services property (which was bought by Landmark Aviation and then in turn by private-equity firm KSL Capital Partners, when Signature was forced to divest the two Landmark FBOs at HPN as part of regulatory approval of February's Landmark purchase) as the only property at HPN still operating under the restrictions.

Indeed, according to Million Air White Plains general manager Pam Day, the facility handled its first large business jet, a G450, that very first day and serviced a dozen more in the first week it was eligible to do so.

Facility Construction

The new agreement on the 23-acre property paves the way for Million Air to embark on a $70 million building project at the New York City-area gateway. According to company CEO Roger Woolsey, it will start construction on a 54,000-sq-ft hangar by the end of the summer, with an expected completion date of spring next year. The structure will accommodate the latest big business jets and bring the location's storage space to 69,000 sq ft. Woolsey told **AIN** the hangar, which will have heated floors, is already more than half pre-sold, before the first shovelful of dirt has been turned.

"We've got a pretty strong waiting list," he said. "There are a lot of aircraft that have been ferrying into and out of White Plains that they have to house elsewhere just because there has not been adequate space."

He noted that fact during the lease approval process, claiming the additional hangar space would help reduce those repositioning flights for tenants, trimming the overall number of takeoffs and landings at the airport. Included in the $70 million is funding for more hangars to be built within the next three years.

Before year-end, Woolsey expects to get approval to break ground on a 20,000-sq-ft terminal built to Leed specifications, with an enclosed climate-controlled four-lane porte cochere. Designed in the Adirondack style, the building will feature stone, timber and fireplaces, resembling a grand park lodge. "When people arrive and depart on the aircraft, we want them to feel relaxed," said Woolsey, adding he wants customers to view the new FBO as an integral part of their travel experience. "I will know if I am successful or not [by whether] they actually come into the FBO, get a drink and sit by the fireplace for a few minutes before they depart. If they go straight to their jet, I'm going to feel like I didn't do my job right."

In 2014, Million Air sparked a building war among service providers in Houston with the opening of its flagship FBO at William P. Hobby Airport. Scherrer believes the project's hefty price tag could spawn a similar reaction at HPN, which last saw an FBO added in 1999. "Like anything else, you want to meet or exceed the competition," he said, regarding the potential for escalation among the three service providers. "We appreciate it and we like to see money invested in our airport." ❑

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NEWS BRIEFS Compiled by Chad Trautvetter

Piaggio UAS Prototype Crashes, Company Financials Fuzzy

Piaggio Aerospace lost its €30 million ($33.5 million) drone prototype last month when the Avanti derivative crashed into the sea off Trapani, Sicily, against a backdrop of uncertainty over the company's financial health. Press reports said the Genoa-based company's negotiations with the Italian government for a financial rescue package were stalled. Speculation surfaced in April that Piaggio's shareholder, Abu Dhabi sovereign fund Mubadala Development, was considering selling its full stake in Piaggio. "The company is taking a range of measures to address the current financial situation," a Piaggio Aero spokesman told **AIN**. "Its industrial plan is currently being updated with the support of financial advisor AlixPartners. The company and its shareholder will provide a further update once they are in a position to communicate a complete and clear roadmap." Mubadala did not respond to **AIN**'s request for comment.

Man Indicted for Unauthorized Flying

A California man has been indicted by a grand jury in Los Angeles U.S. District Court for operating private jets, first without proper certification and then after losing his pilot certificate. Arnold Leto III had his certificate revoked by the FAA in January, on charges that, among other offenses, he operated a Cessna 550 Citation II without a type rating from Santa Monica to Phoenix in January last year. He failed to surrender his certificate. As recently as April 8, he was the sole pilot of a Dassault Falcon 10, which requires a copilot to operate. According to the DOT, Leto flew the aircraft, N720DF, for compensation from Van Nuys to Las Vegas with passengers even though the company did not possess an air carrier or commercial operator certificate. He is scheduled for trial on July 12.

Regional Air Cargo Carriers: Terminal Procedures Volume Unwieldy

Citing a concern that the number of published procedures has swelled to nearly unmanageable numbers in busier terminal areas, the Regional Air Cargo Carriers Association (RACCA) asked the FAA to look at means to streamline and simplify those procedures. In a June 1 letter to Flight Standards director John Duncan, RACCA v-p John Hazlet pointed to the 58 different departure, arrival and approach procedures and notes pages in the current Jeppesen Airway Manual for Los Angeles International. He added that San Francisco International has 74 such procedures. "This large volume of published material has grown beyond the practical limits of usability by pilots in the cockpit," he said. "In many cases, the procedures appear to have been developed for the convenience of air traffic control, without regard for their impact on flight crews."

EASA Updates Criteria for Ramp Checks

The EASA has revised criteria it uses to trigger unannounced ramp checks of foreign aircraft. Its new guidelines list several specific items it might point to as probable cause that an aircraft might not be in compliance with regulations. They include information regarding poor maintenance of or obvious damage or defects to an aircraft; "abnormal [aircraft] maneuvers that give rise to serious safety concerns"; a previous ramp inspection that has revealed deficiencies; indications that the operator or the state in which the operator is based has been suspected of non-compliance; evidence that the state in which an aircraft is registered is not exercising proper safety oversight; and concerns about the operator based on instances of non-compliance that were recorded during previous ramp inspections.

Final hangar-use policy allays stakeholder fears

by Curt Epstein

When the FAA announced in 2014 that it would be introducing new hangar-use regulations at grant-assured airports, many hangar tenants viewed the rulemaking process with suspicion, concerned that they would be forced to dispose of comforts of home such as refrigerators, barbeque grills, pin-ups and lawn chairs.

Last month the agency issued its final policy on the non-aeronautical use of hangars, and fears of a draconian hangar sterilization policy, bent on eliminating everything but aircraft storage, proved unfounded. Rather, the FAA has adopted a commonsense approach that likely takes into account the more than 2,400 public comments it received.

Since the publication of a 1999 GAO report regarding the need for oversight of and enforcement on unauthorized land use at general aviation airports, the FAA has been conducting inspections at 18 airports a year, frequently encountering hangars packed with non-aviation items such as cars, boats and furniture, along with some hangar tenants operating businesses unrelated to aviation.

The primary focus of the new policy, which takes effect on July 1 next year, is to ensure the availability of hangars for aviation needs at airports funded by federal grants. However, the FAA acknowledges that there are periods of low hangar occupancy, during which airport sponsors can earn some income by renting out hangars for non-aviation activities.

Provided there is no immediate aviation use for the structure, sponsors must apply to the FAA to approve an interim non-aviation use of a hangar for a specified period. Non-aviation tenants may then be issued month-to-month leases until and unless there is an aviation need. Those leases must require the non-aeronautical tenant to vacate the hangar with 30 days' notice when there is an aeronautical need for the structure. The FAA's revenue use policy also requires the airport to identify and charge fair market value for the space while it is not used for aeronautical purposes.

Under recently issued FAA guidance, hangars at small airports can be used for non-aeronautical purposes if there is no immediate aviation use for the building.

Appropriate Aviation Use

As for storage of non-aviation items in hangars, the agency will defer to the local sponsor to decide specifically what is and is not allowed. The FAA will not consider a violation if the items do not impede the movement of aircraft in and out of the hangar or impede access to other aeronautical contents of the hangar. It will be more inclined to do so if the items in question are used to conduct a non-aeronautical business or municipal agency function. Aviation-related equipment such as towbars, glider towing equipment, workbenches and tools for the support of aircraft are considered appropriate aeronautical use.

The agency also changed its position on the use of a hangar for the construction of amateur-built aircraft, stating that this is an allowable use. An earlier draft would have allowed only final assembly of the aircraft. "AOPA believes that constructing an aircraft, not just the final assembly, is an aeronautical activity," said Jim Coon, AOPA's senior vice president of government affairs.

During the comment process, AOPA and the National Air Transportation Association (NATA) lobbied the FAA to alter its stance on the effort. "NATA appreciates the FAA's inclusion of our recommendations in the final policy and applauds the agency's efforts to standardize and formalize its non-aeronautical use of airport hangars policy," noted Thomas Hendricks, the organization's president and CEO.

To eliminate stalled construction projects, however, the FAA suggested that airport sponsors institute some sort of progress benchmark process for homebuilders. ❑

AIRBUS LAUNCHES ACJ350 XWB BIZJET

Airbus launched a private version of the A350XWB widebody, the ACJ350 XWB, at EBACE in late May *(see also page 21)*. The composite-construction bizliner will be able to fly 25 passengers up to 10,800 nm. The -900 version of the aircraft offers 2,910 sq ft of cabin floor area. Airbus is introducing what it calls an Easyfit process for outfitting the cabin interior in a more straightforward way by providing attachment points along the fuselage walls for anchoring completion elements.

"One of Airbus's greatest strengths is to offer customers the world's most modern and efficient series of aircraft, and the ACJ350 with Easyfit expands its corporate jet offering, giving customers a new way to take their business to the world. Our customers want the best and most modern aircraft that money can buy, and the ACJ350 exemplifies that," commented Airbus COO for customers John Leahy.

The ACJ350 XWB, which stands for Xtra Widebody, has fly-by-wire flight controls, an airport navigation system and a runway overrun prevention system. Deliveries of the A350-900 started in December 2014. Airbus has garnered orders for 800 A350-900s and (currently under development) A350-1000s from 40 customers. –*S.C.*

Airbus Corporate Jets launched the ACJ350, a bizliner version of the A350-900, at EBACE.

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NEWS BRIEFS Compiled by Chad Trautvetter

Flight Ops/Flexjet, Union Must Negotiate

A U.S. District Court has ordered the management of Flexjet and Flight Options to negotiate with the International Brotherhood of Teamsters, recognize the union's integrated seniority list (ISL) and rescind a voluntary separation agreement offer. The union sought the ruling with the U.S. District Court for the Northern District in Cleveland as the operators have been moving to integrate and streamline fleets. As a result, Flexjet and Flight Options had offered voluntary separation agreements to adjust the pilot workforce. This offer was made without first gaining acceptance by the Teamsters, which represents Flexjet and Flight Options pilots. Meanwhile, the operators had refused to accept the union's proposed ISL, calling the new list "blatantly unfair." In the May 25 ruling, the court said that it "is not [the operators'] duty to ensure the process is fair and reasonable, but rather a duty to accept the ISL list presented."

FAA Plans Meeting about Helo Filters

Facing criticism for its proposed new policy guidance on inlet barrier filter (IBF) installation on helicopters, the FAA has planned a July 7 public meeting at Fort Worth Alliance Airport to gather more technical information. The agency released the proposed guidance in January, saying it focused on two aspects for IBF installation approval: determining the power availability with the IBF and evaluating the bypass system. But the guidance raised fears among aftermarket producers that the requirements for installation would mandate unrealistic testing and data that either helicopter manufacturers or engine makers would be reluctant to share. "The proposal would significantly restrict and may likely prohibit any future IBF development programs," said IBF manufacturer Aerometals.

Bizjet Market Remaining at Low Levels

The business jet market remains at its lowest levels since 2009 as customer interest in North America further declined, according to the May UBS Business Jet Market Index. This most recent index is unchanged from that in April at 29 (out of 100)—the lowest level since early 2009. An index above 50 denotes growth. By aircraft category, large-cabin jets dropped a percentage point to 27 and the midsize jet market was down 7 percent to 29, while the small-cabin jet index improved 7 percent to 32. Customer interest in North America dropped from 48 to 46 in one month—the lowest level since UBS began tracking regional data in 2011. However, it remained higher than in other regions of the world.

Noise Plan Proposed for BUR

The FAA is reviewing a proposed noise-compatibility program submitted for Bob Hope Airport in Burbank, Calif. (to be rebranded as Hollywood Burbank Airport). One of the agency's primary considerations in the evaluation process is whether the proposed measures "may reduce the level of aviation safety or create an undue burden on interstate or foreign commerce." The proposed program is scheduled to be approved or rejected by the FAA on or before November 7.

Asian Sky Launches Charter Report

Hong Kong-based private aviation consulting firm Asian Sky Group (ASG), which publishes annual year-end fleet reports for the region, has launched a new product: the Asia-Pacific Jet Charter Report. According to the company, "readers can expect insider knowledge on the current expectations and challenges for the charter market in the Asia-Pacific region, accompanied by up-to-date fleet and operator data."

FAA seeks consistency in flight standards

by Kerry Lynch

The FAA continues to work on cultural change and is evaluating a larger-scale reorganization within the Flight Standards Service as the agency strives to become more consistent, said Flight Standards director John Duncan during the National Air Transportation Association 2016 Aviation Business Conference last month. TSA Administrator Peter Neffenger also spoke at the event, and experts and executives discussed industry consolidation, legal issues and hypoxia.

Duncan acknowledged the long-standing concerns surrounding the FAA's issues with regulatory consistency and said, "We're aware of that. We are concerned about delivering a consistent product and making sure the work you get in one part of the country from one [Flight Standards District Office] or [Aircraft Certification Office] is consistent with the work you get in another part of the country."

He emphasized that making the agency more consistent in its dealings requires cultural change, but said, "I think we're making progress. We're getting good feedback."

The Flight Standards Service has been evaluating its structure for the past several years, but the culture change must come first, Duncan noted. "Changing the structure of the organization could be an important piece," he said. "But changing the structure and applying the same culture might not have a successful outcome."

Over the past three decades, the organization has changed dramatically as it adopted and adapted to new technology, Duncan asserted, yet the culture remained unchanged, reinforcing the "failed concept" that inspectors should "know everything about everything." The agency is now looking at drawing on the expertise of specialists and assembling "focus teams" to provide guidance, said Duncan, citing a focus team on specialized cargo as an example.

He also noted that until a few years ago, the culture did not focus on varied outcomes. But now the agency has changed expectations to emphasize that "outcomes of decisions made by inspectors are consistent with the decisions made by another inspector in the same set of circumstances."

As for the organization structure itself, Duncan said the agency has been contemplating new models, including one that consolidates activities under streamlined management teams. Under this proposal, all Part 121 activities would be conducted under a single management structure, and the same would be true for Part 135.

Cooperative Relationship

Duncan is also encouraged that the agency is making progress on its new "compliance philosophy," which is designed first to look at ways to work through problems that lead to violations before turning to an enforcement. From October through April, the agency had recorded 2,200 "compliance actions," events where risk was identified, the cause found and corrective action taken. These events represent "powerful" cases where risk can be mitigated without enforcement actions, he said. "Enforcement is not the most effective way," he said, adding that a "compliance philosophy is the right way to do business." The philosophy will create more open, transparent relationships that are critical for safety management systems, Duncan said. "Compliance philosophy is absolutely necessary to support that SMS relationship."

Neffenger outlined his priorities for the agency and discussed a desire to create a more open dialog and improve information sharing with aviation businesses. "It makes sense to me that if you are on a commercial airfield you should have access to information. Having information is a good thing," he said.

He said he wants to hear from businesses: "I like the idea of regular phone calls" between the agency and industry. "You can be a regulator and still be connected with industry," Neffenger said. "We are all in this problem together. No one entity can fix the security problem by itself." Acknowledging the many entry points to airports of all sizes, the TSA also hopes to reach out to airports to "surface the best practices," he said. "The idea is not to regulate but to say there is a lot of work we can do."

Neffenger made brief reference to the long-standing large aircraft security program rulemaking effort, saying only that the program as proposed was too prescriptive. ❑

CESSNA POWERS ON FIRST CITATION LONGITUDE

Cessna has turned on the power on the electrical distribution system of the Citation Longitude prototype, parent company Textron Aviation announced on June 13. The milestone—reached three weeks after the company mated the wing and fuselage of the first Longitude—completes the "next major step" for the super-midsize jet to fly this summer, the company said.

The company says it continues to meet milestones on the development schedule to get the Longitude into customers' hands. "The power-on stage allows our team to begin verifying the aircraft's electrical power system," said Textron Aviation president and CEO Scott Ernest, "and paves the way for functional tests and engine runs that will get us to first flight in the coming months."

The Longitude production line is also being set up in Plant IV at Textron Aviation's East Campus on Beech Field, the former Beechcraft facility that became part of Textron in May 2014. The first Longitude test articles are now under construction in Plant III, and as the assembly tooling and processes are refined, the tooling will move to Plant IV, where space has already been assigned for Longitude production.

Cessna expects to begin Longitude deliveries after it receives FAA certification of the aircraft next year. *–C.T.*

The super-midsize Citation Longitude has been powered on and is on track to fly this summer, according to parent company Textron Aviation.

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The first production CS100 undergoes preparation for delivery to Swiss.

FAA and EASA certify Bombardier CS100

by Gregory Polek

The Bombardier CS100 received validation of its Canadian type certification from the U.S. FAA and the European Aviation Safety Agency on June 15, clearing the first C Series variant for delivery to launch customer Swiss International Airlines late last month and entry into service of the first of its 30 CS100s on order on July 15. Reaching this milestone coincided with the program's five flying test aircraft surpassing 5,000 hours in the air.

"Obtaining the CS100 aircraft type validations from the EASA and the FAA marks one of the final chapters in our successful test program," said François Caza, Bombardier Commercial Aircraft vice president of product development and head of Bombardier's design approval organization. "Achieving these latest milestones is a direct result of the quality of the work by our highly skilled employees who were involved in the program as well as from the solid collaboration we established with our suppliers."

The first flight will take off from Zurich at 12:30 p.m. on a scheduled service to Paris Charles de Gaulle Airport. Along with Paris, cities served by Swiss's CS100 this month will include Manchester, Prague and Budapest, followed by Warsaw and Brussels at the end of August, and by Nice, Stuttgart, Hanover, Milan, Florence and Bucharest in September. Plans call for replacement of Avro RJ100s with the C Series on several more routes as the new twinjets arrive, said Swiss. The airline expects to serve Zurich-London City with the C Series starting in the first quarter of next year. ❑

News Note

National Aeronautic Association (NAA) president and CEO Jonathan Gaffney is stepping down from his role at the end of September. Gaffney joined NAA in 2007 when the organization was at a near default, with operational reserves down to zero.

Within a year, NAA had posted its first profit in nearly a decade after Gaffney had trimmed the staff, moved offices into Ronald Reagan Washington National Airport, cut costs on its magazine and increased corporate support. The organization has been profitable every year since. Gaffney also refocused the organization back to its missions of records collections, awards program and support of air sport organizations. ■

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Legacy assembly begins at Embraer Melbourne

by Chad Trautvetter

Embraer Executive Jets officially opened its expanded assembly facility in Melbourne, Fla., on June 2 amid fanfare, adding Legacy 450 and 500 production to the existing Phenom 100 and 300 line. A day earlier, it quietly announced plans to close the Legacy 600/650 assembly plant in Harbin, China.

The June 2 ribbon cutting in Melbourne to officially open the enlarged assembly plant was attended by Florida Gov. Rick Scott, U.S. Senator Bill Nelson (D-Fla.) and other elected officials, along with Embraer Executive Jets president and CEO Marco Tulio Pellegrini and Gary Spulak, president of Embraer's North American division.

Started in October 2014, the expansion more than doubles the size of the facility, to 149,000 sq ft, placing the Legacy 450/500 and Phenom 100/300 lines side-by-side under one roof. On May 13 the Phenom line was moved into its new position, perpendicular to the previous production flow, while the first Legacy 450 started rolling down the line on May 16, Pellegrini said.

Slow Production Ramp Up

An adjoining 31,000-sq-ft completion center/flight-prep building—which, unlike the previous flight-prep area, has a fire-suppression system to accommodate fueled aircraft—opened on June 17, after apron paving was finished. A separate two-bay paint facility and two-bay delivery center for the Legacy midsize jets will open in October and December, respectively, Embraer Executive Jets managing director and COO Phil Krull told **AIN**.

According to Krull, Legacy assembly will start slowly in Melbourne; the first Legacy 450 now on the line won't be delivered until mid-December. Two Legacy 450s will be assembled at the facility, followed by two 500s. After that, the mix will be determined by customer demand, he said. The facility will be able to assemble up to 96 Phenoms and 72 Legacys annually. However, it will deliver just one Legacy 450 this year, with four expected to come off the line next year, Krull said, with a ramp-up expected in 2018.

All Phenom assembly will be shifted to the Florida site as of this month, he noted. An Embraer spokesman told **AIN** that the last Phenom to be produced in Brazil (a 300) will be delivered this month. Phenom 100 and 300 assembly in Melbourne—currently at a rate of five per month—will expand to six a month by year-end, according to Krull. The rate is expected to rise to seven per month sometime next year—the maximum capacity with two shifts. Up to 600 new employees will be added at the U.S. facility for Legacy production, and Embraer plans to fill 50 of these positions by year-end.

Embraer is winding down the Legacy 600/650 assembly plant in China. Early last month, Embraer and Avic subsidiaries Harbin Aviation Industry and Harbin Hafei Aviation Industry announced the "phase out" of their Chinese joint-venture company, Harbin Embraer Aircraft Industry, after 13 years of manufacturing and delivering commercial and executive jets in China. The Harbin plant delivered its last aircraft—a Legacy 650—in March.

Embraer ERJ-145 regional airliners and, later, Legacy 650 business jets were assembled in Harbin, using subassemblies shipped from Embraer's facilities in Brazil. Some 40 ERJ-145s were assembled in China between 2004 and 2010, and five Legacy 650s were built there from 2012 to this year.

"Embraer remains fully committed to and will continue to serve the Chinese commercial and executive aircraft markets," Embraer said. "Embraer has enjoyed an excellent relationship with its Chinese joint-venture partners over the last decade and looks forward to other opportunities [for] collaboration…to contribute to the continuous development of civil aviation in China." ❑

The first Legacy 450 started rolling down the production line at Embraer's Melbourne, Fla. facility on May 16.

CHAD TRAUTVETTER

FAA on L.A. helo noise: proposals not feasible

by Mark Huber

In late May the FAA denied a quartet of petitions that sought to impose helicopter minimum altitudes; mandatory routings; and hover, orbit and pooling restrictions on tour and electronic news gathering (ENG) operators for all helicopters flying within the Los Angeles Basin. The petitions were filed by various groups of anti-helicopter activists under the umbrella group known as the Los Angeles Area Helicopter Noise Coalition (LAAHNC).

The Coalition had petitioned that non-emergency helicopters be required to fly at a minimum of 2,000 feet; that limits be imposed on hover and/or orbit times for tour and ENG helicopters; that the latter be forced to operate in pools; and that all helicopters flying along the coast do so at least half a mile offshore.

In denying the petitions, the FAA said they did not "meet the criteria to pursue rulemaking at this time" and that "three were not feasible for safety reasons" and one "was not within the agency's regulatory authority."

The agency also noted that basin-area helicopter operators had developed a series of voluntary noise-mitigation initiatives such as flying higher over local noise hot spots and that the FAA had developed a voluntary offshore helicopter route that it expected to publish last month.

The Professional Helicopter Pilots Association (PHPA), a Los Angeles-area organization that represents the local interests of the helicopter industry, heralded the FAA's decisions but "cautions helicopter pilots and operators not to become complacent. This is not the time to abandon the hard work we have already done over the past year to demonstrate our ability to collaborate with the stakeholders in the area to mitigate noise," said PHPA president Morrie Zager. "On the contrary, this is the time to remain extra vigilant and build upon our efforts to continue to be good stewards of the community and remember helicopters are noisy to the communities below. We must not alienate ourselves from the LAAHNC. They are a well organized group of like-minded individuals who will certainly continue their crusade to regulate us."

The LAAHNC abandoned voluntary cooperation with the Los Angeles helicopter community last year before filing its petitions with the FAA, claiming that the strategy was not producing results, a claim disputed by the PHPA and the FAA. In denying the LAAHNC's petitions, the FAA noted that it "has taken important steps that further voluntary action on the part of operators, residents and other stakeholders" and that "the FAA is committed to working with stakeholders as they further mature and formulate additional voluntary measures" and had committed significant resources to studying the problem of helicopter noise in the L.A. Basin.

As an example, the agency pointed out that it has "developed specific beacon codes for use in Los Angeles County to enhance safety by distinguishing helicopters from fixed-wing aircraft and raising situational awareness of pilots and air traffic controllers; has completed extensive analyzing adherence to existing helicopter routes and potential for route adjustments for the Hollywood, Torrance, Palos Verdes and Long Beach areas; has provided stakeholder briefings to review and explain the results of the analysis; and has identified a new voluntary offshore route based on an analysis of coastal air traffic and stakeholder input."

The FAA also pointed to the new automated helicopter noise complaint system it recently implemented in the Los Angeles area and its potential to form the basis of a permanent helicopter noise program. While the LAAHNC has walked away from voluntary helicopter route and altitude measures for the Basin, the FAA noted that it continues to meet with the PHPA to discuss the results from the automated complaint system, "to discuss complaint system results and help make informed decisions about modifications to

Continues on page 59 ▶

BIZAV GROUPS: PREPARE NOW FOR NEW U.S. LABOR LAW

Business aviation organizations are warning their members to prepare for one of the most significant changes to the mandatory overtime threshold since the regulation was established.

On May 17 the U.S. Department of Labor released the final rule essentially doubling the minimum salary for employees "exempt" from mandatory overtime requirements. Effective December 1, the threshold will jump to $47,476 from $23,660. The rule further calls for an update of the salary threshold every three years, taking into account wage growth over time. The Department of Labor said the rule is designed to provide greater clarity for workers and employers and fortify predictability and worker protections. The Department of Labor added that the rule could nearly double the number of employees eligible for mandatory overtime to 11 million from 6 million.

NBAA released guidance on preparing for the change, saying, "The changes to overtime exemption regulations are among the most substantial since the introduction of the Fair Labor Standards Act (FLSA) in 1938."

"It's one of the largest jumps since the statute was enacted," added Greg Ripple, chair of NBAA's Employment Issues Working Group and a partner at the Miller Johnson law firm, who developed the resource for NBAA members. "Under the new rules, almost every employee who makes less than $47,500 will be entitled to overtime pay."

"These overtime exemption changes will affect nearly everybody in the industry," added Brian Koester, NBAA manager of operations. "It's important for our members to begin preparing for compliance now."

The regulation was adopted over the objection of numerous organizations, among them the National Air Transportation Association. NATA said it would "inhibit the promotion of employees to management positions and return some current managers to hourly status. The end result will be reduced take-home pay and loss of benefits." *–K.L.*

Clock is ticking on FAA reauthorization

by Kerry Lynch

U.S. lawmakers and aviation groups are stepping up pressure for the House of Representatives to act on a comprehensive aviation bill before the FAA's operating authority expires on July 15. The House Transportation and Infrastructure (T&I) Committee passed its version of comprehensive FAA reauthorization legislation in February, but that bill has stalled over controversy surrounding a measure in it to create an independent air traffic control organization.

The architect of the ATC measure, Rep. Bill Shuster (R-Pa.), maintains that he continues to build support in the House to move his bill. Shuster recently told the Washington insider publication *Politico* that "we are working on a strategy" to move the bill forward, but that the House would not take up the Senate-passed bill because it does not include "real reform." The Senate bill, which passed the full chamber in April by a 95-3 vote, does not include the independent ATC measure. Last month Shuster also continued to rule out another stopgap extension of the FAA's authorization.

Push for Long-term Plan

A number of lawmakers who spoke June 9 during the National Air Transportation Association's 2016 Aviation Business Conference, however, said they had seen little movement on additional support for the Shuster bill and believe that the stalemate over the House bill could spur another extension.

House General Aviation Caucus co-chair Sam Graves (R-Mo.) spoke of important provisions in the House bill, such as the Pilots Bill of Rights 2, and agreed that Shuster is trying to push through at least some version of the bill. During the NATA conference, however, he said he thought an extension is more likely.

House opposition to independent ATC remained clear, with T&I ranking Democrat Pete DeFazio (Ore.) reiterating his concerns to the NATA conference attendees; he questioned whether the proposed ATC reform would be constitutional and how that would affect airport funding.

Senate Commerce Committee member and General Aviation Caucus co-chair Joe Manchin (D-W.Va.), noting that the Senate bill captured a rare almost unanimous vote, said he believes the two chambers could work out the differences on the majority of the House and Senate bills. But, he stressed, the House has to pass a bill. Rep. Rick Larsen (D-Wash.), ranking Democrat on the House aviation subcommittee, and Rep. Mike Pompeo (R-Kan.) echoed similar sentiments during the NATA conference.

Separately, Larsen and Pompeo joined a growing chorus of lawmakers pushing the House to take up consideration of a comprehensive FAA bill. Larsen and Pompeo made the appeal for House action in a joint opinion piece published in *The Hill*, another Washington insider publication. "If Congress wants to prove it can pass large reform legislation during a presidential election year, this is the ultimate opportunity," the lawmakers said. "We cannot let [air traffic control] reform stand in the way of passing other meaningful reforms that are sorely needed to ensure America remains the global leader in aviation."

Their opinion piece followed similar calls on the Senate side by Commerce Committee chairman John Thune (R-S.D.) and the ranking Democrat Bill Nelson (D-Fla.). The Senators cautioned in a May 24 letter to Shuster and DeFazio that the independent ATC proposal was unlikely to win full Senate support at this time but said that the Senate-passed reauthorization bill could capture overwhelming House support.

The Senators acknowledged the work already done on reauthorization in the House and in particular on the independent ATC organization. "We understand the commitment to this proposal, but the Senate is far from reaching a consensus on this issue," the senators said. "Thus, we believe expeditious House passage of the Senate bill or a similar measure provides the only viable opportunity this year to deliver a bill to the President. …Time is of the essence."

Meanwhile, more than a dozen aviation organizations also made an appeal to Speaker of the House Paul Ryan (R-Wis.) and Minority Leader Nancy Pelosi (D-Calif.) in a June 8 letter.

"Republican and Democratic leaders from both sides of the Capitol have long acknowledged that operating the FAA under a series of extensions hinders the smooth operation of the agency and creates considerable uncertainty for the nation's aviation stakeholders," the groups told the House leaders. "Our organizations represent millions of hardworking taxpayers who want Congress to get things done and not let this important bill be stalled because of a provision that divides our community and many within Congress."

House aviation subcommittee chairman Frank Lobiondo (R-N.J.), who also spoke during the NATA conference and who has worked closely with Shuster on the T&I bill, noted that Ryan is aware that time is drawing short.

Extension Likely

Should Congress opt for another extension—as it appeared as of press time—it would be the third such short-term, stopgap measure for the FAA since the last comprehensive FAA bill expired in September. And that bill, passed in 2012, required 23 short-term extensions. Lawmakers have emphasized since that time that they did not want a repeat of that stalemate.

FAA Flight Standards Director John Duncan, who separately addressed the NATA conference on June 9, also acknowledged the likelihood of another extension. The FAA's concern, Duncan said, is that "we have adequate and timely funding." He questioned whether another series of extensions would accomplish that.

Signing the June 8 letter from the aviation associations on passage of a more comprehensive FAA bill were the Aerospace Industries Association, Aircraft Electronics Association, Aircraft Owners and Pilots Association, Commemorative Air Force, Experimental Aircraft Association, General Aviation Manufacturers Association, Helicopter Association International, International Council of Air Shows, National Agricultural Aviation Association, National Air Transportation Association, National Association of State Aviation Officials, NBAA, Recreational Aviation Foundation and Small UAV Coalition. ❑

NTSB: Part 23 rewrite welcome

The National Transportation Safety Board is hoping the Part 23 rewrite will help bring new safety technologies into service on aircraft more quickly to help reduce the risks of accidents such as the December 2014 crash of the Embraer Phenom 100 in Maryland. (*See article on page 6.*) The Safety Board has concluded that the accident highlights a need for an alert for activation of the ice protection system, and it is pushing for collaboration within the aviation community for the development and implementation of such a system.

NTSB member Earl Weener said the Part 23 rewrite effort could facilitate such efforts. "It will definitely help in the development of technology and getting it onto airplanes much more quickly without going through the rulemaking process," Weener told **AIN**. A framework that would get safety improvements to market more quickly is "something we'd be enthusiastic about, not just supportive but enthusiastic."

In its comments on the Part 23 process, the Safety Board was cautious about some aspects of the rewrite process. In comments it had said, "We are concerned with and have questions about how the new certification process will work." The agency also pointed to its investigations of the in-flight structural breakups of Zodiac CH-601XLs, saying they revealed "problems, delays and omissions within the consensus standards."

The establishment of consensus standards, under which industry and government experts collaborate on standards rather than the regulatory agency setting them independently through a formal process, is a key tenet of the new Part 23.

Despite the concerns, Weener supports the concept of consensus standards, saying they would enable regulators and industry to work in tandem to address safety recommendations immediately rather than having those recommendations languish during a lengthy rulemaking process. "We have a number of recommendations, which may be [waiting] five, 10 years or longer," he said. The consensus standards approach could help alleviate that.

Taking the Long View

Weener also said the agency supports the concept of another key tenet of the rewrite: a performance-based approach where a goal is established and industry has flexibility on how to reach that goal. "The NTSB is fully aware of the value of performance-based requirements. Most of our recommendations pretty much come out in the form of what has to be the end state, not how to get there," he said. "The current Part 23 is largely prescriptive and not performance based."

Having said that, Weener emphasized that the FAA must look at lessons learned now as it crafts the final rule. The Zodiac was a case where consensus standards were not successful, he said. "We have an example of one that didn't work. [We need to] make sure we understand why it didn't work so we don't have the situation again."

Weener likened the Part 23 rewrite rulemaking process to being in the "critical design review" stage, saying this is the stage where "[you] throw as much information out as you can about what might go wrong. This is the time to address those things—not three, five or ten years from now when we're trying to do an airplane with the new Part 23 rewrite and we find out that there are some situations we should've known about rather than finding out by experience."

In general, though, he reiterated, "the NTSB certainly has been supportive of the Part 23 rewrite and for good reason." Typically, the agency investigates 1,500 accidents in a year and the rates have been relatively flat for years. "We are all for something that can upset the status quo. The rewritten Part 23 has the potential to do that." *–K.L.*

News Note

The FAA is seeking input on its runway status lights (RWSL) program as the agency looks to expand the advisory system to more airports. RWSL, operational at 15 of the nation's busiest airports, alerts pilots and vehicle operators when it is unsafe to enter a runway or taxiway. RWSL taps into the airport's surface surveillance system to monitor current and future traffic on runways and taxiways. Red lights embedded in runway and taxiway pavement illuminate when other traffic makes it dangerous to enter or cross a runway, or begin takeoff, the FAA said. The FAA has developed a survey to assess whether the program is meeting expectations about cost, performance, schedule and benefits. ■

TORQUED Full-throttle opinion from former NTSB member John Goglia

ValuJet crash 20 years later: Have we learned the lessons?

May 11 marked the 20-year anniversary of the ValuJet crash. For those who are too young to remember ValuJet was one of the many low-cost start-ups that sprang up in the years after deregulation encouraged new entrants into the airline business. Most started and failed. While safety concerns surrounded many of these low-cost carriers, the crash of ValuJet Flight 592 into the Everglades 10 minutes after takeoff from Miami International Airport shined a bright light on some of those safety issues.

The ValuJet crash is personal for me; I was the Board member who chaired the NTSB public hearing for that accident. During that process, I got to know some of the family members of the victims of that awful tragedy. And around each anniversary, even this many years later, I still get calls and messages from them. For some, more than anything, they want their loved ones not to have died in vain. We owe it to them to make sure the lessons of ValuJet are not forgotten.

The Takeaway from the Crash

As with the anniversary of other aviation tragedies, this has been a time for me to reflect on what went wrong with ValuJet and what lessons we need to remember as an industry lest we are doomed to repeat the same mistakes. We don't always learn the first time; I have investigated many an accident where the mistakes of the past were not learned, with tragic consequences. Sometimes it seems that with the passage of time, we forget the lessons even when they are written in blood. With the ValuJet anniversary, I thought reviewing those lessons from the past would be worthwhile.

So what are the lessons? The probable and contributing causes of the accident–the result of a fire in the cargo hold that started from one or more improperly carried oxygen generators–were many. The probable causes were determined by the NTSB to be: failure of a maintenance contractor to properly package and identify the oxygen generators that started the fire; the failure of ValuJet to properly oversee the maintenance contractor; and the FAA's failure to require smoke-detection and fire-suppression systems in the cargo hold. Contributing causes included the FAA's failure to adequately monitor ValuJet's heavy maintenance program, including oversight of its contractors, the agency's failure to properly address prior oxygen generator fires and ValuJet's failure to properly train its employees and contractors on its no-hazmat-carry policy.

But the lessons that I want to focus on are how to prevent an airline from becoming like ValuJet, not up to the task of overseeing its own maintenance contractors. And how to ensure that the FAA has the resources to oversee today's low-cost airlines.

John Goglia is a former member of the NTSB and currently a safety consultant. He welcomes your e-mails at gogliaj@yahoo.com.

A lot of ValuJet's problems involved rapid growth beyond the ability of its infrastructure to handle and oversee that growth. To keep its initial costs low, ValuJet bought older, cheaper aircraft of various models. But older aircraft tend to have more maintenance problems and higher costs of operation. More maintenance problems meant more use of outsourced maintenance providers and required ValuJet to have the infrastructure to support a higher level of oversight of these maintenance providers to ensure compliance with its maintenance manual.

In the aftermath of ValuJet, the FAA analyzed what had gone wrong with ValuJet's certification and growth and put in place recommendations to prevent it from occurring in the future. It's not clear that it continues to adhere to its own recommendations but they were good ones in 1996 and they are good ones today.

Those recommendations were included in the NTSB's accident report for Flight 592. Three that bear remembering are:

- Ensure that all air carriers have adequate resources and infrastructure to support outsourcing and operation of a varied fleet mix.
- Increase DOT and FAA scrutiny of these factors in determining an air carrier's initial and continuing qualifications to operate.
- Ensure that Flight Standards resources and training are adequate to meet safety requirements.

Every airline needs to have the resources and infrastructure necessary to run its operation, considering its schedule, fleet mix, employees and maintenance contractors. If it doesn't have those, there is a problem. If the airline won't address the problem itself, the FAA has to step in and ensure public safety.

At the same time, the FAA needs to ensure that it has the resources and staffing to oversee carriers that it has regulatory responsibility for. As safety management systems become the norm, the best carriers will hopefully require less hands-on oversight by the FAA. But in the meanwhile, the FAA needs to deploy its resources to ensure public safety isn't compromised by an unwillingness to heed the lessons of the past. ❑

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Haeco Zen lounge

Completions and Refurbishments

by James Wynbrandt

More comfort, flexibility, productivity and utility—that's what the completions and refurbishment (C&R) industry has long offered business aviation. With the introduction of a new-generation composite bizliner, retrofits offering the latest onboard connectivity technologies, adoption of 3-D capabilities that streamline interiors projects, and many more milestones, the past year has put an exclamation point on the progress this sector perennially leads and showcases.

Completion Centers

Amac Aerospace Switzerland has acquired France's JCB Aero SAS, which produces interior elements such as curved honeycomb panels and composite structures and provides engineering and helicopter completion services. Located in Auch, JCB will continue operating under its own name for the present. It has 120 employees, a 54,000-sq-ft hangar and 66,000 sq ft of office space. Citing its "experienced and highly skilled craftsmen," Kadri Muhiddin, Amac's group executive chairman and CEO, said the acquisition "makes the perfect complement to Amac Aerospace's operations and core competencies."

Meanwhile, at its Basel headquarters facility, Amac refurbished a BBJ3 737-900ER with new seats, handmade carpeting and electrically controlled high-low tables, and modified existing divans. That project followed the green completion late last year of an ACJ319. Amac has also returned a head-of-state A320 to service following heavy maintenance that included installation of a satcom system and cabin connectivity upgrade for onboard GSM (Global System for Mobiles) usage. Amac will also perform multiple cabin modifications on a Boeing 777-200 as part of a new heavy base maintenance contract, and will refurbish a BBJ 737-700.

Muhiddin noted that while green private widebody sales are down, growing demand for interior refreshment is keeping the facility busy. "If you don't have a new airplane, the next step is refurbishment; if you don't want to spend $100 million, you spend $20 million," Muhiddin said.

Amac is among the completion centers offering high-speed Inmarsat-Honeywell JetWave Wi-Fi systems, and recently installed and developed an STC for a BBJ3, its fourth Ka-band STC. It's also developing Ka-Band installations for BBJs, BBJ 777s, and ACJ340s.

An Amac technician at work

Early this year, more than a month ahead of schedule, **Associated Air Center** (AAC) of Dallas, Texas, delivered its first BBJ 747-8 completion, to an undisclosed Middle East head of state. AAC's in-house team designed the more than 5,000 sq ft interior (4,786 sq ft upper and main deck cabins, plus 393 sq ft berthing module). Purpose-specific zones accommodate resting, meeting, dining, lounging, gaming and medical services, while audio-video-on-demand (AVoD) is universally available through in-arm, personal LCD touchscreen and 55-inch bulkhead-mounted LED monitors. The passenger flight information system (PFIS) displays 3-D moving maps and external high-def cameras provide landscape viewing. Multi-region satellite TV, Internet and video conferencing are provided via Satcom Broad Band (SBB), and LED mood lighting and multi-zonal cabin humidification system. Three of the nine lavatories are equipped with showers. AAC's in-house certification organizational designation authorization (ODA) team obtained several FAA supplemental type certificates (STCs) as well as other EASA and customer country validations.

In September, AAC will deliver an ACJ320 to another undisclosed Middle Eastern customer, its 90th head-of-state completion, said AAC president James Colleary. The interior has a bedroom, private lounge and dining, entertainment and staff areas. JetWave satcom will provide connectivity. Meanwhile a BBJ 747-8 and BBJ 787 are both nearing

Bombardier interior

Airbus ACJ350 lounge

completion, scheduled for redelivery before year-end.

Fokker Services will convert China's Comac (Commercial Aircraft Corp. of China) ARJ21-700 regional airliner into a business jet through a Netherlands-based joint development program. Final completions and outfitting will be performed at Comac's Shanghai Aircraft Manufacturing division. Peter Somers, president of Fokker Services, said the company is "especially excited to be involved in the conversion of the first Chinese-built business jet." Fokker's previous regional-to-bizjet conversions are the CRJ700 and its own F28 and F70. At the end of last year, parent company Fokker Technologies was purchased by GKN for $760 million.

Jumpstarting its move into JetWave high-speed Wi-Fi, **GDC Technics** is investing almost $20 million in developing STCs for Ka-band connectivity, said GDC general partner Mohammed Alzeer. By the first quarter of next year the company will offer Ka-band connectivity STCs for the BBJ 737/747/777 and similar STCs for the ACJ330/340 by the third quarter. "We're saying to the customer community, 'You don't have to pay for all the engineering and certification costs,'" said Alzeer. Having participated in the engineering of every commercial airplane that entered service within the last decade, including the 787, A380 and A350, GDC is well positioned to take on this challenge, he said.

GDC currently has two BBJ 787s and a BBJ 777ER undergoing completion. Another BBJ 787 will be inducted next year, and the company is in discussions for a widebody

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Interior Visions

C&R specialists are using 3-D design tools and technologies to tackle two critical issues confronting completion and refurbishment projects: getting customized interiors to fit inside airframes properly; and getting customer approvals for design changes, work orders and other project modifications and milestones, so work can proceed on schedule. With 3-D protocols, projects can now be designed and manufactured so precisely that interior elements require only a single fitting, rather than the two and three fitting and adjusting steps previously required.

Jet Aviation Basel (JAB) has harnessed this 3-D technology to create JetVision, a web-based app that lets clients monitor their projects and provide needed feedback and approvals in real time from anywhere in the world. The app is an outgrowth of the Basel-based provider's preparations for completions on BBJ 787s and the ACJ A350s, said Matthew Woollaston, vice president of completions sales and marketing.

"The overall goal is to reduce the downtime and give the client a far greater understanding of what they're going to receive at the end of the program," Woollaston said. "We came to the realization we would probably be moving faster [on completion projects] than the principal and their representatives would be able to make decisions."

In addition to precise depictions of design and layouts for clients' approvals, JetVision provides progress reports, images and video feeds in real time. The app is smart device based, and both iOs and Android compatible. Though created for completions on new-generation aircraft, JetVision can be adapted for any completion or refurbishment project, according to Woollaston. ■

BBJ 787 and ACJ A350: New-gen bizliners take completions spotlight

Turf wars between BBJ and ACJ have advanced into the new generation as completions plans and projects for the composite BBJ 787 Dreamliner and ACJ A350 XWB (Xtra Wide Body) move from 3-D toward reality.

BBJ 787

Boeing Business Jets and Kestrel Aviation Management displayed the first BBJ 787 with a fully customized interior at EBACE in Geneva in May. (Only invited guests were allowed inside.) The 40-passenger cabin, finished in a palette of earth tones, was designed by Kestrel and Pierrejean Design Studio of Paris and has a forward master suite with bedroom, an expansive lounge area, and in the rear a guest cabin with first-class seating. Kestrel, based in Washington State, has driven the project from its inception (this is the 11th private widebody project it has managed) and for the 787 the company says it "explored the world for materials never before seen in corporate aircraft. The texture of our carpet offers gentle reflexology, which is wonderful for the feet and circulation. We have found and customized the best leathers, materials with silk threads and even innovative lightweight metal composites."

At the end of 2013, after the interior had been designed, Greenpoint Technologies was awarded the contract to perform the completion at its facility in Moses Lake, Wash. The aircraft arrived there in early 2014. By the time the Dreamliner landed in Geneva for EBACE it was on the cusp of FAA certification, and Stephen Vella, Kestrel's chief executive, told **AIN** in the middle of last month that "on behalf of our principal, Kestrel is in the final closing process with [China's] HNA Aviation Group" for ownership of the aircraft.

"With this BBJ 787," said Vella, "we are launching corporate aviation into a new era of luxury, technology and style." HNA said at EBACE that the aircraft will be registered in Guernsey, one of the Channel Islands between England and France. It will be only the second aircraft to sign up with that recently established registry.

Continues on next page ▶

BBJ 787-8

▶Continued from preceding page

completion and refurbishment, Alzeer said.

Inside its facilities at San Antonio and Fort Worth, Texas, technology investments have streamlined completions, which now require only one fit check per project, reducing costs by about 30 percent in the last year, according to Alzeer. But "there are processes you cannot speed up," he said, pointing out that craftsmen do much of the hand fabrication. "People who do the work are artists. You can have it machine made; it looks beautiful, but it doesn't have the soul."

"The most dangerous thing I see in the industry is [the possibility of] second-tier completion centers competing with each other on price," said Alzeer. "Then you'll find airplanes stuck" in those facilities, he said, should they face financial difficulties brought on by their cost cutting.

Long known for green completions and tip-to-tail refurbishments, Montreal's **Innotech Aviation** is now promoting its a la carte services to OEMs and operators. "We want to get the message out that you don't have to show up with an airplane" or need major work for Innotech to take on a project, said Rob Brooks, vice president and general manager. "We'll build you a set of cabinets, or you can send your old cabinets in for refreshment. We'll build you a set of seats, or we can send an engineering team to manage an installation." Innotech will "brand our cabinet shop, our upholstery and interior design capabilities as resources" for outsourcing a complete cabin, "or just monuments, upholstery work or shower installation," said Brooks. Headquartered at

Continues on page 24 ▶

Conquering the Cabin Sound Barrier

OEMs and aftermarket providers are attempting to conquer the cabin sound barrier, using new technologies and materials to bring down interior decibels (dBs) and meet the rising expectations of customers. "We've seen soundproofing evolve more and more in recent years," said Jarod Triplett, vice president at interior materials supplier Skandia. "Owners and operators are much more sophisticated and savvy if there's a sound issue."

The advent of HD IFE systems has driven the push to quieter cabins, said Triplett, as passengers have come to expect a home theater-style experience—where audio quality plays a large role—in flight. Skandia, of Davis Junction, Ill., which provides the majority of foam used in business aircraft seats, has a growing line of acoustic materials and soundproofing kits for 80 aircraft models, from Globals to piston aircraft.

"The key is the frequency band from 63 Hz to 8,000 Hz; those are ranges we need to neutralize," said Kambiz Avval, a Skandia acoustical engineer and specialist in aerospace soundproofing. "As material scientists, we look at what material is best for which frequency range."

The dB scale is exponential; every 3-dB reduction in sound is the equivalent of a perceived 50-percent reduction in cabin noise. Skandia's systems reduce cabin sound levels by between three and 10 dB, Triplett said.

Soundproofing uses a matrix of different materials, each layer designed to dampen a dominant frequency harmonic wave in the aircraft. As an added bonus, a soundproofing retrofit often reduces weight. With current-generation materials, engineers can achieve an equal level of soundproofing with just two thirds the weight of the old.

All elements of a soundproofing plan must be properly certified to ensure the project doesn't affect the aircraft's overall certification, cautioned Aerocom Engineering of Van Nuys, Calif., makers of electronic cabin controls and interior components including acoustic noise reduction systems. For any VIP soundproofing project, Aerocom recommends using facilities with in-house design engineering staff, including an FAA designated engineering representative (DER), as well as structural, weight, stress and environmental control systems specialists.

Gulfstream has made quieting the cabin "a major focus," said Matthew Huhn, the company's director of product support business and program support. "We have dedicated acoustics engineers, and we do sound surveys and tune the acoustics to that individual aircraft. We have blanket STCs for insulation and noise-dampening packages." The engineers can identify noise sources such as an engine hydraulic pump and adjust soundproofing to mitigate the offending frequency range. "That really has put a smile on our customers' faces," Huhn said. ■

A350 dining area by Jet Aviation Basel

BBJ 787 and ACJ A350: Continued

Supporting its assertion that this is the first true BBJ 787, Kestrel emphasizes that this is "the only one with an entirely bespoke interior." The airplane is slated for delivery this month, "largely on schedule, to budget and below the contracted cabin weight," according to Vella. "The degree of interaction required between Kestrel and the modification center was uncharacteristically intense." **AIN** understands that an aircraft of this opulence would carry a price tag in the region of $350 million.

Jon Buccola, chairman of Greenpoint (a division of Zodiac Aerospace) called the completion "only the tip of the iceberg for our 787 future," noting that the company has a second BBJ 787 in completion. Associated Air Center and GDC Technics also have BBJ 787 completions in the works.

Two other BBJ 787s are currently in operation, one owned by a Middle East airline and the other by the government of Mexico, but neither has an all-VIP interior.

Meanwhile, at least one airline wants to upgrade its Dreamliner passengers to business (aviation) class. Lufthansa Technik (LHT) will soon commence a comprehensive cabin modification program on a green Boeing 787-8 for the undisclosed airline. The aircraft, accommodating about 200 passengers, will be outfitted with upgraded in-flight entertainment and communication systems, and modified galley and crew rest compartments. The 787 will arrive at LHT's completion center in early autumn, said Walter Heerdt, senior vice-president for VIP and special-missions aircraft. Installation is expected to require about two months.

ACJ A350

With green deliveries of ACJ A350 XWBs (Xtra Wide Body) scheduled to begin in 2019, completion centers are showcasing their interior design concepts for the aircraft. Lufthansa Technik's (LHT's) "Home" concept is designed for a new generation of private airliner buyers, said Michael Reichenecker, LHT's chief interior architect, and Home's co-designer. "Our customers are getting younger, and they will have different demands on what they want their aircraft to do." LHT answered with a flexible space that allows an owner to enjoy complete family privacy or grand entertaining, while still accommodating staff and other support needs.

Home puts the master suite area in the front of the cabin, which Reichenecker calls "the best place in the airplane, the most quiet, the least affected by movement." The forward section can be closed off with "huge sliding doors," transforming the space into a private suite with bedroom, and providing the opportunity to gather alone with family, "something VIPs often don't have enough time to do," Reichenecker said.

This private section joins a large guest area to its aft, and when the sliding enclosures are opened, forms "a huge cinema lounge" for entertaining. Healthy dining is also a focus, and with a galley equipped with LHT's new inductive cooking stove, "You can always have a fresh meal prepared instead of having something coming out of a microwave," said Reichenecker. The rear of the cabin has a large spa area. "We want the VIP to leave more relaxed than when he entered," Reichenecker said.

Jet Aviation Basel (JAB) recently unveiled a private XWB cabin from JAB's Design Studio taking inspiration from both high-end hotel and residential design philosophies. The proposed cabin layout features a large lounge and dining area segmented into separate spaces for eating, relaxing and socializing, and balanced by a spacious private suite with a master bedroom, bathroom and private lobby. The proposed design elements include an electrochromatic shade system and induction chargers within the nightstand in the bedroom, and a heated towel rail and walk-in shower in the bathroom. ACA Advanced Computer Art created renderings of the interior.

Airbus launched its own corporate-jet version of the A350 XWB airliner, the ACJ350 XWB, with Easyfit provisions for simplified cabin outfitting. (Simplifying all ACJ350 completions, Airbus has pre-equipped the carbon-fiber composite fuselage with 200 attachment points, easing interior design and installation work.) The -900 XWB's 2,910 sq ft (270 sq m) cabin can fly 25 passengers up to 10,800 nm/20,000 km, or some 22 hours aloft.

Like the Summit interior for the ACJ330, the ACJ350 XWB offers a more economical and faster path to completion and entry into service, with a selection of popular modules that can be mixed and matched for flexibility and individuality, without the costs of a customized completion. ACJ thus far has an order for one A350. *-J.W.*

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Dorval Airport (CYUL), the company has experience with Dassault, Gulfstream, Hawker Beechcraft and Textron/Cessna Citation, as well as its signature work on Bombardier models.

Aloft AeroArchitects (the former Pats Aircraft Systems) completed a BBJ2 for His Majesty the Sultan of Johor of Malaysia, certified by Aloft's on-site ODA and validated through the presiding local airworthiness authority in Malaysia. Designed by Aloft in partnership with Edese Doret Industrial Designs of New York, this was the company's 16th head-of-state BBJ completion, said John Martin, Aloft president and CEO.

Comlux America, completion center for Switzerland-based Comlux the Aviation Group, has wrapped its fourth green ACJ and ninth bizliner completion overall with the redelivery of a privately owned ACJ320. Comlux Creatives led the design team under the direction of Lauri Church in partnership with Fiona Riddle of InFlight Solutions, the customer's design representative. The lightweight cabin outfitting optimizes range performance while maintaining a noise level in the master bedroom measuring just 45.4 dB, said Richard Gaona, Comlux chairman and CEO.

The interior motif blends modernism with classic European styling. A color palette of white and cream contrasting with dark veneer "allows the flow between rooms to feel natural and relaxing," said Riddle. In addition to the master suite, the layout provides a forward lounge and staff area, and a business-class seating section.

The Indianapolis facility is now upgrading the cabin and installing security systems on a pre-owned ACJ319 for the government of Slovakia, in a purchase arranged by Comlux Transactions. This marks the fourth nation (Jordan, Kazakhstan and Malaysia the others) for which Comlux has assumed fleet renewal responsibilities.

Greenpoint Technologies' second BBJ 787 Dreamliner completion is under way at the company's facility in Moses Lake, Wash. As part of the project, Greenpoint installed the first Ku-Band antenna for in-flight connectivity on a 787-8 and is offering the STC to other 787 completion providers. The 18-month project is scheduled for delivery early next year. Also under way at Moses Lake: interior and engineering developments design work for a BBJ 777-200LR completion for an undisclosed client, scheduled for induction early next year.

Haeco Private Jet Solutions introduced Zen, a single-aisle cabin concept drawing inspiration from Buddhist ideals of harmony, balance and tranquility. The natural, free-flowing interior incorporates a symmetrical layout and colors from the four seasons. The lounge, featuring light green furniture and a cherry blossom motif, represents spring. The lotus flower and red carpet in the galley signifies summer, while the tatami area, decorated with a chrysanthemum floral pattern, is autumnal. A multi-purpose table in the tatami area can be used as a mahjong table, a tea table and a tatami bed. In the bedroom, pure white and plumb blossoms provide shades of winter.

The design continues the Xiamen, China company's signature combinations of traditional Asian design elements with Western motifs, seen in its feng shui-inspired Xiao Yao single-aisle interior, and East Meets West cabin concept for the A330-200. Haeco also has a U.S. office in San Antonio, Texas.

Jet Aviation Basel (JAB) recently completed a head-of-state ACJ320 interior refurbishment for an undisclosed European government client "significantly ahead of

Continues on page 26 ▶

Haeco Zen interior

Notable projects of the past year Under Way and Planned

ACJ A320neo

UK charter operator Acropolis Aviation has tapped France's Alberto Pinto Design (APD) for its ACJ A320neo interior design. The 19-passenger cabin will have a private master bedroom with luxury en suite bathroom, and large galley outfitted like a terrestrial kitchen. APD also designed Acropolis's current flagship, an ACJ A319, whose features include the first shower installed in an ACJ. Yves Pickardt, who designed that interior, will head the Neo project. Delivery of the green aircraft is expected in late 2018, with entry into service in early 2020.

Globals

OHS Aviation Services has completed a highly customized interior refurbishment for a Global Express in less than eight weeks, the 15th cabin makeover the Berlin-based company has performed on the model. Designed by Tim Callies for ArcosJet Design in a palette of dark chocolate brown, light cream and nuances of green, the refreshment included new seat design, seat belts, carpet, counter tops, sidewall and ceiling coverings, divan re-covering, wood veneer rework, and individualized accessories such as monogrammed towels and pillows, with fabrics from Dedar and Hermés.

Jet Aviation St. Louis and SmartSky Networks are jointly installing and plan to certify the first airborne 4G LTE-based wireless Internet network on a Global Express. The resulting STC will be available for the retrofit market. David Loso, manager for avionics sales at Jet Aviation St. Louis, called SmartSky "game-changing technology."

Charlotte, N.C.-based SmartSky plans to roll out its air-to-ground network, SmartSky 4G, later this year, with full U.S. coverage slated for 2017.

Ruag Aviation early this year finished a total cabin refurbishment of a Global Express XRS and system upgrades, an 8C check and full aircraft repainting. The Swiss company's design team replaced all wooden applications, veneers, varnishes, plating and soft furnishings, as well as new seats and divans, complete with leather and fabrics. Among the upgrades were full-spectrum LED mood lighting in the cabin, galley, entrance area and lavatories, dual-channel satcom SwiftBroadband with Wi-Fi and GSM connectivity, acceleration and channel bonding, Internet Television (IPTV) over satcom SwiftBroadband, and new wireless handset system, as well as transitioning from cabin IFE to high-definition standard (HD-IFE), consisting of new HD monitors, HD source equipment, 3D wireless Airshow, distributed and streamed Avod with SkyBox and Boxee integration.

Challenger 604

Istanbul's MNG Jet refurbished the cabin and cockpit of a 17-year-old Challenger 604 with new carpet, new seat leather, sidewall and ceiling leather, complete wood veneer change, metal plating, and seat belt replacement, as well as USB data loader modification and EFB installation on the flight deck. The lavatory and galley were also refurbished. The work was completed in 12 weeks during a scheduled 96-month inspection and landing-gear overhaul. MNG Jet is now preparing for its first Global Express refurbishment when the jet comes in for an 8C check.

Citations

Spectrum Aeromed has equipped the Argentine Army's (Ejercito Argentino's) newly delivered pre-owned Cessna 550 Citation Bravo with a complete air medical interior providing an advanced life support system with a defibrillator, ventilator and infusion pump. The Fargo, North Dakota company worked with Textron Aviation in arranging the sale and installation of the interior, which follows the Argentine force's purchase of two Cessna 208 Grand Caravans equipped with medical interiors from Spectrum. The aircraft are intended to allow the service to provide medical transport throughout the large country's diverse and remote areas.

Legacy 650

Jet Aviation Basel delivered a major refurbishment performed on a U.S.-registered Legacy 650 in conjunction with its C-check. The project involved full carpet replacement, seat and divan re-upholstery, wood repairs, recovering of the dado panels and a new non-textile flooring installation in the galley, in addition to an avionics upgrade. Jet Aviation Basel also repainted the aircraft's exterior.

Falcon 2000

West Star Aviation has created a 13-passenger interior in the standard eight- to 10-passenger Falcon 2000. The project, performed at West Star's East Alton, Ill. facility, required fabricating a smaller galley and auxiliary galley/entertainment center, shifting the forward cabin bulkhead/door forward, and extending all the side ledges and window panels. Rearward, the addition of a new conference group in the back of the cabin necessitated modifying the aft bulkhead to accommodate a new door location. Structural modifications below and above the cabin floor were also required to support the new loading. The interior work included all new veneers, soft goods, countertops, plating, and switch panels for the new seating configuration.

West Star's in-house engineering group and on-staff DER provided engineering support, with final certification for the reconfiguration accomplished via an FAA Form 337. Interior manager James McCann said Dassault Falcon might have previously delivered one 13-passenger Falcon 2000, but called West Star's layout "a unique configuration."

Hawker 800XP

Cleveland-based Constant Aviation is installing Gogo Biz 2000 Wi-Fi systems in eight aircraft—six Beechjet 400A/XPs and two Hawker 800XPs—from Georgia Jet's owned and operated fleet. The installations began early this year. Constant has developed and owns about a dozen Wi-Fi STCs, experience that enabled the MRO to "guarantee Georgia Jet minimal downtime for each installation," said Jay Rizzo, vice president of sales. *– J.W.*

60 YEARS

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Experience. Unlike any other.

▶ Continued from page 24

schedule," said Joshua Florio, completions project manager for the Zurich-based company. Designed and engineered in house and certified under EASA STC for private use, the 57-passenger layout provides a bedroom, bathroom, lounge and office in addition to a large executive staff area.

Last fall JAB completed a new ACJ340-600 for an undisclosed client in Europe. Equipped for 121 pax, the layout features a forward galley, dining and lounge areas, a master bedroom and en suite bathroom with shower, a second bedroom with its own bathroom, an office, first-class seating and dining areas, a mid-galley complex, a staff seating area and an aft galley. Its IFE features satellite TV and a wireless LAN linked to primary and alternate satellite high-speed-data communication networks. A humidification system heightens comfort during long-haul flights.

After more than two years of work, Hamburg's **Lufthansa Technik** (LHT) has delivered the first of three head-of-state BBJ 747-8 conversions it is performing simultaneously for an undisclosed customer at its VIP & Executive Jet Solutions facility. Each interior, larger than 4,700 sq ft, is individually designed and equipped with custom hand-made parts incorporating more than 300 different finishing materials. An integrated cabin management and onboard entertainment system delivers broadband Internet, GSM, WLAN, Live TV and satcom. The first aircraft has a large conference room, lounge, bedroom and several bathrooms with showers.

LHT is also performing completions on two BBJs for Abu Dhabi-based Royal Jet, with redelivery slated for the third and fourth quarters. New York's Edese Doret designed the 34-passenger interiors, each providing a private master bedroom and master bathroom, large lounge area, and business- and economy-class areas.

LHT and Mercedes-Benz unveiled a cabin design floor plan for single-aisle private airliners. The 16-passenger interior features independent spatial zones without the typical configuration of seat and wall elements. The forward area has a foyer, galley, a private room and lavatory, while the aft cabin combines a separate entertainment zone with an en suite private area. The en suite space features an open-design bathroom and bedroom conceived around a freestanding shower with transparent sidewalls, with a king-size bed framed by an upholstered concave head wall.

Jet Aviation St. Louis is seeking to attract customers from outside the U.S. to have cabin refurbishment work done at its facility, perhaps in combination with heavy maintenance. The company has delivered more than 200 completed aircraft, among them numerous Bombardier models. Earlier this year, it upgraded its paint facility, which now has improved environmental controls and devices that can analyze paint color tint, inspect pearl and metallic paints, and gauge the smoothness of a paint finish.


Jet Aviation St. Louis

Refurbishers

Pentastar Aviation of Waterford, Mich., opened an aircraft interior design studio in September at its headquarters at Oakland County International Airport. The studio will support the company's interior work, where "clients can meet our experts and touch and feel the high-quality materials we use to bring aircraft cabin visions to life," chairman and owner Edsel B. Ford II said at the opening event.

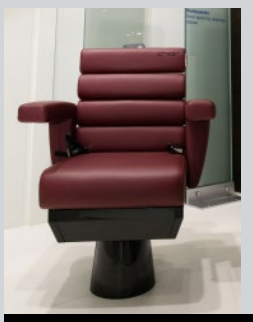
Duncan Aviation, the Lincoln, Neb.-based MRO provider, installed the first F/List stone floor in a Falcon 2000. The

Continues on page 28 ▶

New Products and Services

AviationGlass & Technology (AG&T) of the Netherlands received approval for the first use of lightweight glass for aircraft interiors through an EASA STC for its ultra-thin glass mirrors and panels in a Falcon 900. The glass replaced all protective inner windowpanes in the cabin and the mirrors were installed in the lavatory. AG&T's patented glass is up to 50 percent thinner and 20 percent lighter than traditional polycarbonate products, said CEO John Rietveldt. The company also received a production organization approval certificate for its manufacturing facility in the Netherlands. Since 2010, the EASA has applied more stringent requirements for use of glass inside aircraft cabins.

MSB Design's Hi-Lo conference tables are now available as a line-fit option on the Gulfstream G500/G600, the aircraft for which the latest manual versions of the table were designed. The new table features a slimmed pedestal and carpet pinch beauty ring. The Montreal company also offers an electric pedestal version that can be operated by Bluetooth, changing between dining and coffee-table modes; and an optional oval shroud converting the standard round or square shape into an elegant oval. The table can support 600 pounds of load and survive 1,400 pounds of weight in the deployed position.



Lufthansa Technik's chair and induction cooktop

Leather specialist **EcoDomo**, which introduced custom-made leather countertops for homes and luxury motor coaches, is offering similar countertops for business aircraft. Christian Nadeau, president of the Rockville, Md.-based company, said the material can be treated to meet FAA flame resistance standards. Made in the U.S., the full-hide leather features an extremely durable waterproof finish and can be used for dining surfaces or wet bars. The leather is dyed through, and thus hides scratches. EcoDomo also makes a recycled leather product more dense than red oak that performs like laminate, used for flooring in deluxe custom motor homes. Nadeau said a major business aircraft OEM has approached the company about creating leather flooring for its aircraft.

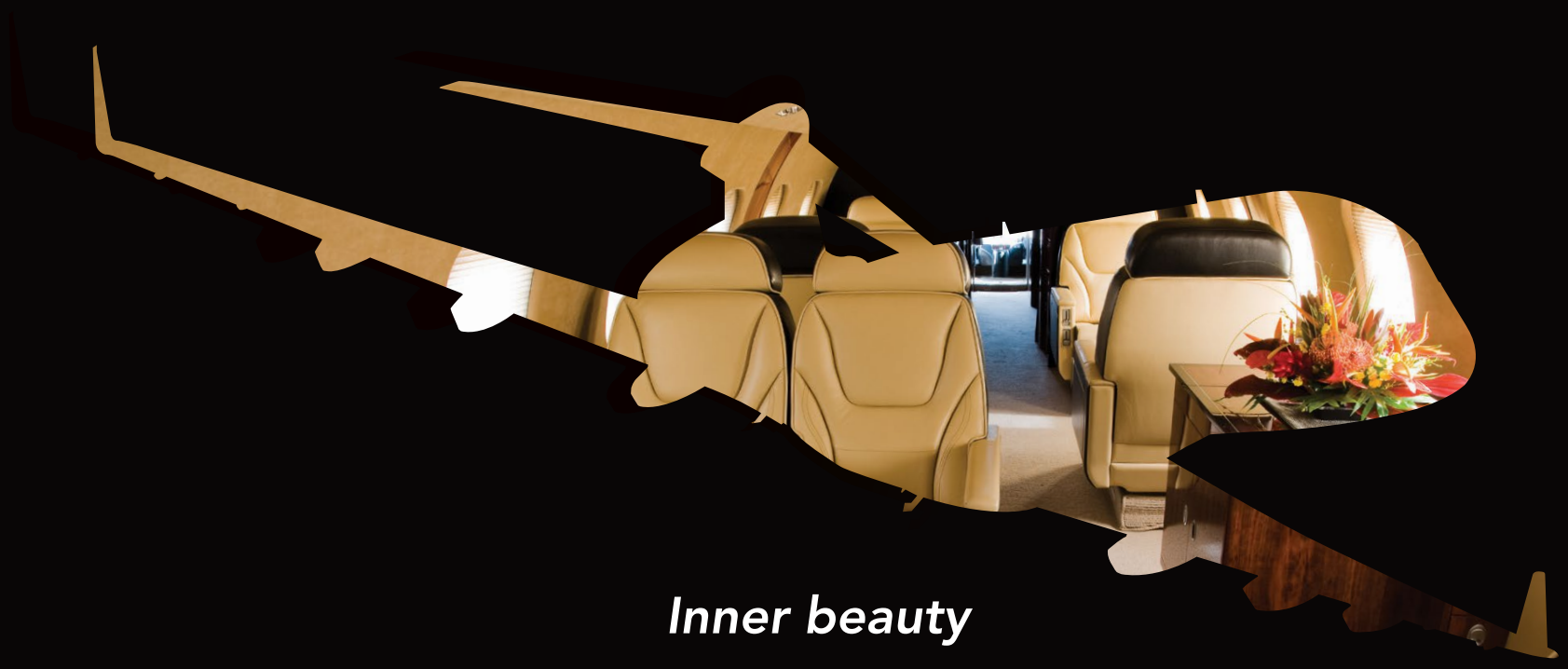
Worn or damaged countertops have an alternative to replacement or complete repainting, with repairs introduced by **Ruag**. The repairs can be performed during a scheduled maintenance event at the Switzerland-based firm's Part 145 facilities in Berne, Geneva, Lugarno or Munich, with approval guaranteed. Ruag's paint specialists can evaluate any countertop repair project free of charge and discuss various techniques and finishes, from palette knife painting to opalescent refinishing effects. The experts can also advise on which finishes provide maximum durability and beauty while conforming with owners' individual needs.

Two years after its unveiling, **Lufthansa Technik**'s (LHT's) "chair" seat has received European technical standard order certification and is available for business aircraft. "We now break the paradigm of designing cabins around bulky seats, to selecting the appropriate chair for any environment, just like at home," said Oliver Thomaschewski, head of the company's seating and structures product division. The "chair" seating uses a pedestal design that serves as the base of a core skeleton structure upon which designers can create a seat for specific applications within the aircraft, whether in the main cabin, bedroom, office or other location. This "opens up an unequaled degree of freedom for cabin interior designers and passenger wishes," said aircraft interior designer Jacques Pierrejean of Pierrejean Design Studio. The EASA approvals can be used for FAA TSO certification.

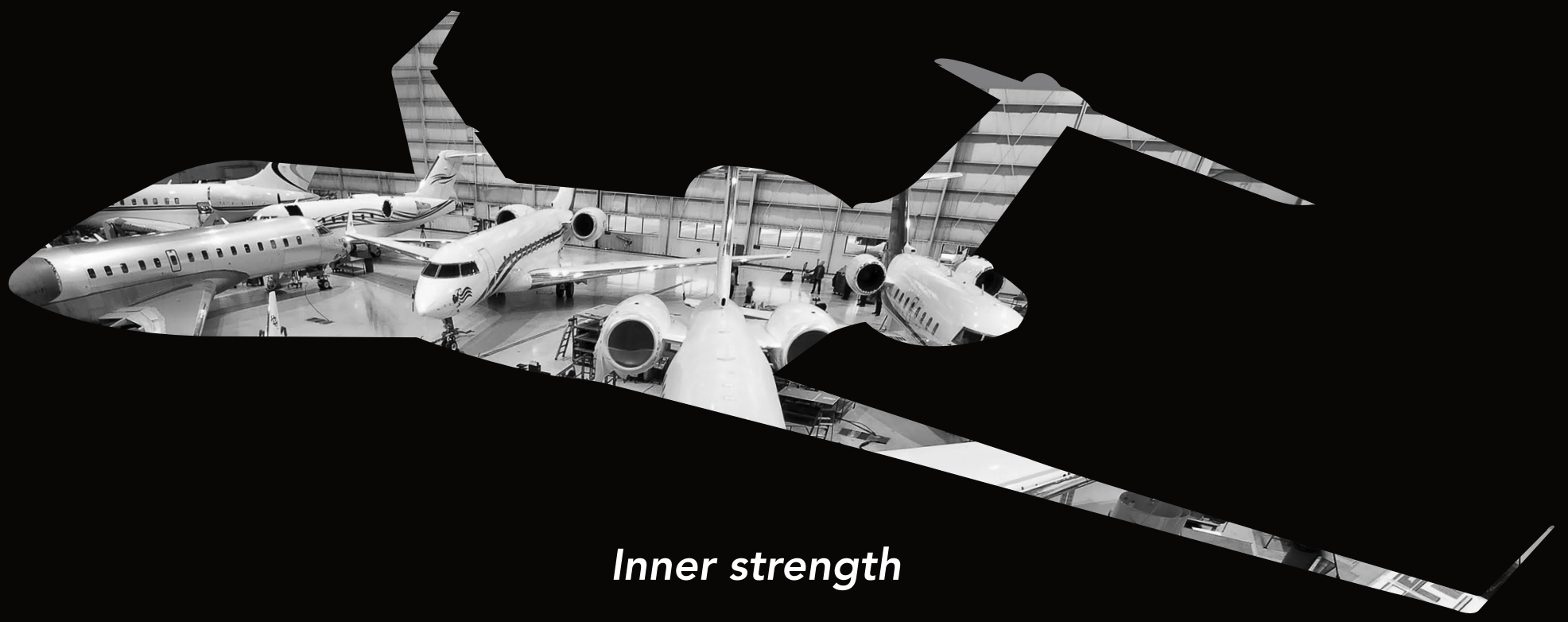
LHT also unveiled an induction cooktop that fits in any aircraft galley, weighing less than 30 pounds and measuring less than 1 foot x 2 feet x 1 foot. The all-in-one unit incorporates an exhaust fan and a cover that keeps pots and pans in place in turbulence, and also accommodates a "special rice cooker" and toaster. The Hamburg-based completion specialist is in discussions with potential customers, flight attendants and chefs to gauge market interest in the device and refine its design.

Jinggong Global Jet (JGJ), a charter/management joint venture between Switzerland-based Global Jet and China's Jinggong Group, has added interior design services to its portfolio. Already a staple of Global Jet's offerings through sister company Pegasus Design, the same completion and refurbishment expertise is now available to customers of JGJ, based in Hangzhou, China (Hangzhou Xiaoshan International Airport). "The design team can really help clients rethink the interior," said Héloïse Converset, JGJ sales and marketing executive. The Pegasus team, with offices in London and Monaco, can work on the interior of any size aircraft, and is also noted for its exterior paint project capabilities.

The 115 VAC direct replacement LED lamps from **Aircraft Lighting International** (ALI) gives BBJ and ACJ operators a new LED lighting system replacement option for existing fluorescent lights. The 115 VAC system, like ALI's 28 VDC L-Series lamps, is designed to connect to an aircraft's current lighting system and use existing controls, minimizing installation downtime. The LED system draws a fraction of the energy fluorescent lights require, and its plastic bulbs are more durable and resilient. The lamps are customizable and available in multi-pitch curves to fit aircraft-specific galleys, lavatories and premium cabin amenities. This marks the expansion of ALI's product offerings into "larger business jets and the commercial aviation market," the company said. – *J.W.*



Inner beauty



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INNOTECH AVIATION

COMPLETIONS - MAINTENANCE - PAINT

▶ Continued from page 26

2.5-mm-thick granite (marble is also available) sits on a lightweight panel substructure, adding little weight over standard flooring, according to the Austrian manufacturer. Meeting all slip resistance and other applicable certification requirements, the stone is available in various colors and can be enhanced with customized tiling concepts, mosaics, borders, logos and other design options.

Global Aircraft Interiors of Ronkonkoma, N.Y., recently refurbished a GV and a Citation 560. The GV upgrade provides a Blu-ray DVD player and 20-inch HD monitors. Global president Robert Roth said he has seen rising demand for cabin improvement projects. He told **AIN** the company has "seen things really turn around in the last months. [Owners are] stepping up to the plate and doing complete refurbishments, instead of putting band aids on the interior."

The Citation 560 refurbishment features "a modern European look with bold colors" and a black piano finish on the woodwork, LED lighting, and custom made leather from Aeristo, with multiple stitching patterns in the seats. A Wi-Fi system and new CMS were also installed.

Aeria Luxury Interiors of San Antonio, Texas, secured major refurbishment and maintenance contracts for five executive airliners early this year: three BBJs, an ACJ and a 757, operated by customers in Asia-Pacific and the U.S. The aircraft are arriving through the first three quarters. Ang Chye Kiat, executive vice president for aircraft maintenance and modification for parent company ST Aerospace, reported seeing "a rising trend of aircraft operators requesting cabin interior refreshments to be performed concurrently with heavy maintenance." Singapore-based ST Aerospace, meanwhile, opened a private aircraft interiors facility early this year at Seletar Aerospace Park. The 29,000-sq-ft, $1.25 million facility comprises a hangar capable of accommodating a 757, design studios and workshops outfitted with 3-D printing technology.


Gulfstream G600 mockup

In San Antonio, Aeria closed 2015 with redelivery of its first green BBJ completion, said Ron Sort, vice president and general manager. The BBJ layout provides a conference room, large resting lounge and master suite, decorated throughout with 3-D printed items sporting elegant finishing touches like the application of precious stone. The cabin was outfitted with humidification and zonal drying systems, and multiple high-definition monitors complement the entertainment system. Aeria's in-house team also created a custom-designed exterior paint scheme.

West Star Aviation recently refurbished a six-year-old Falcon 900 at its East Alton, Ill. headquarters facility, for new owners who wanted an interior more reflective of their personal tastes, such as a satin finish on the woodwork, said West Star interior manager James McCann. West Star's newest site, in Chattanooga, Tenn., has concluded its first refurbishment project with a soft goods and carpet replacement in a palette of gray on a Learjet 45. West Star has numerous customers from the Chattanooga area who are pleased to have a facility closer to home, according to McCann.

West Star also received "a significant investment" from Norwest Equity Partners. The amount and terms of the investment weren't disclosed.

OEMs

In an organizational change this spring, **Gulfstream Aerospace** combined its previously separate completions and aftermarket design organizations, "to make sure we're leveraging our strengths across all projects," said Matthew Huhn, Gulfstream's director of product support and business and program support. With the consolidation in place, "we're able to take the customer all the way from the first time they buy a new aircraft through when they want to refresh, and they can use the exact same team."

Gulfstream is seeing more demand for "natural stone and wood floors" in both completions and refurbishments, Huhn said, though these surfaces are more fragile than traditional flooring materials. "Sometimes customers aren't concerned; they like the aesthetic, and they're OK with having to replace it more frequently," said Huhn.

Gulfstream advises buyers of its pre-owned aircraft "to take it for a few months after they complete the transaction to learn it, and understand their specific wants, needs and desires," before proceeding with refurbishment, Huhn said.


Falcon 900LX by West Star Aviation

Infrastructure: New Facilities Open, Companies Expand in Past Year

West Star Aviation has completed a new paint facility at its location in Grand Junction, Colo. (GJT). The 41,000-sq-ft facility has two bays, one for strip, sand and priming, the other a downdraft bay. Each can accommodate aircraft as large as the Global 7000 and G650. The facility, which uses high-efficiency vari-drive compressors, has clean rooms, a flight-control balance room, and paint storage and mixing areas. The location already had a paint shop large enough for a Challenger 604 but "needed more capacity and the ability to paint the larger corporate aircraft," said Dave Krogman, general manager of the MRO's GJT facility.

Amac Aerospace Switzerland opened its fourth hangar, dedicated to maintenance, last October. The 78,000-sq-ft structure can accommodate one widebody and two single-aisle jets simultaneously. Recently a 747-8i was undergoing its first annual inspection in the new hangar. Amac handed over that aircraft—the first head-of-state completion on an -8i, according to Amac—to an undisclosed Middle Eastern customer last May.

China-based **Ameco**'s completion facility got an upgrade of its own with last year's opening of an interior manufacturing workshop, the second such facility at its Beijing base since the MRO specialist moved into business aircraft completions in 2012. The 17,000-sq-ft workshop, created from refurbished space, complements a hangar the company is upgrading "to accommodate new aircraft types," said Feng Bin, head of VIP and business jet services.

Comlux America in Indianapolis is expanding its 129,000-sq-ft facility into a widebody hangar, to accommodate aircraft as large as the 747.

Sierra Completions, Sierra Nevada's cabin interiors subsidiary, has broken ground for a completions hangar at its Colorado Springs Airport headquarters. The 31,000-sq-ft facility will be capable of handling ACJs and BBJs. The company is in "active discussions with a number of customers" about performing completions at the facility, said Ed Topps, vice president of programs. Sierra Completions offers interior design, modification, integration, modernization, and aircraft maintenance and overhauls. ■

Interior spec activity for the first delivery customers of **Bombardier**'s Global 7000 is well under way. Two to three more aircraft will be specified "within the next few months," the Canadian OEM said. Bombardier's floor plan-selection tool is helping customers identify the cabin layout that best suits their needs, though "the customer sample size is still relatively small." Bombardier's Global 7000 cabin systems test rig (CSTR) is now operational; the integration test bed ensures all onboard systems for the ultra-long-range Global 7000 work properly before installation on Flight Test Vehicle 4.

Bombardier's Wave Ka-band Wi-Fi Service, its branded Inmarsat-Honeywell Aerospace high-speed connectivity system, has been approved for the Global 5000 and 6000 by the FAA and Transport Canada. The service supports airborne videoconferencing, content streaming and Internet browsing everywhere except the North and South Poles.

Bombardier has added AVoD to its aftermarket portfolio for Learjet, Challenger and Global operators. STCs have also been granted for retrofits on these aircraft for SmartSky installations and Aircell 4G high-performance airborne broadband.


G550 refurb by Gulfstream

Pilatus introduced the 2016 PC-12 NG at EBACE in May. In addition to performance-improving aerodynamic enhancements, the updated turboprop offers six new executive interiors from BMW Group's Designworks, with new materials and colors. Pilatus also offers full customization services. The cabin is also quieter with the addition of a new five-blade Hartzell propeller that reduces noise "to an absolute minimum," according to Pilatus.

Wichita-based **Cessna Aircraft**, a division of Textron Aviation, recently displayed its new Latitude demonstrator, featuring larger, fully berthable seats and redesigned sidewalls, similar to those in the Longitude. With a flat floor and six feet of cabin height, the nine-passenger Latitude features Cessna's wireless cabin-technology system, providing passengers connectivity and entertainment through personal electronic devices. The new cabin pressurization system maintains a 5,950-foot cabin altitude at the Latitude's maximum operating altitude of 45,000 feet.

Boeing Business Jets (BBJ) marked its 20th anniversary this year by showcasing the first BBJ 787 with a fully custom interior at EBACE in May. "If you told the people who built this company that in 20 years they'd be landing an airplane that hadn't been invented at an airshow that didn't exist, they wouldn't have believed it," said BBJ president David Longridge, noting initial projections estimated a total market demand for 40 private Boeing airliners.

Since EBACE last year, Longridge said, nine BBJs had been ordered, eight delivered and 10 entered service, bringing totals for the brand to 238 orders, 215 deliveries and 191 in service.

Expanding private aviation's reach into the airline world, **Airbus Corporate Jet Centre** (ACJC) introduced Super First Class by ACJ, an interior design and completion offering for airlines. The program offers a "bridge between private jets and first class," said Joël Frugier, ACJC general manager, allowing carriers to offer a more exclusive travel experience. ACJC can create mini-suites offering a "cozy life-space that ensures comfort and intimacy," Frugier said, and first-class zones can incorporate soundproofing, illumination, temperature controls, and airflows previously unavailable in commercial aircraft.

For corporate jet customers, ACJC continues to offer à la carte services such as artistic design, concepts, architectures, certification, and provision and installation of cabin comfort, in-flight entertainment and connectivity systems. ❑

AIN's annual special report on cabin electronics and online connectivity, the rapidly evolving frontier of cabin completion technology, will appear in next month's issue.

Nextant expects to hand over the first customer G90XT by year-end.

Year-end G90XT first delivery eyed

by Thierry Dubois

Nextant Aerospace says it is in the middle of a post-certification effort on the G90XT remanufactured turboprop and that it expects to deliver the first example to a customer at the end of this year.

The G90XT is an updated and remanufactured version of the Beechcraft King Air 90 with GE H75 engines replacing the original Pratt & Whitney Canada PT6As. Nextant is also installing Garmin G1000 avionics and has redesigned the cabin and cockpit, as well as upgraded other systems.

"Our G90XT was FAA certified last November—with one exception, the single-lever power control," executive v-p Jay Heublein told **AIN**. The company expects the FAA to issue an amendment next month. To that end, initial flight-testing was completed four weeks ago. In Europe, the EASA is expected to issue type validation within 90 to 120 days of FAA full certification.

Nextant sees single-lever power control as a key feature, and as it is not retrofittable, says that deliveries of the remanufactured and re-engined King Air 90 have been postponed. Apart from that piece of equipment, the twin turboprop is said to be on specification. "The airplane has done everything we said it would do," Heublein said. Specific fuel consumption and high-altitude performance are even slightly better than expected, he added.

The company will be ready to announce its next project by the NBAA Convention in November, Heublein said. This is expected to center on a re-engining and avionics upgrade for a larger business jet.

At EBACE in May Flexjet announced that it has selected the Nextant 400XTi as the light jet for its newly announced European operation. With its 2,003-nm (3,710-kilometer) range, the 400XTi could make a trip from London to Moscow, Moscow to Nice, and Nice back to London.

The fleet will feature a custom interior with a refreshment center, enclosed aft lavatory, a three-place divan and Wi-Fi. ❑

News Note

Embraer Commercial Aviation president and CEO Paulo Cesar de Souza e Silva is replacing Frederico Fleury Curado as Embraer CEO under a transition plan that will continue over the next six months, the company said in a surprise announcement on June 9. CEO since 2007, Curado is departing the Brazilian manufacturer after a 32-year career there. Curado joined Embraer as the EMB-120 Brasilia was nearing market entry; the company is now one of the largest aircraft manufacturers in the world. ■

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A daughter on a mission, bizav comes to the rescue

by Nigel Moll

The ranks of the Greatest Generation, who fought and won World War II, are thin now, and some stout hearts in the business aviation community seized an opportunity last month to recognize the courage of a D-Day survivor.

On May 17 Susan Friedenberg, well known in bizav for the passion she brings to her professional role in corporate flight attendant training and her more personal cheerleading for veterans, posted her family's predicament on NBAA's Air Mail forum: "I am calling in a huge favor. My father, Bernie, is 94. He has survived two strokes and three falls in the past two years. He also survived WWII and is recognized as one of the most decorated men in New Jersey for his war record. He fought his way across Europe for four years. A medic in the 1st Battalion, 16th Regiment, U.S. Infantry Division, he was on Omaha Beach in the fourth wave of guys at the age of 22 off the boat, onto the beach, and got his first Purple Heart that day as well as a Silver Star. He is the bravest man I have ever known and has fought his way back from being very ill to just being frail and in a wheelchair. He has COPD and nightmares, still to this day.

WWII vet Bernard I. Friedenberg travels to the WWII Museum in New Orleans in a Citation CJ4 donated through the Veterans Airlift Command.

"I received a call yesterday from the WWII Museum in New Orleans, and they wish to commemorate my Dad at a ceremony on June 6, the 72nd anniversary of the D-Day invasion. I badly want Dad to be there, but there is no way we can take him and my 89-year-old Mom on the airlines with their aide. His immune system is compromised and, simply put, we just

Continues on page 74 ▶

News Note

NATA set a transition plan in place for the upcoming departure of president and CEO Tom Hendricks on August 31, with Marathon Jet Center owner Marty Hiller set to take over as acting president at the beginning of September. Hiller will work with NATA senior vice presidents Bill Deere and Tim Obitts, who will steer the association's daily activities.

Noting that Hiller has agreed to take over in an acting role, NATA chairman and Priester Aviation president and CEO Priester said, "This provides the board of directors with the luxury of time to decide how it will proceed in filling Tom's important position."

Hiller, who had run the energy supply company The Hiller Group until it was sold to World Fuel Services in 2010, had served as vice chairman of the NATA board of directors since 2012. ■

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DJI

The commercial applications and considerations of flying small drones

by Bill Carey

Before last month's release of the FAA's Part 107 regulation for small unmanned aircraft systems (sUAS), the commercial drone industry in the U.S. emerged through exemptions to existing aviation rules. Analyzing the types of operations allowed by those exemptions, which in late May numbered several thousand, offers insight into where the growth may be.

In the FAA Modernization and Reform Act of 2012, Congress inserted a number of provisions designed to speed the introduction of unmanned aircraft into the National Airspace System. Section 333 of the act, titled "Special Rules for Certain Unmanned Aircraft Systems," became the predominant route that aspiring commercial drone operators followed to gain entry. It gave the secretary of transportation authority to determine "if certain unmanned aircraft systems may operate safely" in the airspace before the FAA promulgated standards for certifying and operating drones weighing less than 55 pounds through the long-awaited sUAS regulation.

The FAA started accepting petitions to fly drones commercially under Section 333 in May 2014. It granted the first exemptions, each with 35 conditions attached, to six aerial photography and video production companies backed by the Motion Picture Association of America that September. As more petitions arrived, the agency relaxed the way it administered them. In March last year, the FAA announced that operators who obtained exemptions would automatically receive a "blanket" certificate of authorization (COA) to fly their machines at or below 200 feet anywhere in the country, except in restricted airspace or in major cities. (A COA is required of operators in addition to the exemption.) A month later it announced a "summary grant" process—a more expeditious method of approving batches of exemptions in cases that were similar to previous approvals. This past March, it doubled the blanket operating altitude for Section 333 exemption holders to 400 feet.

As of late May, the FAA said it had granted 5,238 petitions from operators seeking to fly small drones for business purposes. Another 1,517 petitions were denied or closed because they lacked adequate information.

The bow wave of applications from aspiring drone entrepreneurs hinted at the exponential growth predicted by the trade group Association for Unmanned Vehicle Systems International (AUVSI), which this year renamed its annual conference "Xponential" to reflect its optimism. AUVSI recently published an analysis of the first 3,000 companies to receive exemptions, indicating which applications and markets they were targeting. The findings cannot be considered conclusive, as the industry is still forming and some of the more hyped applications—such as Amazon's "Prime Air" project to deliver small packages by drone—were impeded by the FAA's prohibition of beyond visual line-of-sight operations and flights over people.

In an economic impact study it released in March 2013, AUVSI predicted that "precision agriculture" uses involving remote-sensing and precision spraying of crops by drone would command 80 percent of the commercial market once the FAA produced a regulation, a share that was still not apparent. In its aerospace forecast this year, the FAA predicted that the top five sUAS markets will be industrial inspection (42 percent), real estate and aerial photography (22 percent), agriculture (19 percent), insurance (15 percent) and government (2 percent).

Section 333 exemptions often applied to multiple applications for which an operator intended to use drones, meaning there were more overall applications than exemptions. Many companies received multiple exemptions and operated more than one drone type. According to AUVSI's analysis of the first recipients, 2,557 exemptions made reference to general aerial photography, 1,969 to real estate and 1,496 to construction. There were 38 application categories mentioned in the petitions; in order, the top 10 were aerial photography, real estate, aerial inspection, aerial survey, construction, infrastructure inspection, agriculture, filmmaking, advertising and environmental uses such as forestry, geological mapping and land management.

More than two-thirds of exemption holders—2,121—were companies employing fewer than 10 people; another 541 were individuals. California led all states with 360 exemption holders, followed by Florida (328) and Texas (268). Rotary-wing drones were specified sixfold over fixed-wing models in the petitions, and Shenzhen, China-based DJI claimed six of the top 10 models. Most popular among exemption holders was DJI's Inspire 1, a quadcopter with articulated rotor arms that lift in flight to provide its rotating camera with an unobstructed, 360-degree view. It retails for around $3,000.

A moneymaking proposition?

Among the top ways to make money with a drone are to sell aerial footage to luxury properties such as golf resorts, offer aerial photography of weddings and "inspect stuff," advises drone hobbyist and marketing consultant Alan Perlman, who produces the website *UAV Coach*.

But not unlike the rush to do business on the Internet, the stampede of petitions to operate small drones left unanswered the question of whether they can be

Report continues on next page

deployed profitably in the current environment, at least by sophisticated operators.

At the Xponential conference in New Orleans in May, the former president of Pictorvision, one of the first companies to receive a Section 333 exemption in September 2014, poured cold water on the notion that drones present a sure-fire business case. "There is barely a commercial market yet," instructed Tom Hallman. "I can tell you as a guy with boots on the ground, very few people are making any meaningful profit in this game."

Speaking then as vice president of business development for Approved Technologies, a start-up company devoted to advancing drone-related technologies and services, Hallman said the FAA's slow-going rulemaking process, "competing agendas" of major industry players and a lack of commercial-grade equipment are creating drag on the growth of the commercial market.

Foremost among the challenges operators face is continued uncertainty over provisions of Part 107, which the FAA released in draft form in February last year. At the time, Administrator Michael Huerta said the regulation probably would not require that small drone operators have a pilot certificate; instead it would establish an "unmanned aircraft operator's permit," issued on the basis of passing a knowledge test on airspace rules. Section 333 exemptions have required that an operator have a sport pilot certificate at a minimum. The FAA promised to deliver the final regulation by late this spring.

"It's really hard as a company to jump into this game. You don't know if you're too early or too late until we see Part 107," Hallman said. "Do I get a pilot certificate or do I wait? What's going to be the timing of Part 107? How long until that actually goes into effect? In spite of the existing rules, there's a huge problem. As a guy trying to make a living, I'm competing against guys who choose not to follow the rules…who honestly just don't care."

Hallman suggested that the FAA, deprived of resources and pressured by Congress and industry, opened the floodgates to some operators who may be incompetent by granting so many commercial exemptions. "When we got the first [exemption] it was a really big deal," he related. "The fact that they've cranked out 5,000 of these things since then tells me the vetting process is probably pretty lenient. I can tell you from experience that there are some folks in our area who have had multiple problems with the FAA but still got their exemption. After cease-and-desist letters, they were still able to get an exemption, so what is the vetting process?"

Buyer Beware

The Part 107 sUAS rule will provide a long overdue regulatory framework for the industry and, according to the FAA, will be the primary method of authorizing commercial drone operations. But the regulation is just a start, a minimum standard to which drone operators must adhere to gain entry to the airspace system. To be successful as trusted, accredited operators, they will need to implement proven safety management processes, said Art Dawley, CEO of aviation risk management and safety auditing firm Wyvern. That could prove challenging for an industry that is immature and largely undisciplined when it comes to benchmark safety practices.

"This is the challenge," said Dawley, whose company exhibited at the Xponential conference. "We're not working with aviation providers, number one," he explained. "We found that in the acceptance, even the recognition, of these types of process, most operators have no clue. Safety management is not even part of what they do. These are people who have never had to document and implement organizational policies, risk management processes—all these kinds of things."

Wyvern, of Yardley, Pa., has advised business aviation clients on safety best practices for more than two decades. It also now assesses vendor compliance with quality- and safety-management practices for consumers of unmanned aircraft services.

The DJI Inspire 1 quadcopter was the most popular drone among the first operators to seek Section 333 commercial exemptions from the FAA.

The safety-auditing firm participates as a third party in the UAS Insurance Association, an industry group focused on insurance, risk management and safety aspects of commercial drone operations. Formed late last year, the group's founding members are aviation insurance providers Allianz Aviation, AIG Aviation, Global Aerospace and Transport Risk Management. Thus far, it is mainly aircraft insurers that offer drone coverage as a modification to their policies; for other types of insurance aircraft are an exclusion, said Tom Karol, National Association of Mutual Insurance Companies general counsel, who was interviewed recently by the Center for the Study of the Drone at Bard College. One impediment insurers face in setting premiums is a lack of data on the frequency and severity of accidents involving small UAS, he said.

At Xponential, Wyvern announced the launch of a safety assessment program for drone operators called Exact, short for "Excellence through Assessment, Consistency and Training." It provides a certification process for operators benchmarked from the International Civil Aviation Organization (ICAO) Document 10019 Manual on Remotely Piloted Aircraft Systems. The goal of the program is to help drone users "make informed decisions" about the vendors they use, and measure vendors' "commitment to mitigate risk" in their operations.

"Our aim is to ensure that you have an organizational management structure in place, quality management, internal evaluation-type processes, a safety management plan, a documented emergency response plan," said Dawley. "Then, on the technical side, that you conform to recognized benchmarks from everything from command and control to security- and intelligence-type processes."

Wyvern developed the Exact program after hearing from its fixed-wing aviation clients, including "big corporate groups" such as General Electric, Boeing Flight Services and Disney, he said. Asked if these companies planned to employ unmanned aircraft, Dawley replied: "They already were; they already are." Clients "want to know when they're going out and sourcing these vendors. Do they meet a certain benchmark?"

RTI Forensics, a forensic investigation and engineering firm based in Stevensville, Md., was the first company Wyvern awarded Exact certification. RTI uses small drones to collect aerial data for accident investigations, infrastructure inspection, failure analysis and other requirements of law firms, insurance adjustors, surveyors, manufacturers and government agencies. The firm received a Section 333 exemption from the FAA in June last year allowing it to perform "aerial data collection" using DJI multi-rotor drones; this was later amended to add "closed-set" filming, allowing flights near on-scene investigators.

Jeremy Reynolds, RTI's COO, said the firm started by using radio-controlled airplanes and helicopters in the regulatory void of the 1990s and early 2000s. In 2007 the FAA issued a policy notice that forbade flying unmanned aircraft "for business purposes," causing RTI to ground its model-aircraft fleet. "We followed what the FAA put out there" and had "a lot of disappointed clients," he recalled.

The now-ubiquitous quadcopter and other multi-rotor drones provided better platforms for aerial data collection at a lower price for clients, Reynolds said. "The UAS is really a support tool for preserving the evidence at the scene," he explained. "It's more of a value-added service that we can provide to our clients. Does it make us money? No, not the UAS alone. But what it allows us to do is provide our clients with a better solution than what was out there."

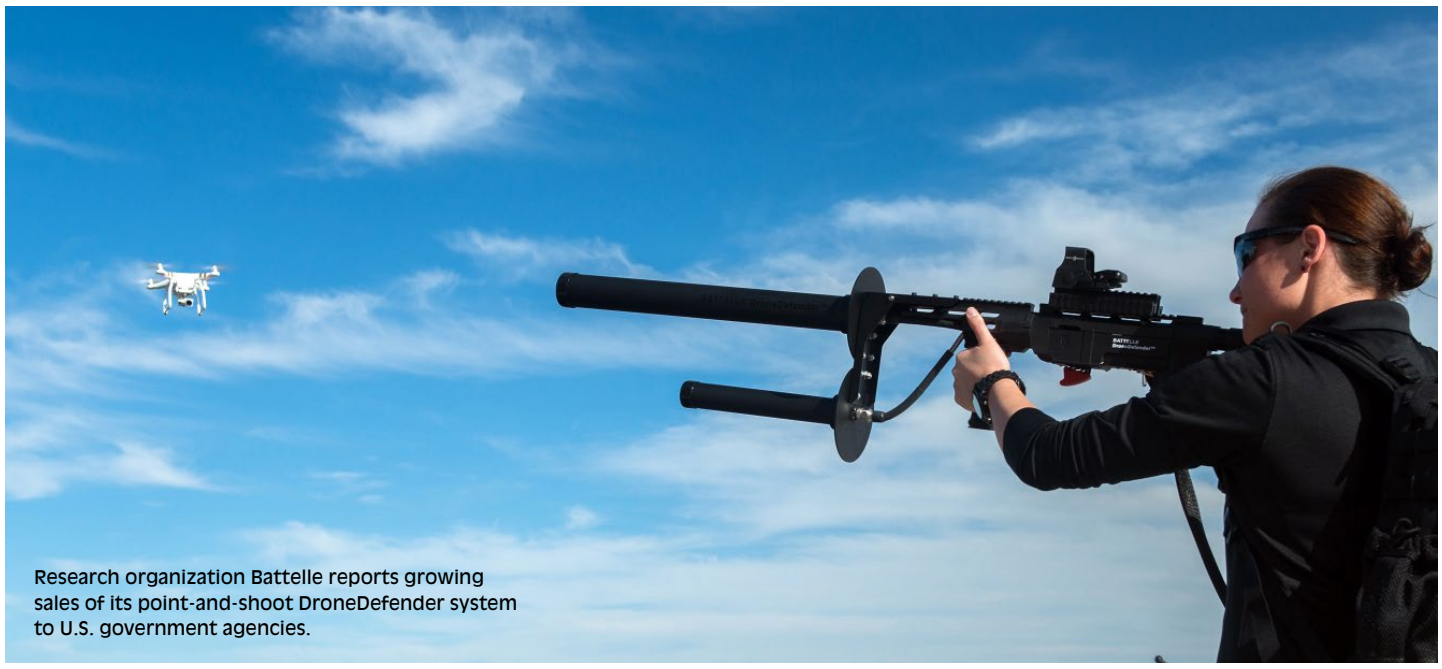
Wyvern's Exact certification assures potential clients that RTI operates to certain standards, and Reynolds expects the approval will also help his firm do business in other countries because it is built on ICAO best practices. "One problem that we are finding is providing our services globally," he said. Different countries "have different requirements and restrictions and hoops to jump through. I'm looking more internationally and trying to figure out how we can create an international standard that will allow us to fly more freely in other countries."

In a paper that it posted to its website in May, NBAA provided a checklist designed to assist corporate flight departments that are considering using an sUAS service provider. Recommended questions include whether the provider has received one or more Section 333 exemptions and COAs from the FAA; employs an operator with a current pilot certificate; has a written flight operations manual, maintenance manual and safety plan; and will provide aviation liability insurance coverage of at least $2 million "for each occurrence."

The paper, "Integrated Operational Management and Oversight of sUAS," also makes the case that corporate flight departments are a natural fit to operate drones for their respective companies.

"With the recent advancement and accessibility of sUAS as tools to support business pursuits and services, desire for use by engineers, technicians, marketing personnel and other company employees continues to increase. However, such individuals may not have received the appropriate aviation training, certification or practical experience development to operate these machines safely and effectively," the association stated.

"Involving flight departments in proposed operations improves the potential for successful task completion and continued operational safety," NBAA asserted. "As aviation professionals, these flight departments are well versed in best practices and potential implications of operating aircraft in specific environments and conditions." ❑



Research organization Battelle reports growing sales of its point-and-shoot DroneDefender system to U.S. government agencies.

Taking stock of the drone universe

by Bill Carey

The number of exemptions the FAA has granted for small drone operations offers an early indicator of the commercial market in the U.S.; the number of people who have registered to fly their machines for fun suggests the size of the drone universe. As of early May, the FAA reported that 443,000 hobbyists had registered their drone—or drones—weighing from 0.55 pound (250 grams) to 55 pounds with the agency's Small Unmanned Aircraft System Registration Service.

Given the speedy gestation of the so-called national drone registry, which was conceived and born between October and December last year, the number of registrants who paid the $5 fee and the universe they represent seems impressive. But in its latest annual aerospace forecast, the FAA projects sales of 2.5 million hobbyist and commercial drones this year, growing to 7 million sales (4.3 million hobbyist, 2.7 million commercial) by 2020. The forecast includes very small units that fall below the 250-gram weight triggering registration.

Although couched as "highly uncertain," the numbers may cheer retail outlets such as Wal-Mart, Best Buy, Apple and Amazon that sell drones. But they are concerning for flight crews that could find themselves sharing the airspace with hobbyists who flout voluntary guidelines to stay below 400 feet, outside five miles of an airport and "well clear" of manned aircraft.

In the last two years, incident report releases by the FAA and headline-grabbing flybys at major airports have pointed to a growing problem from rogue drones. The Center for the Study of the Drone at Bard College analyzed records of 921 incidents involving drones and manned aircraft dating from Dec. 17, 2013, to September 12 last year. It organized the reports into two categories: "sightings," or incidents in which a pilot or a controller spotted a drone flying within or near the flight paths of manned aircraft; and "close encounters," in which a manned aircraft came close enough to a drone that it met the FAA's definition of a "near midair collision." By those criteria, 35.5 percent of incidents were close encounters; 64.5 percent were sightings.

"We found that 90 percent of all incidents occurred above 400 feet, the maximum altitude at which drones are allowed to fly. A majority of the total incidents occurred within five miles of an airport," the center stated. "Our findings indicate that incidents largely occur in areas where manned air traffic density is high and where drone use is prohibited…The locations with the highest number of incidents were large metropolitan areas."

Drone Defenses

Significant resources are being applied to the problem. The national drone registry is one response; by requiring hobbyists to mark their aircraft with a unique registration number, the system provides a means of tracing back a rogue drone to its owner and thereby subjecting that person to civil or criminal penalties.

The FAA's "Center of Excellence for UAS Research," a coalition of universities and companies led by Mississippi State University, is developing computer simulations of drone strikes on aircraft engines and airframes. Led by retired U.S. Air Force Maj. Gen. James Poss, the center reported working on 146 drone-related research projects overall, worth $148 million. Project focus areas were: air traffic integration, airworthiness, control and communication, detect and avoid, low-altitude operations safety, human factors and training.

The UAS traffic management (UTM) effort spearheaded by NASA Ames Research Center in Mountain View, Calif. with substantial industry involvement aims to create a low-altitude air traffic management system for drones. In April, researchers demonstrated the simultaneous operation of multiple drones at six FAA-sponsored UAS test ranges, accomplishing the first multi-state test of the UTM platform and the first coordinated test involving all six FAA ranges. Through successive software builds and demonstrations, the program's goal is to create a prototype UTM system for transfer to the FAA by 2019.

Other solutions are available now. In March, digital mapping services provider AirMap, of Santa Monica, Calif., and the American Association of Airport Executives (AAAE) rolled out the Digital Notice and Awareness System (D-NAS), a notification system that enables unmanned aircraft operators to inform nearby airports of the location of their flights. Through interfaces that include flying apps from drone manufacturers DJI, Yuneec and 3D Robotics, operators can send encrypted digital flight notices to an AirMap dashboard at the airport's operations center. The dashboard provides managers with a map view of flights in proximity to the airport and the option to contact the drone operator directly.

Ben Marcus, co-founder of light jet brokerage JetAviva, and Pepperdine University professor Gregory McNeal founded AirMap in January last year. With the AAAE, it announced that 50 airports had joined the D-NAS pilot program.

Another recent start-up company—DroneShield, of Herndon, Va.—offers a detection and alerting system that uses a network of acoustic sensors that can sense small drones that evade radar or have no radio frequency link to disrupt. DroneShield markets the system for use by airports, commercial venues, prisons and operators of critical infrastructure. Authorities tested it at the last two Boston Marathons.

Under its "Pathfinder" initiative on unmanned aircraft systems, the FAA recently signed cooperative research and development agreements to test prototype drone-detection systems from Gryphon Sensors, Liteye Systems and Sensofusion at selected airports. These added to an agreement the agency reached last year with CACI International to test the

Continues on page 38 ▶

Shown is a monitor scene from the CACI 'SkyTracker' system to detect drones, evaluated earlier this year at Atlantic City International Airport.

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▶ *Continued from page 36*

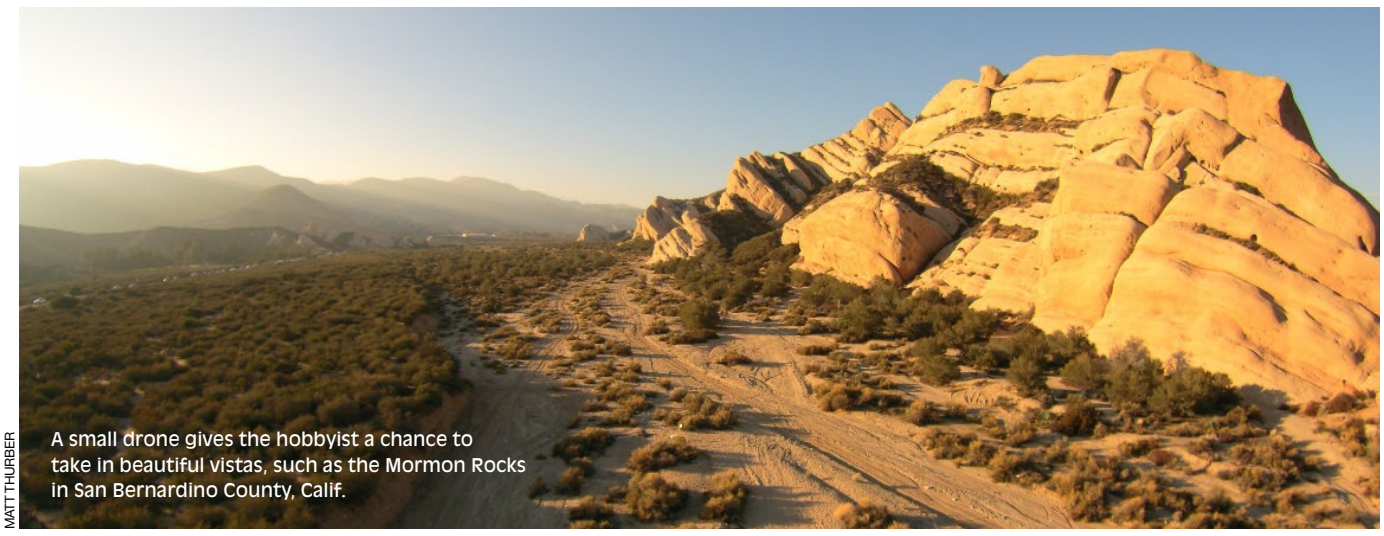
latter's "SkyTracker," a passive detection system that senses the radio frequency link between a drone and its operator within a defined electronic perimeter. Testers evaluated SkyTracker from January 25 to February 2 at Atlantic City International Airport, the first such detection research at a commercial airport, the FAA said.

In May, the FAA tested an "FBI drone detection system" at John F. Kennedy International Airport in New York. Other agencies participating in the test were the Department of Homeland Security, the Department of Justice, the Queens District Attorney's Office and the Port Authority of New York and New Jersey.

There is also the option of disrupting rogue drones in flight. With support from multiple federal agencies, Mitre is conducting a counter-drone technology challenge this year to identify technological solutions to "detect and safely interdict" small unmanned aircraft weighing less than five pounds that present a potential safety or security threat in urban areas. The sought-after solutions would down small drones that fly too close to airports or other sensitive locations, and must be "domestically viable," according to Mitre.

Aerospace and defense companies large and small have developed drone countermeasures using radar or other sensors in combination with jamming or laser technology to detect and disable drones, among them Raytheon, Boeing and Lockheed Martin in the U.S., Thales in France, MBDA and Rheinmetall Defence in Germany and Blighter Surveillance Systems, Chess Dynamics and Enterprise Control Systems in the UK.

Last year, nonprofit research and development organization Battelle introduced "DroneDefender," a directed-energy, point-and-shoot technology resembling a rifle. The system uses radio control frequency to disrupt drones in flight at a range of 400 meters, causing them to slowly descend and land or return to their origin. "The technology is restricted to use by federal authorities under a strict permitting process, but sales are taking off with nearly 100 units sold" to the U.S. departments of defense and homeland security, Battelle said in April. ❑



MATT THURBER

A small drone gives the hobbyist a chance to take in beautiful vistas, such as the Mormon Rocks in San Bernardino County, Calif.

Drone flying: a hobbyist's perspective

by Matt Thurber

Owning a hobby drone in Los Angeles is a little frustrating. As much fun as these devices are to fly, especially with their high-resolution video and still cameras that keep getting better and better, there are many areas where some authority wants to keep me grounded.

I do live in a fairly congested area, and there is little opportunity to fly my Yuneec Q500 Typhoon in my neighborhood. I could probably get away with flying it in a local park early in the morning, but local rules are strict about not flying any radio-controlled models in parks. The gorgeous California coastline beckons as a perfect place to photograph stunning vistas, but again, local authorities have ruled that out, and we're not supposed to fly our drones over beaches. (Not surprisingly, there are plenty of drone videos of California beaches on YouTube, so it appears that people are flying drones there despite the rules.)

The FAA's B4UFly smartphone app is an attempt to help drone fliers figure out safe areas to fly, but the app has some serious flaws that make it all but useless. When I fire up B4UFly on my iPhone, according to its depiction, I have to drive about 25 miles to get away from all the restricted flying zones. This is because there are a significant number of privately owned heliports in the Los Angeles area, from pads atop hotels to obscure heliports that apparently exist but are never used. The B4UFly app draws a five-mile circle around everything that the FAA qualifies as an "airport," including all those heliports.

However, the app incorrectly states that "permission" is required to fly within these five-mile circles, when in fact a drone operator merely needs to notify the airport operator of the planned flight; permission is not part of the process. The other flaw of B4UFly is that it contains little useful information to find out how to contact the airport operator to make the required notification, although it does include the airport identifier, which can be Googled to find out the operator information. In any case, my Yuneec contains geofencing software that doesn't allow it to operate near airports.

The hassles of flying my drone in the nearby area mean that I usually drive out to the desert for flying fun. After a day of snowboarding in the San Gabriel Mountains, for example, I stopped at Mormon Rocks on the way home for some drone photography of the setting sun reflecting off the bulbous rocky formations.

To make my drone more useful, I'm tempted to follow in the footsteps of my friend Bob Howie, a professional pilot who went to the trouble of getting an FAA 333 exemption and started his own commercial drone company (Lone Star Drones in Texas). Howie films construction sites, disaster aftermaths and commercial property and has enough business to keep a few pilots busy. "Honestly, it is some of the most exciting flying stuff I've ever done in some respects," he said. "I like the results and I like how people are happy with the work." ❑

FEDERAL 'MULTI-STAKEHOLDER' EFFORT ON UAS YIELDS CAREFUL DOCUMENT

The operators of unmanned aircraft systems (UAS) should notify people before using their drones, avoid using them to collect information when people have a "reasonable expectation of privacy," limit the use and sharing of data that reveals identity and secure any such information. These are guidelines agreed by a group of privacy and consumer organizations, trade associations, news groups and companies convened by the National Telecommunications and Information Administration (NTIA), a branch of the U.S. Department of Commerce.

The NTIA's "multi-stakeholder process" on UAS privacy, transparency and accountability was initiated in February last year by a presidential memorandum and involved a series of meetings. The effort concluded on May 18 with the release of a carefully worded eight-page document that sets forth voluntary "best practices" for commercial and recreational drone users.

UAS best practices are not meant to establish a legal standard "or serve as a template" for future statutory or regulatory requirements, the document states. "These guidelines provide the flexibility to evolve as the industry grows while ensuring a baseline understanding of ethical practices," the NTIA explains in a blog post.

Central to the guidelines is the treatment of "covered data," which the stakeholders' group defined as information collected by a drone that identifies a particular person. Best practices relate to the means by which covered data is collected, stored, used and secured.

The recommendations do not apply to news reporting organizations, which are "strongly protected" by U.S. law, including the First Amendment. "Newsgatherers and news reporting organizations may use UAS in the same manner as any other comparable technology to capture, store, retain and use data or images in public spaces," the document states.

Best practices for recreational drone users are listed separately in an appendix titled "Guidelines for Neighborly Drone Use."

Among parties listed as supporting the best practices document were Amazon, Intel, X (formerly Google X) and PrecisionHawk representing industry; the Small UAV Coalition, the Association for Unmanned Vehicle Systems International, the Academy of Model Aeronautics and CTIA-The Wireless Association among trade groups; and the News Media Coalition, Newspaper Association of America, National Association of Broadcasters and Radio Television Digital News Association among news organizations.

Not all interested parties concurred. "During the May 18 multi-stakeholder meeting on UAS, we urged important changes to the best practices document to bring it in line with core privacy principles," states a joint letter from Access Now, the American Civil Liberties Union and the Electronic Frontier Foundation. "However, those changes, which would have provided greater protections for privacy, were not reflected in the final document. Absent those changes, the undersigned believe that the document cannot represent 'best practices' for the use of UAS." —*B.C.*

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BOEING

MATT THURBER

Visitors to this month's AirVenture can expect plenty to see…both on the ground and in the air.

Some amazing aircraft coming to Oshkosh

by Matt Thurber

Every year the Experimental Aircraft Association (EAA) brings together a cornucopia of aircraft to attract the thousands of visitors who spend a week in Oshkosh, Wis., at the annual AirVenture extravaganza. This year, EAA has upped its game, although visitors will have to take a brief bus ride over to the EAA seaplane base on Lake Winnebago to get a close look at the marvelous, massive Martin Mars flying boat during the show, which takes place from July 25 to 31. The Mars will also fly during the daily afternoon airshows on July 25, 27, 29 and (night show only) 30.

"There aren't many airplanes that have never been to Oshkosh, but this is one of them, so this is both literally and figuratively a huge addition to this year's lineup," said Rick Larsen, EAA vice president of communities and member programs. "Among flying boats, only the legendary Spruce Goose is bigger, but the Martin Mars is the largest ever to be operational."

The Martin Mars is a true flying boat, with a 200-foot wingspan, nearly the same as that of a 747, and it can land only on water. The one being flown to Oshkosh is the last flying Mars in the world, one of six built in the 1940s as a Navy troop and freight transport. Flown as a water bomber from 2007 until last year, the *Hawaii* Mars is owned by Coulson Flying Tankers of Port Alberni, British Columbia.

"This is the last flying Mars in the world and the largest warbird ever built," said Wayne Coulson, CEO of Coulson Flying Tankers. "There isn't a better aviators' venue than EAA AirVenture, so it's an honor to be part of this world-class event. We're excited to bring the *Hawaii* Mars to Oshkosh as we…showcase this magnificent airplane's capabilities."

Military Presence

A gathering of the aircraft of Operation Desert Storm/Desert Shield brings back many of the aircraft that participated in the 1991 Oshkosh show 25 years ago. These include the F-15 Eagle, F-16 Fighting Falcon, A-10 Warthog and F/A-18 Hornet and support aircraft such as the KC-135, EA-6B and C-5M. The afternoon airshows on July 29 through 31 will also feature the Air Combat Command F-16 Viper Demonstration Team.

The airshow roster is already full, from Luca Bertossio's Swift S-1 glider aerobatics to the GoPro Bomb Squad and John Klatt's *Screamin' Sasquatch* and much more, including night airshows on Wednesday July 27 and Saturday July 30 with fireworks and the famous Oshkosh Wall of Fire.

EAA AirVenture has never been a big business aviation show, but there are plenty of products for that crowd and a growing number of OEMs serving the turboprop and light jet owner-pilot market. This year, Honda Aircraft, a longtime exhibitor, comes to the show with the FAA- and EASA-certified HondaJet. Embraer and Textron Aviation are long-time exhibitors, too, and will bring plenty of examples of their aircraft to the show.

One new item at the Textron exhibit will be the cabin mockup for its single-engine turboprop (SETP), which will be powered by a 1,240-shp GE Aviation engine. The T-tail SETP will carry seven to 11 people and fly at a maximum speed of 285 knots and offer range of 1,600 nm. Introductory price is $4.5 million, and Textron Aviation is expected to reveal the new turboprop's official name at AirVenture.

Innova Aerospace, the new owner of Sierra Industries and Sabreliner Aviation, among other aviation companies, is flying two modified King Air 90s to Oshkosh, both outfitted with BendixKing's new AeroVue flight deck. One of the King Airs will also be equipped with new engines, and more will be revealed about those at the show. Innova is also developing an AeroVue upgrade for the Citation 560.

More than Just Airplanes

Because so many people from all walks of aviation gather yearly at AirVenture, EAA has expanded the show's job fair to cover the entire week. The job fair will open from 9 a.m. to 5 p.m. every day at the Aviation Gateway Park, which showcases education, innovation and technology. Career services company JSfirm is assisting with the AirVenture job fair and will promote opportunities during the show.

"There are so many job opportunities in the industry right now and we're pleased to support EAA's efforts to match people and aviation jobs at AirVenture," said Abbey Hutter, marketing coordinator for JSfirm. "We stand firmly behind EAA's dedication and mission to growing participation in aviation, whether it's through recreational flying or as a career."

Boeing is celebrating its 100th anniversary this year and bringing a collection of airplanes to the show's main ramp, this year named Boeing Centennial Plaza. The Boeing fleet will include a Cathay Pacific 747-8 on July 30 (Boeing Day at Oshkosh), a B-17 Flying Fortress and B-29 Superfortress, an Alaska Airlines 737-800 participating in WomenVenture Day on July 27 and a gathering of Stearmans (which were also part of Boeing's history).

For those flying into Oshkosh Wittman Regional Airport, close study of the Oshkosh Notam is important, and it can be found on the EAA website (www.eaa.org). ❑

The last Martin Mars still flying will be at AirVenture, operating from Lake Winnebago.

PILOT REPORT

HondaJet

HondaJet production is ramping up, and more pilots are getting to see how the new jet flies.

by Matt Thurber

The HondaJet has taken a long time to enter service. First announced as a commercial product in 2006 with certification planned in 2010, the new light jet finally received its FAA blessing on December 8 last year, nine-and-a-half years since Honda Aircraft applied to the FAA for type certification. (Flight into known icing certification remained pending when I flew the HondaJet on May 12.) The HondaJet received EASA certification on May 23. Base price is $4.85 million (2016 $).

That the airplane is thoroughly modern is a credit to Honda Aircraft's designers, chief among them company president and CEO Michimasa Fujino. While it must have been frustrating to see milestones pushed back for various reasons, including the engine's own certification delays, Honda Aircraft engineers didn't sit around twiddling their digital slide rules but took full advantage of the extra time to hone and refine and tweak almost every facet until perfection loomed closer and closer. To say that there is a Japanese and Honda-style level of pursuing perfection might be an understatement. And to be fair, a company like Honda, when fully committed to a project, apparently has financial pockets deep enough to let a little time in the long scheme of things go by, as long as steady progress is made toward the goal.

In this case, the goal has finally been reached, and it is by any measure a remarkable achievement. Recall that the HondaJet is a first aircraft designed and built by an entirely new company, and it is an airplane every bit as, if not more so, sophisticated as anything else available (not comparing it to fly-by-wire jets). Also, the HondaJet is powered by a new engine of Honda design, the 2,050-pound-thrust HF120, which was refined, certified and put into production by a 50-50 joint venture between GE and Honda called GE Honda Aero Engines. Designing, building and putting into production a new jet powered by new engines is a huge challenge, and Honda Aircraft and GE Honda have made it happen.

When the FAA presented Honda Aircraft with its type certificate in December last year, Honda Aircraft president and CEO Michimasa Fujino called the approval the culmination of an "aviation adventure" begun in 2005, when Honda showed the test version of the HondaJet to enthusiasts at AirVenture.

How the HondaJet Flies

A modern airplane is much more than just its handling in the air; now designers focus intensively on the pilot-aircraft interface. The HondaJet came on the aviation scene as the concept of better cockpit design took on more importance, and Fujino and co. certainly paid that a lot of attention, especially taking into account that the HondaJet is designed to be flown by a single pilot.

Yet from a pure hands-on perspective, the HondaJet is a pleasure to fly. It is a light jet, with an mtow of 10,600 pounds, but handling-wise it feels like a larger jet. Its wing loading is relatively high and it punches easily through bumpy air. The controls are not light and snappy, but are firm and positive and well harmonized; when trimmed, the HondaJet stays right where you put it, with no tendency to wander while the pilot is looking elsewhere in the cockpit.

Where the HondaJet really shines is the cockpit design and the integration with the Garmin G3000 flight deck, which Honda engineers helped design; Honda Aircraft was the first manufacturer to select Garmin's new touchscreen-controlled avionics, but other OEMs have brought G3000-based flight decks to the market ahead of the HondaJet.

In the HondaJet cockpit, the placement of all controls is natural and instantly comfortable. Checklists are surprisingly short and simple, and they match a superbly crafted cockpit flow that will help new pilots feel safe and proficient in little time. Adding to the excellent cockpit feel is a well thought out implementation of the dark cockpit concept; not only are there few knobs and switches, but those that are needed are logically placed with intuitive alignment and indications.

The usual drill for a pilot report begins with a briefing before the flight in the airplane. Sometimes the briefing is an all-day affair; other times it lasts for an hour or two. In this case, however, I was able to fly the HondaJet simulator first with Honda Aircraft demo pilot and manager of corporate flight operations Tim Frazier. The FlightSafety HondaJet learning center is located on the Honda Aircraft campus at Piedmont Triad International Airport in Greensboro, N.C., and the HondaJet Level-D full flight simulator has been busy training pilots since it was certified by the FAA last December. FlightSafety did an excellent job with the simulator, and it handles almost exactly like the real airplane, although I found it slightly easier to land than the airplane. The simulator features FlightSafety's latest Vital 1100 visual system, as well as a modern electric motion base.

The big benefit of flying the simulator first was beginning the process of training my flying muscles to recognize the switchology in the HondaJet cockpit. I liked that Frazier had me go through the checklists in the simulator

Author Thurber settles into the cockpit of the HondaJet, noting that it exemplifies the company's attention to detail, with the Garmin G3000 integrated seamlessly and the layout crafted to simplify pilots' transition to the airplane. The FlightSafety training course is also an asset, as it provides the opportunity to learn about the airplane's handling on the ground.

to a full-stop landing, and a reposition to an approach from three miles on final to another full-stop landing. It didn't take long at all to feel comfortable in the HondaJet cockpit, and I can easily see that new HondaJet pilots are going to experience a straightforward transition into their new jet.

because that replicated what we would do in the airplane, but it also helped me learn the Honda Aircraft cockpit design philosophy.

A big but pleasant surprise was that the HondaJet checklists are relatively short; this is a big change from most business jets, some of which make me feel like I'm about to launch in the Space Shuttle, with endless checklists filled with critical steps. The HondaJet designers made a huge effort to pare the steps to the minimum, which is a boon for the single pilot but also something that any pilot will appreciate. A lot of this has to do with taking advantage of automation, but doing so in an intelligent fashion that supports keeping pilots in the loop.

Frazier added another simple twist to help make my flight smoother; he positioned the simulator on the Honda Aircraft ramp about where the real airplane awaited, so when I taxied out in the simulator, I would recognize landmarks and be that much more comfortable when taxiing the airplane. This proved to be an excellent use of the simulator, and it whetted my appetite for getting my hands on the airplane.

In the simulator, we ran the checklists to get the HondaJet's HF120 engines fired up and the jet ready to taxi, then taxied from the Honda service center ramp to nearby Runway 23L. The simulator flight lasted about an hour and included steep turns and a stall then an ILS approach

One item that I would need more time to get used to, however, turned out to be the pilot checklist interface. The pilot uses a roller knob on the left yoke horn to scroll the checklist, then pushes on the roller wheel to select an item. It takes a little practice to learn how to push to select instead of letting the roller roll, and a few times I missed clicking on the roller and instead scrolled. I'm pretty sure I would get used to this after a few hours, but it was one move that didn't initially feel completely natural during my simulator and airplane flight.

The over-the-wing engine mount design makes more room in the cabin. Honda Aircraft expects the most popular configuration to be the executive version, with leather seats and an under-seat storage drawer.

The Real McCoy

One thing that is hard to duplicate with a simulator is the external preflight inspection or walk-around, and Frazier took time to introduce me to the HondaJet parked on the ramp. This was N420EX, Serial Number 11, with the green/gold paint scheme.

Of course, the placement of the HondaJet's HF120 engines is one of the jet's most noticeable characteristics, and it isn't just because it looks different from other jets. This configuration has been tried before and even made it into production on the Fokker VFW 614, a 40- to 44-passenger jet that went out of production after 16 aircraft had been delivered in the mid-1970s.

In the HondaJet, there are two principal benefits from the over-the-wing engine placement. One is elimination of structure and systems to accommodate traditional aft-fuselage engine mounting. The HondaJet fuselage doesn't narrow until the very aft end, allowing for a more roomy cabin and space for a fully enclosable, externally serviced lavatory, something missing in many light jets, plus a huge baggage compartment. The fuselage is almost entirely composite (co-cured laminate composite with four plies of carbon fiber and copper mesh embedded for lightning protection), which added to the engine placement provides a quiet environment for passengers and pilots.

The other design benefit of the over-the-wing engine mount is improved high-speed performance. Fujino discovered that an over-the-wing engine placed in exactly the right spot (about 75 percent of wing chord) could help delay the onset of the drag-producing shock wave that builds as jets gain speed, the result being a 5-percent improvement in fuel efficiency. Fujino and engineer Yuichi Kawamura received a U.S. patent for this "method of reducing wave resistance in airplane" on Oct. 30, 2001. In the HondaJet, it was critical not only to position the engines precisely but also to design the engine pylon so that it doesn't generate too much side lift or drag. The aerodynamic shape of the vertically mounted engine pylons is clearly evident. The engines' placement also makes it easier to look them over during preflight.

There are other distinct airframe features, such as what appears to be bulbous shaping of the nose and cockpit side windows. This helps with pilot visibility, but also facilitates natural laminar flow, reduces drag and cuts cockpit noise.

The all-aluminum wings look like they belong on a larger jet, with bleed-air anticing a welcome feature in a light jet. The wings are equipped with vortex generators on the lower surface in front of the ailerons "to energize airflow across the lower surface of the aileron," according to the pilot's operating manual. A stall strip is mounted on the inboard leading edge to improve airflow at high angles of attack. A subtle "bump" is visible on the wing's upper surface, and this is designed to improve airflow at high Mach numbers. Tiny triangle-shaped devices march up each winglet's leading edges to "energize the airflow over the winglets at high angles of sideslip."

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HondaJet

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The empennage is aluminum, and the horizontal stabilizer leading edges are fitted with a Cox electro-mechanical expulsive de-icing system (Emeds). The system's 20 actuators electromagnetically create mechanical force that deflects the leading edge skin to break off ice. With switches in the NORM position, wing and tail anti-icing automatically turns on when ice is detected; windshield heat normally runs in the low power mode when at least one engine is running, then switches to high heat when ice is detected.

The wing upper surfaces aren't marred with fuel filler ports because fueling is done through the single-port adapter mounted on the upper right aft fuselage. This isn't pressure fueling; fuel is gravity fed through the filler first into the wing carrythrough tank, then each wing tank and finally the aft fuselage tank. Honda Aircraft offers an optional external fuel gauge mounted next to the filler cap, and this eliminates the need to monitor fueling from inside the airplane using the fuel synoptic page. The HondaJet does require fuel containing fuel-system icing inhibitor. Max fuel load is 2,850 pounds.

One other notable feature on the airframe is the optional speedbrakes, which are hydraulically actuated panels on the aft fuselage that deploy on either side like hefty butterfly wings. The speedbrakes, while selectable only in full or retracted positions, automatically blow back toward the closed position at high speeds. If the pilot forgets to retract the speedbrakes when they could add unwanted drag, during a go-around, for example, moving the throttles forward to near the maximum continuous thrust (MCT) position automatically causes the speedbrakes to retract.

Before Takeoff

The simplicity and elegance of the cockpit was immediately apparent because even with me running the checklists, entering the flight plan (KGSO-KGSO, TRIAD6 departure) and setting up the mode control panel, it didn't take long at all. Cockpit switchlights use the convention of dark for normal operations, or lit with the words NORM or OFF for other required positions. Rotary switches are aligned so they look consistent, and their state can quickly be determined at a glance, with three-position switches always pointing forward (12 o'clock) when in the normal position.

"When I designed the cockpit," Fujino explained, "I tried to be consistent, one philosophy: the dark cockpit concept or the knob should be 180 degrees so that any switch can be observed on the spot."

Fujino approached Garmin early in the HondaJet design process, meeting with co-founder Gary Burrell in 1999 to discuss future avionics concepts. "He was open for any discussion," Fujino recalled. "And he attended all the technical meetings with me. At the time they didn't produce an avionics system, just GPS [the G1000 integrated flight deck didn't enter service until 2004]. Gary was interested in going to an entire avionics system. And we started to work together."

While many aircraft manufacturers prefer to attach their own brand name to the customized flight decks that they select, Honda Aircraft stuck with G3000, even though the system is customized for the HondaJet. "I appreciated our relationship from 1999," Fujino said, "and they collaborated with me without having any commercial decision. At the time I didn't have any business plan I could present formally to him. Of course I had a business plan, but as a company we could not present it. [We had] just the one experimental aircraft. And Gary Burrell maybe saw the future of HondaJet, and that's why he decided to collaborate."

What sets the G3000 flight deck apart from G1000 is the dual GTC 570 infrared touchscreen control display units (CDUs) that are the main pilot interface with the avionics. The G3000 system retains softkeys, buttons and knobs similar to those on the G1000, but these are hardly needed when using the CDUs. For Fujino, the CDUs make operating the avionics much simpler for pilots because it doesn't require them to memorize complicated menus and layers of information. Honda Aircraft engineers spent much time helping design touchscreen location for proper cooling and operation in turbulence as well as influencing the selection of infrared touchscreen technology so pilots can operate the CDUs while wearing ordinary gloves.

"We discussed how we use the touchscreen menu for each operation, so that is a collaborative effort. We proposed input and they incorporated it, and we requested revisions," he said. This partially illustrates Fujino's and his engineering team's incredible attention to detail. Not only did they have to fine-tune the distance between touchscreens for cooling, but also to meet center eye-distance constraints with proper location and tilt angle. "When you fly you may see how much time we spent to optimize the location of the touchscreens," he said.

The cockpit is comfortably outfitted, and further evidence of the designers' attention to detail. Three 14-inch displays fill the panel, along with a Meggitt standby display mounted next to the mode control panel. The two CDUs are mounted at an angle in front of the center pedestal and are easily viewable and reachable. The power levers and yoke feel substantial and match the purposeful decor of the flight deck, while adding a touch of leather-trimmed design flavor.

Each front seat has a cupholder at the front of the side ledge, and oxygen masks sit aft of the cupholders. The pilot seats received as much design attention as the passenger seats and are equipped with adjustable inboard armrests that fold into the seat back and thigh adjustments to set the forward seat edges to the most comfortable position. Leather covering is optional.

Among the avionics options are synthetic vision, radar altimeter, CPDLC (VHF datalink), cockpit Iridium satcom (voice, text, weather), DME, ADF, second transponder, Tcas II, Taws A, Sirius XM Weather, weather radar ground-clutter suppression and turbulence detection, CVR, maintenance recorder, Jeppesen Chartview and Garmin SurfaceWatch. Takeoff and landing data is not automatic yet in the HondaJet but will be added in a future software upgrade. ADS-B OUT is standard.

The electronic checklists are available as soon as the HondaJet is powered up, and it was easy to scroll through the lists using the yoke scrollwheel. Clicking the wheel without scrolling takes a little time to get used to, but Frazier showed me how I could position my thumb on the edge of the switch to hold it steady while pushing. This got better as the flight progressed.

Before starting the engines, I used the CDU to plug in our flight plan, weights (7,381 BOW without pilot, 2,410 pounds of fuel plus two pilots for an mtow of 10,161 pounds) and V speeds (V_1 110, V_R 115, V_2 120, V_E 140). While I know that traditional FMSs are capable devices, I find the G3000 pilot interface far easier and faster for cockpit setup. Just touch the icon on the CDU, fill in the blanks and you're good to go. Systems tests on the before-start checklist are simple: just push one button on the CDU, and all the tests run automatically.

Starting the Fadec HF120s is totally automatic, with the sole pilot action moving the power lever off from cutoff, past idle, then pulling it back to the idle stop after pushing the START button. Green rings light up around the START button during the start process. The engines started at a relatively cool ITT, below 400 degrees C.

Nosewheel steering is electronic (steer-by-wire), a surprising feature in a small jet. While sensitive, the steering worked fine and I felt that I was able to taxi smoothly fairly quickly. The simulator experience was a big help preparing me for the ground behavior, too. Minimum pavement width for a 180-degree turn on the ground is just 38.5 feet, and after landing Frazier demonstrated the tight turning capability.

KGSO weather was calm wind, good

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Location of the G3000's touchscreens relative to the pilot was a key concern for HondaJet designers, who wanted to find the optimal location and tilt angle to work eye-distance constraints. Avionics options include synthetic vision, radar altimeter, CPDLC, Iridium satcom, Tcas II, Taws A and Garmin SurfaceWatch.

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Honda Aircraft has handed over 12 HondaJets to date.

HondaJet

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visibility and higher than normal temperature, with towering thunderstorms flanking each side of the Shenandoah Valley, leaving us a clear southwest-northeast path to put the HondaJet to the test.

I pushed the TOGA button on the throttle, but didn't select a lateral mode on the flight mode annunciator yet. Frazier likes to set the assigned heading in the mode control panel, but without pressing the select button. That way, the flight director command bars show normal takeoff pitch and wings level, but then after getting airborne, pushing the select button immediately commands a turn to the assigned heading.

I took off on Runway 23L, and as Frazier had explained, the HF120 engines accelerated the HondaJet smartly, just as they had in the sim. After rotating, I held the nose steady for a moment then allowed it to climb into the V-bars, then retracted the landing gear and, after building more speed, the flaps. I pushed the heading selector button and started a turn to 270 and pulled the power levers back to max continuous power (MCT). Climbing through 3,000 feet at ISA+11 degrees C, the HondaJet was ascending at nearly 4,000 fpm, and I had to pull the power back about halfway to keep the speed down for our first level-off at 5,000 feet.

We weren't able to get an unrestricted climb to FL430 because of all the traffic sandwiched between the thunderstorms, but Frazier said such a climb normally takes 25 to 26 minutes and uses about 520 pounds of fuel. We leveled briefly at FL280 at MCT, burning 550 pph per side at ISA +8 degrees C. As we leveled again at FL330, fuel flow dropped to 480 pph per side. After accelerating with MCT still set, speed topped out at 423 ktas and Mach 0.72. Resuming the climb, we saw 2,000 fpm through FL410 then leveled at the HondaJet's maximum altitude of FL430 at ISA -9 degrees C. Fuel flow dropped to just 300 pph per engine and cabin altitude maxed out at 8,000 feet.

On the way back down to KGSO, Frazier showed me the rudder bias system, which takes out some, but not all, of the rudder pedal needed during an engine failure. When rudder bias is engaged, the flight mode annunciator replaces the yaw damper symbol ("YD") with "RB." Although we were still at a high altitude, pulling one engine back to idle hardly seemed to affect the jet's flightpath.

Frazier showed me the HondaJet's handy cruise speed control (CSC) feature, which allows the pilot to use the autopilot and Fadec to set and hold a target airspeed. CSC can be engaged in altitude hold mode with a steady airspeed when the engines are in sync mode. CSC holds that speed using the autopilot and Fadec, but the speed can't be changed without disengaging CSC, flying to a different speed, then re-engaging CSC. This feature is helpful when the pilot needs to hold a specific speed per ATC in an airplane with Fadec but no

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HondaJet

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autothrottles. CSC can also hold speed while Vnaving to an altitude restriction.

Another useful feature is quick access to the G3000 system control pages. Pushing a button on the aft side of the inboard yoke brings them up; they can also be accessed by pushing a CDU icon, but it's much easier to use the yoke button. Various items can be set or changed on the system control pages, such as power control for access to solid-state relays and cabin power outlets, engine sync de-select, setting the landing field elevation, lights and lighting configuration, thermostat and CVR erase (only on the ground).

Frazier accelerated our descent by cranking down the vertical speed roller on the mode control panel while I popped the speed brakes, which rumbled slightly but didn't seem to affect pitch at all. The HondaJet descended smoothly to FL240 at more than 6,000 fpm. He then had me bring the power back up to MCT to show me the overspeed protection, which kicks in just above redline. While we heard the overspeed horn, the HondaJet didn't get quite fast enough for the protection to activate; if it had, it would have raised the nose to slow us below redline.

On the way back to KGSO, we diverted to Shiloh for some airwork. I slowed the HondaJet to 200 knots VFR at 4,500 and flew a left and right steep turn then a clean and dirty stall, just to stick shaker, then recovered. Even with just a short amount of time hand-flying, I felt completely comfortable in the HondaJet. The steep turns were solid, although it feels a little like cheating to use the G3000 synthetic vision's flightpath marker to maintain altitude. The stalls were straightforward, with quick recovery and fairly rapid spool-up of the HF120s.

After the airwork, we dialed up ATC and headed back to KGSO for a coupled ILS approach to Runway 23R. Setting up the approach is simply a matter of making sure KGSO is selected as the destination, then pushing the procedure icon on the CDU, then selecting the approach and transition.

The G3000's autopilot smoothly captured the localizer and glideslope, and all I had to do was deploy approach flaps then landing gear at glideslope about one dot up, and full flaps at

glideslope intercept. Then it was time for the before-landing checklist, managing power for VREF+5 and monitoring the HondaJet's progress. I clicked off the autopilot at about 300 feet and tracked down to the touchdown point for a clean but solid landing in a seven-knot nearly direct crosswind, not as smooth as in the simulator, but still satisfactory.

Frazier took care of resetting the flaps, then I added power for a touch-and-go and took off and flew a right pattern back to Runway 23R. The second landing was slightly smoother; the HondaJet doesn't need much of a flare and lands like a larger jet. "There's not a lot of flare," Frazier said. "The only thing is when you de-rotate, just hold the nose up there, rotate [it down] nice and smooth, and then firm on the brakes initially, not anti-skid firm, then release them as required."

The HondaJet has room for an enclosed externally serviced lavatory.

Interior Details

The passenger cabin of the HondaJet got equal attention from designers, and they made maximum use of the space available. While the normal number of occupants is six, one of them the pilot, a seventh side-facing seat can be installed opposite the main entry door. To add some utility to this seat, when the cabin door is closed, one of its steps cleverly folds out to make a table for the side-facing passenger.

Many buyers will likely opt for the executive seating option, which upgrades all cabin seats to leather and adds a neat underseat sliding drawer to the main cabin seats, as well as retractable inboard armrests.

Cabin windows are electrochromically dimmed and brightened, but powered pleated window shades are an option. One stowable table is standard on the right side of the cabin, and a left-side table is optional. Optional personal storage compartments are available at each seat.

Buyers can opt for an enhanced cabin management system with touchscreen controllers added to the right-hand aft personal storage compartment and right-hand cabinet, and with this upgrade the remaining three storage compartments can also be equipped with optional touchscreen controllers. The enhanced upgrade allows installation of an audio entertainment system, with mobile device control of audio, lighting, temperature and electrochromic windows. Sirius XM satellite radio and Gogo Business Aviation airborne connectivity are optional. Up to six cabin power outlets are available.

Other desirable airframe options include the external service port for the lavatory and solid pocket doors for the lavatory area, and a sink with running water. The flushing toilet is standard, and there are two skylight windows that add natural light to the aft lavatory area.

Thanks to the engine placement on the wings, the HondaJet's cabin is roomy at 4.8 feet high, five feet wide and 17.8 feet long from the forward to aft pressure bulkheads, leaving plenty of legroom for the club-four seating area. Baggage space is a key attribute of the HondaJet, with 57 cu ft in the unpressurized aft compartment and nine cu ft in the nose area. The aft compartment is easily reached from the ground, with no ladder needed to hoist luggage into the space. While not heated, the aft compartment does get warmed by cabin outflow air.

Expected Performance

On a standard day at mtow, the HondaJet should be able to climb directly to FL430 in 24 minutes, but the jet's sweet spot speedwise is about 12,000 feet lower. Climbing to FL310 takes just under 12 minutes, and at that altitude true airspeed should clock in at 422 knots while burning a total of 1,122 pph. Long-range cruise power settings cut fuel flow considerably. At FL410 and after burning off about 500 pounds in climb fuel, the HondaJet can cruise at 356 ktas burning 597 pph total.

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HondaJet

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The HondaJet could climb to FL430, fly at high-speed cruise for 2.6 hours then descend and land with 600 pounds of reserve fuel. This would result in a flight of just over 1,200 nm. The same high-speed flight at FL310 would allow an 800-nm trip in about 1.6 hours. These numbers were calculated using a high-speed descent.

At long-range cruise with a climb to FL430, the HondaJet could fly 2.8 hours and about 1,250 nm, with a normal descent at the end of the flight. Clearly the high-speed cruise option is better at this altitude.

Takeoff field length on a standard day at mtow, with takeoff flaps and anti-icing off, is just under 4,000 feet. Add about 1,000 feet for a 5,000-foot airport. Typical landing field length numbers on a standard day at sea level range from about 3,000 to 3,500 feet, depending on landing weight.

Overall Impressions

The HondaJet is a fully capable business jet that will be a pleasure to fly for the owner-pilots who are likely the majority of the market for this airplane, but also appreciated by professional pilots who fly a HondaJet for the owner. Obviously customers who placed early orders had to wait a while, but I'm betting that they are glad they waited. Apart from revealing that buyers committed to more than 100 airplanes early after it had announced the program, Honda Aircraft has not released any current backlog numbers. At the current rate of three to four deliveries per month, it will take just over two years to fulfill the orders for 100 aircraft.

Honda Aircraft isn't a typical jet manufacturer; instead of selling directly to buyers, it has set up a network of dealers worldwide, modeled after Honda's own automobile dealer network, not only for sales but for service as well. The dealers' service network is backed up by a full service center at the Honda Aircraft headquarters, and here all of the delivered jets are overseen to make sure customers are being taken care of properly.

All of the documentation that comes with the HondaJet—the airplane flight manual (AFM), pilot's operating manual (POM), quick-reference handbook (QRH)—is of highly professional caliber and among the best I've seen in this industry. For example, the POM's Operating Procedures and Techniques section provides detailed steps for each phase of flight, including diagrams of flight profiles and notes about various steps, all in a logical sequence. The POM Systems Description section is amazingly detailed yet clearly explained and illustrated by gorgeous colorful lifelike images of various systems. The environmental control system illustrations are especially well done.

The HondaJet's systems and performance are at the high end of the Part 23 design spectrum, and it is clear that Honda Aircraft's engineers have learned enough on this program that another airplane, even a Part 25 design, will easily be within their capabilities. The HondaJet is a thoroughly modern airplane, and it is abundantly clear that Honda Aircraft has now joined the ranks of serious business jet manufacturers. ❑

Honda Aircraft HA-420 HondaJet Specifications and Performance

Price (base)	$4.85 million
Engines (2)	GE Honda Aero HF120, 2,050 lbs
Passengers (typical)	1 crew + 5 pax
Range (w/NBAA reserves, 100-nm alternate)	1,206 nm
High-speed cruise	422 ktas/Mach 0.72
Long-range cruise speed	368 ktas/Mach 0.64
Fuel capacity	2,850 lbs
Max payload w/full fuel	547 lbs
Ceiling (certified)	43,000 ft
Cabin altitude at ceiling	8,000 ft
Max takeoff weight	10,600 lbs
Takeoff field length at mtow (sea level, standard)	3,934 ft
Landing distance	3,047 ft
Length	42.6 ft
Wingspan	39.8 ft
Height	14.9 ft
Cabin	Volume: NA
	Width: 5.0 ft
	Height: 4.8 ft
	Length (between pressure bulkheads): 17.8 ft
Baggage capacity (nose compartment)	9 cu ft/100 lbs
Baggage capacity (aft compartments)	66 cu ft/400 lbs
FAA certification (basis, date)	FAR Part 23 (through 23-62), 12/08/15
Number delivered (through date)	12 (6/17/16)

Leadership roundtable: av groups think local

by Gordon Gilbert

How local and regional aviation groups can make a difference in their communities as well as on the national level was one of the themes of this year's NBAA's annual Regional Leadership Roundtable. Fifty representatives from 30 local aviation associations from all parts of the U.S. attended the fourth annual presentation of the roundtable, held in Boston in mid-May. Members of NBAA's local and regional groups committee conducted the program.

With proposals for a user-funded, not-for-profit organization to run the ATC system still being pushed in Congress, roundtable speakers, NBAA

Ed Bolen, NBAA president and CEO

president and CEO Ed Bolen among them, reiterated how important it is that regional business aviation groups continue reaching out to their congressional representatives. "Tell your elected officials why communities, companies and citizens across the country would be adversely impacted by ATC privatization, which would hand control of the system over to an airline-centric board of directors. This would put general aviation at risk and would threaten the economies of rural communities, which rely on general aviation," Bolen told attendees.

Another goal of the roundtable was to provide suggestions for local associations on how to stay viable and relevant. According to input from attendees, some of the ways to accomplish these goals is through internships and scholarships.

Having a gathering of many local groups, with varying levels of success, allowed for one-on-one exchanges of tips about what works and doesn't. What is working: four of the associations present at the event have hired lobbyists to get their objectives heard by the right people.

To help obtain community understanding of business and general aviation and to gain support for an association's efforts, community leaders, legislatures and even representatives of groups not friendly toward aviation should be invited to meetings where pro-aviation viewpoints have the best chance of being thoroughly aired. As one presenter said: "It's all about establishing relationships with the proper entities." This means working with the local media by providing them with good-news stories for their consideration and being available when they are making the effort to be technically accurate.

The forum packed a lot of information into a relatively short period. "In one day [attendees] learn pretty much everything about the best practices involved in getting their own group started," said Steve Hadley, NBAA regional program director, Southwestern regional rep and organizer of the event. Next year's roundtable is scheduled for May. ❑

Automation as path to single-pilot big aircraft

by Thierry Dubois

A new job–ground-based pilot–is likely to appear in aviation over the coming two or three decades, according to experts at the French Air and Space Academy (AAE). During a conference in Toulouse on June 1 and 2, they asserted that safety trends demonstrate that more automation on board translates into better safety.

There is still room for debate, however, as progress in neuroergonomics might reveal ways to compensate for human weaknesses. This would strengthen the case for safety specialists who believe aviation must retain a high level of human presence because the brain has long proved itself to be effective as master of the cockpit. While research in the man-machine interface sometimes struggles, military experience with the latest-generation unmanned and single-pilot fighters might help automate civil aircraft, including business jets.

The AAE presented the findings from research it started in 2012. It was assumed that automation is good for safety. "A decisive stage was passed in the 1970s and 1980s, when greater automation was made possible by the electronic revolution from analogue to digital," said Alain Garcia, an AAE v-p and a former Airbus engineering v-p. Thanks to automated systems, crew tasks have been simplified. In turn, this has reduced the number of crewmembers and "has led to a significant drop in the accident rate," according to Garcia.

Michael Feary, a research scientist in the human-systems integration division at NASA Ames Research Center, concurred. He noted that the introduction of four generations of automation since 1958 has had a visible, favorable effect on safety statistics. However, an unwanted phenomenon consistently happened during the first couple of years after an introduction, Feary said. A brief but noticeable spike could be seen in the number of accidents per million flight hours. Nevertheless, the downward trend was overwhelming, according to Feary.

Garcia expressed his expectation that researchers and industry will pursue this path. "An extension of automation, aimed at countering persistent failures such as loss of control in flight, collision with mountains or runway excursions, will improve flight safety," he said. He warned that designers should build in precautions based on human capacity.

Six scenarios were devised for a gradual increase in automation, with various distributions of responsibilities between ground and air. The AAE determined that, for commercial passenger transport, human presence on board will remain until at least 2050. It studied safety but stopped short of investigating economic implications.

The role distribution between humans and systems will have to be devised with care. "Will tomorrow's aircraft be a robot? Will the pilot be a robot of that robot?" asked Catherine Tessier, head of the "piloting and decision" research unit at France's aerospace research center, Onera.

Pilots on Board, Pilots on the Ground

A desirable and attainable goal for 2050, according to Garcia, is to have one pilot on board (PB), whatever the flight duration. The pilot on the ground (PG) would need to be able to react within 10 minutes. This calculated time assumes that the PG will have to analyze the situation before acting. On a long-haul flight, the PG would be in control while the PB is in a rest period. In that situation, the PG would have to react in two minutes, in case of a problem.

THIERRY DUBOIS

Above, researchers can monitor a pilot's brain activity in flight. A study by Toulouse-based Air and Space Academy predicts single-pilot airliner operations by 2050.

The PG should contact the PB regularly, to ensure the latter is physically able to fly. How often they should be in touch "depends on the flight phase, as threats vary in density and type," said Jean Broquet, an AAE member and former designer of automated satellite control systems. Contact should be continuous during takeoff, initial climb, final approach and landing. In cruise, a frequency of one contact every 30 minutes seems adequate, according to Broquet.

PGs, also known as ground operators, would be qualified as pilots. Each would hold a type rating. "Airlines might manage PGs and PBs together in human resources," Broquet suggested. The AAE has estimated one PG can take care of five flights, on average, in short- to medium-haul operations. This could expand to seven flights after a few years of experience, efficiency improvement and workload reduction, Broquet said.

For long-haul operations, a pair of PGs could deal with six to eight flights, according to the AAE study. A rest period could be interrupted for threat management. This would happen one to three times every 10 flights, in the AAE's assessment.

Denying the PB his or her authority would require more than one PG. A team of PGs would confer before making such a last-resort decision. During the discussions, the aircraft could be in autonomous mode.

"We recommend evaluating the weak and strong points in PB-PG cooperation," Broquet added. Airbus has been working on single-PB operations for medium-haul, said Bernard Rontani, head of the company's center of competence for systems. Under such an arrangement, communications will play an essential role, AAE's Garcia noted, explaining that it will place more demands on coverage and bandwidth. Real-time video could be key.

> "No study has ever counted the instances when the crew avoided a danger."
>
> *Jean Pinet, doctor in psychology-ergonomics and former Concorde test pilot*

The communication system to support the automated aircraft concept is considered achievable, according to Luc Deneufchâtel, an expert formerly with French air navigation service provider DSNA. However, the spectrum required for such operations is a critical issue, he said, citing the current congestion. The Ka band is the only potential additional spectrum for aviation needs, he noted. But it is not without challenges, including range. Separately, the need for two independent radio links–to ensure redundancy–will affect cost at aircraft and ground levels, Deneufchâtel cautioned.

"Making flights without a human [pilot on board] would be a serious mistake," said Jean Pinet, an AAE member, doctor in psychology-ergonomics and former Concorde test pilot. Like automation, Pinet said, the human brain combines the skills for calculating derivatives (trends) and integrals (short-term memory) thanks to its perception of the present time.

"No study has ever counted the instances when the crew avoided a danger," he pointed out, and a computer has difficulty defining a critical situation.

NASA's Feary described big data as "associative intelligence," while the human brain's skills are rather about "generative intelligence." Not all problems are associative in nature, he noted. "Humans are particularly good at adaptive problem-solving and discovery, areas where there has been little machine intelligence progress," Feary added.

Recovery Button for Business Jets?

Dassault has added a "recovery" button to the Dassault Rafale cockpit. In the event the pilot realizes he or she is spatially disoriented, pushing the button puts the aircraft in a gentle climb at sufficient airspeed. What about a recovery button on a Falcon to prevent loss of control in flight? Dassault's system engineering director, Frédéric Falchetti, said it would be tricky to implement. He referred to the Air France 447 crash in 2009. "What is disturbing us in the community is, how do I deal with incorrect airspeed data? How do I detect that and how do I gather accurate data?" ■

Bruno Nouzille, technical v-p of avionics for Thales Group, agreed. Although automation improves safety, humans are better at managing the unexpected, he emphasized. An airplane system malfunction occurs on 20 percent of flights, according to NASA data.

Neuroergonomics

Frédéric Dehais is the holder of the Axa chair for flight safety. His research laboratory in Toulouse, part of the ISAE SupAéro engineering school, has been making strides in neuroergonomics for pilots. As the word suggests, the goal is to adapt the flight deck to the way the human brain works best, using the latest developments in neuroscience. Future, safer cockpits could thus help the pilot if some situation degrades his or her performance.

One focus has been alarm deafness. For most human beings, measurements show that the sense of sight is dominant, according to Dehais. A stimulus coming from the eye can outweigh, in 100 milliseconds, a simultaneous stimulus coming from the ear. This happens before the person is even conscious of the stimuli, which takes 300 milliseconds. Before the brain knows what's happening, it can shut down its own aural channel. Although these occurrences are rare, some high-profile accidents have focused scrutiny on such alarm deafness.

Nine pilots in a simulator were subjected to a stressing scenario Dehais devised. The sample group missed a number of aural alarms; in fact, one subject missed more than half of them. The simulation posed the tests before the formal simulation session began. One test sought insight into the brain's working memory, which usually is key in pilot proficiency; the other was about visual dominance.

"We saw a good correlation between the latter test and how the pilot performed in the simulator," Dehais said. A person with strong visual dominance was found to be more prone to miss an aural alarm. More trials are under way in flight, in a TB20 piston single.

Mind wandering is another topic Dehais' team is working on. "The human brain needs mind wandering but it can be a safety issue when driving a car or flying an aircraft," Dehais said. The issue is the delayed response to an unexpected, urgent situation. Research is still at an early stage but has already produced a useful interim result. Mind wandering can be detected when one area of the brain activates. In a test, subjects had to give clearances to aircraft flying in one direction. The clearance had to be denied to an aircraft flying in the opposite direction, a rare instance. As the task was predictable most of the time, the subject's mind was often found in wandering mode. "Detecting mind wandering predicted an error 10 seconds in advance," Dehais said.

Dehais' work is part of a broader research endeavor to help pilots in today's cockpits. Robert Sumwalt, a member of the NTSB and a former airline pilot, emphasized the issue of monitoring. The Asiana crash in 2013 epitomized the problem, as it was found the crew

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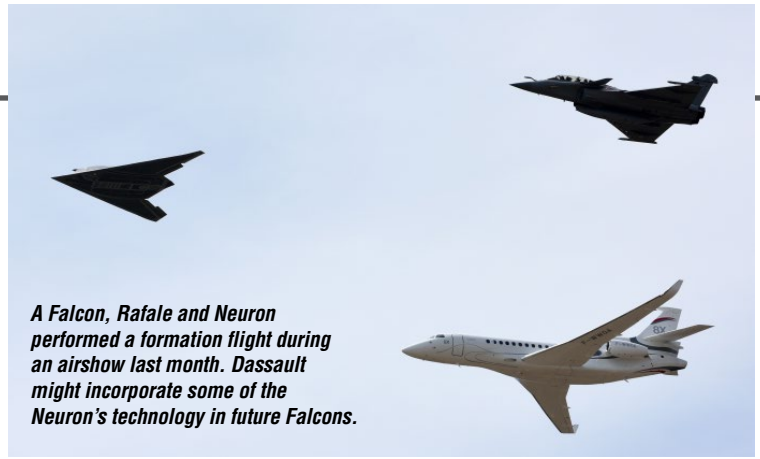


A Falcon, Rafale and Neuron performed a formation flight during an airshow last month. Dassault might incorporate some of the Neuron's technology in future Falcons.

Single-pilot operations

▶ *Continued from preceding page*

was not properly monitoring airspeed.

Sumwalt quoted the late Raja Parasuraman, a neuroergonomics specialist who expressed a fundamental concern in 2002: "[Automation] is highly but not perfectly reliable in executing decision choices, then the operator may…fail to detect the occasional times when the automation fails."

Sumwalt also mentioned change blindness. The human brain is poor at detecting even a gross visual change if it occurs in an object that is not the focus of attention. One example: the disappearance of the A/P (autopilot) indication on a display. As a potential advancement to help the pilot, Sumwalt suggested that the installation of a "low energy alert" system should become widespread.

Onera's Tessier emphasized the need for transparency. The designer must ensure that an automated system will not make a decision unbeknownst to the pilot, she said. The risk, otherwise, is to disrupt the pilot's situational awareness.

Situational Awareness

To help the crew with situational awareness, Thales is offering a "fly by trajectory" feature in its Avionics 2020 flight deck demonstrator. The upcoming flightpath–a blue line equivalent to two or three minutes of flight–is displayed in synthetic vision. The source of information is the flight director, programmed by the crew. The proposed trajectory can take into account weather information, so the system may offer to detour around a thunderstorm. If the pilot makes an input on the stick, the blue line will bend accordingly.

What about a comparison with the flightpath vector some head-up display users have become familiar with? "The flightpath vector is tangent to the trajectory in our design," Thales' Nouzille answered.

Research into the man-machine interface sometimes struggles. Dutch research center NLR has devised risk level displays that pilots deemed interesting, but tests showed they made little use of the new displays. The idea is to use colors to provide a comprehensive aircraft status overview. A combination of failures may color the takeoff performance indicator in red and the landing performance indicator in orange. The tested displays were called the Risk Information System. While pilots emphasized that the system was useful, they said it was difficult to incorporate it in their workflow and used it only when time was available.

Military Feedback

Military experience with automation and autonomous aircraft might show the way for commercial and business aviation. A "recovery" button has been added in the Rafale cockpit, a pilot explained. If the pilot realizes he or she is spatially disoriented and pushes the button, the system puts the aircraft in a gentle climb with sufficient airspeed. The addition, made about 18 months ago, is intended to avoid a repeat of the spatial disorientation that caused the fatal crash of a Rafale in 2007.

Further automation is being considered. "We are studying how to make in-flight refueling automated for long missions, so the pilot can concentrate on the attack phase," the Rafale pilot said. He is a member of a French air force working group on "the future of combat aviation."

In partnership with other European firms, Dassault has tested an unmanned combat aircraft demonstrator, the Neuron. The aircraft has a wingspan greater than that of a Mirage fighter and uses Falcon 7X flight control sensors. It has already flown at Mach 0.70. Gradually, the Neuron has been allowed to fly beyond initially limited airspace. The level of confidence is now such that flying by populated areas and chemical factories near the Istres, southeast France flight-test center is no longer seen as an issue.

The Neuron relies on both pilots on the ground and autonomy. On the ground, no direct piloting means (like a stick) is available. Instead, ground control gives high-level orders such as "taxi" or "go around." Low-level orders are available, too, like "capture and hold heading." In the event of a datalink failure, the aircraft automatically flies to a so-called "safety area" in the flight-test center's airspace.

Dassault's system engineering director, Frédéric Falchetti, noted that the company's pilots do not like the idea of moving the pilot out. However, they could not imagine anyone else being at the controls (albeit on the ground) for the test flights, he said. Although the program does not include the problems of air traffic management, "Neuron experience has shown the path to follow for future Falcons," Falchetti said, stopping short of suggesting a business jet without a pilot on board. A design driver for future Falcons should thus be "extending the autopilot and autothrottle operation domain to cover all flight phases," including taxiing he said. The authority of automation should be raised to perform in all external conditions, including heavy turbulence.

The resilience of automation should be improved in all known degraded modes. "Today, a loss of automation induces a high pilot workload, often in a complex context which, if combined with a lack of training, may lead to an accident," Falchetti emphasized.

Pilot understanding should be simplified. The man-machine interface should become "service oriented," as opposed to system architecture-oriented. ❑

Insurer Says Carrier Liability Will Remain

Sophie Moysan, chief claims and legal officer at insurance firm La Réunion Aérienne, endorsed the view that introducing four generations of automation has had a visible, favorable effect on safety statistics. But she predicted that moving to more automation will not affect liability in an accident. The trend toward the carrier being seen as fully liable will remain, she said. She noted that the Chicago convention mentioned pilotless commercial aircraft in 1944. ■

Internships help recruit new talent into bizav

by Rob Finfrock

The problem of finding ways to attract young, talented workers to jobs within business aviation has beleaguered flight department managers and other industry stakeholders for years. As experienced workers from the Baby Boomer generation retire, taking with them decades of experience and institutional knowledge, corporate flight departments are increasingly turning to internships as an effective method for grooming new professionals in the industry.

David Small manages the flight department for Cox Enterprises and serves as chairman of the Georgia Business Aviation Association. At NBAA's Leadership Conference in San Antonio, Texas, he told **AIN** that his operation faced two primary concerns ahead of establishing its first internship opportunity, which was filled by an aviation management program student from Auburn University.

First: "How could we make the experience productive for someone who isn't type-rated on an aircraft?" Second: "Would there be enough work for someone for the entire summer?" He told **AIN**, "As it turned out, we were pleasantly surprised to find we could immerse our candidate in all aspects of the department; in fact, he had gobs of work to do."

This successful experience has Small working to add a dedicated schedulers and dispatchers' internship track, in addition to the company's existing flight department and maintenance programs.

Community Partnerships

Another important step involves developing a talent pipeline through partnerships with area high schools and universities. In addition to spearheading aircraft pilot and maintenance internships within his flight department, Daniel Wolfe, v-p and general manager for Nationwide Insurance, speaks frequently at learning institutions across the country to encourage support for similar programs.

"Many educational institutions out there really don't have a good connection to the industry and what we need from their students," he noted. "Working with college officials to develop internship opportunities at local academic institutions is a way to get a foot in the door to help them develop an effective curriculum."

Larger flight departments might also draw from their parent company's existing internship program, although finding personnel within the department to lead such programs can prove an obstacle to getting the program up and running. "We've been highly interested in internship programs for some time, but just recently we found someone within our organization to run with it," said the flight department manager for a *Fortune* 500 company.

NBAA's business aviation management committee is working to develop a toolkit that regional industry groups can use to introduce internship programs to their members. "If we can build a consistent message throughout these groups," Wolfe added, "it will be a powerful tool that everyone can draw on."

He noted that when candidates interview with the company after two years, the value of the program is evident. "They've seen everything first hand, and they're well prepared for their next job opportunity in our industry." ❑

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

Diamond – DA50-JP7 (3/15 p. 10)	Two versions: Tundra for unpaved runways, takeoff distance 650 feet; and training/private owner model, high-speed cruise 230 knots. Seven seats. Powered by 465-shp Motor Sich AI450S. First flight 1/19/15. Cert. est. second half 2016.
Epic Aircraft – E1000 (5/16 p. 62)	Single-engine all-composite turboprop, based on Epic LT kit airplane. P&WC PT6A-67A engine, Garmin G1000 avionics, $2.95 million. Cert. est. 2016.
Evektor – EV-55 (10/15 p. 37)	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 (10/15 p. 38)	10-seat single-engine turboprop, powered by RR250. First flight 5/1/12. Cert. pending, first in Australia, followed by FAA.
Mahindra – Airvan 18 (10/15 p. 37)	Resurrection of the Australian twin-turboprop Nomad program. Entry into service pending.
Mallard Aircraft – Turbine Mallard (10/15 p. 37)	Twin-turboprop amphibian, conventional all-metal construction, Rockwell Collins avionics, P&WC PT6 engines.
One Aviation– Kestrel K350 (5/15 p. 1)	Six- to eight-seat composite single, powered by Honeywell TPE331-14GR. Garmin G3000 avionics. Earliest delivery est. 2016. Program led by Alan Klapmeier.
Piper– M600 (05/15 p. 16) CERTIFIED	Clean-sheet single-engine turboprop, 600-shp P&WC PT6-42A, 260-kt max cruise, 1,400+-nm range, Garmin G3000 avionics. Price $2.853 million. Certified June 20.
Privateer Industries – Privateer (10/15 p. 38)	Single-engine composite amphibian with dual sponsons, GE M601 pusher powerplant. Prototype on hold because of production difficulties.
Textron Aviation – **Single-engine turboprop** (6/16 p. 1)	Powered by new GE turboprop, range more than 1,500 nm, max cruise speed 280 ktas +. First "article" to be built in 2016.

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

BUSINESS & PERSONAL JETS

Aerion – AS2 (11/15 p. 28)	Supersonic three-engine business jet; Mach 1.6 max speed; 5,300 nm max range. 9/22/14 alliance with Airbus aims for service entry 2Q/22.
Bombardier – Global 7000 (11/15 p. 21)	7,300-nm range, 59.6-ft-long cabin, GE Passport engines, Rockwell Collins Pro Line Fusion-based Global Vision avionics. EIS est. 2H/2018.
Bombardier – Global 8000 (11/15 p. 21)	7,900-nm range, 50.6-ft-long cabin, GE Passport engines, Rockwell Collins Pro Line Fusion-based Global Vision avionics. Certification est. unspecified.
Cirrus – Vision SF50 (6/16 p. 60)	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. 1H 2016.
Dassault – Falcon 5X (4/16 p. 8)	Twin-engine fly-by-wire large-cabin jet, powered by Snecma Silvercrest engines, Honeywell EASy flight deck. Rolled out 6/2/15. First flight and cert. delayed by engine program.
Dassault – Falcon 8X (5/16 p.14)	Trijet, derivative of 7X with longer fuselage and 6,450-nm range. First flight 2/6/15, cert. mid-2016.
Diamond – D-Jet (4/13 p. 50)	Five-seat, all-composite single-engine jet; first flight 4/18/06; powered by 1,900-pound-thrust Williams FJ33. Program on hold for lack of funding.
Flaris – LAR 01 (11/15 p. 28)	Composite single-engine jet, five seats, Williams FJ33-5A. $1.5 million, 1,700 nm range. Taxi tests begun 02/15.
Gulfstream – G500 (12/15 p. 3)	Pratt & Whitney Canada PW800 engines, Honeywell-based, touchscreen-control Symmetry flight deck, sidestick fly-by-wire, 5,000 nm at long-range cruise (Mach 0.85). Fuselage sized between G550 and G650. First flight 5/18/15, service entry 2018.
Gulfstream – G600 (5/16 p. 8)	Same technology and engines (but higher thrust) as G500, 6,200 nm range at Mach 0.85. First flight late 2016, service entry 2019.
HyperMach Aerospace – SonicStar (11/15 p. 28)	Mach 3.6, powered by SonicBlue electric-turbine hybrid engines. First flight est. 2024/2025. Unmanned half-scale-model testing est. 2018.
Pilatus – PC-24 (6/16 p. 1)	All-metal jet powered by a pair of Williams FJ44-4As and designed for short and unimproved runways. Honeywell Primus Apex avionics. Rollout 8/1/14. First flight 5/11/15. EASA and FAA cert. est. 2017.
Spike Aerospace – S-512 (11/15 p. 28)	Twin-engine, 12- to 18-passenger, 4,000+-nm range, Mach 1.6 supersonic business jet. Service entry five to seven years from program launch, current est. 2022.
SyberJet – SJ30i (11/15 p. 26)	Production to resume in late 2016 with new SyberVision cockpit, based on Honeywell Epic 2.0 avionics suite.
Textron Aviation – 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 2016.
Textron Aviation – Citation Hemisphere (12/15 p. 4)	4,500-nm jet with 102-inch-wide cabin, still in product definition phase. First flight 2019.
Textron Aviation – Citation Longitude (6/16 p. 4, 38)	Longer than the Latitude, Honeywell HTF7000 engines, range 3,400 nm, Garmin G5000 avionics. First flight est. mid-2016, EIS 2H/17.

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

Gulfstream G500

Gulfstream has checked off another milestone in the development of the G500 with the successful completion of ultimate load testing. A required certification test by the FAA and EASA, the ultimate load trials were carried out over five months, testing the fuselage, wing, vertical and horizontal stabilizers and control surfaces.

The testing, to 150 percent of the limit load (the maximum level an aircraft should experience during its service life), involved wing up and down bending, horizontal stabilizer up and down bending and wing torsion, among other conditions. The aircraft's structural response was monitored through 6,000 instrumentation channels. Cameras were placed in the wing, empennage and fuselage.

"The successful completion of these tests confirms the airframe's solid construction, fulfills certification requirements and clears the way for us to proceed with additional testing," said Gulfstream president Mark Burns.

With ultimate load testing complete, Gulfstream will turn to a company test that imposes even higher loads to determine the destruction point. Also ahead is a multi-year fatigue program for the G500 airframe to simulate three lifetimes of operation.

Gulfstream is keeping the G500 on pace for certification next year, with four flight-test aircraft collectively logging more than 1,000 hours within the first 12 months of flight trials. A fifth test aircraft is being fitted with an interior to test the cabin components. The initial test aircraft, T1, has reached a maximum speed of Mach 0.9995 and altitude of 53,000 feet.

The G500 will have a range of 5,000 nm at Mach 0.85 or 3,800 nm at Mach 0.90, with a maximum operating speed of Mach 0.925. The aircraft will be fitted with Gulfstream's Symmetry flight deck, incorporating active control sidesticks, integrated touchscreen panels, a next-generation enhanced vision system (EVS III) and Honeywell Primus Epic avionics.

Cirrus Vision SF50

Cirrus plans to submit all the type certification documentation to the FAA at the end of this month in preparation for imminent final approval from the FAA. The final step in the flight-testing phase was 300 hours of function and reliability testing on one of the type design conforming SF50s. The company has also submitted the SF50 type rating and training course to the FAA's Flight Standardization Board for approval.

Four Cirrus salespeople recently completed the first unofficial Perspective Touch avionics course at Cirrus headquarters in Duluth, Minn., to help provide feedback on the training and learn the new flight deck, which features Garmin's new GTC 580 touchscreen controllers. The Perspective Touch training course is designed to help prepare pilots for the SF50 type-rating training program, and it includes classroom study and hands-on practice with customized kiosks that replicate the avionics. Subjects covered include navigation and communication techniques, autopilot operation, weather radar interpretation, PFD and MFD set-up, flight plan creation and modification, introduction to terminal procedures and terrain awareness and traffic avoidance. ❑

EASA GROUNDS AIRBUS AS332L2/EC225LP FLEET

The European Aviation Safety Agency issued an emergency airworthiness directive (AD) on June 2 to ground the Airbus Helicopters AS332L2 Super Puma and EC225LP (H225) fleet after more evidence of a potential unsafe condition in the main rotor assembly was discovered. The action follows the April 29 fatal crash of an EC225LP near Bergen, Norway.

Feedback received after an AD requiring inspections revealed issues with the suspension bars, which are also known as lift struts. Some tightening torque values on the attachment bolts of the fittings were found to be out of tolerance. Some washers were incorrectly positioned in the fitting assemblies. Those components are involved in scheduled maintenance, Airbus confirmed.

According to the EASA, the latest report from the Accident Investigation Board Norway (AIBN) "indicated metallurgical findings of fatigue and surface degradation in the outer race of a second-stage planet gear of the main gearbox epicyclic module." However, the agency pointed out that it cannot yet be determined whether this was "a contributing causal factor or subsequent failure from another initiating factor."

The EASA-mandated grounding does not extend to search-and-rescue (SAR) operations. Norway and the UK

aviation authorities, however, have issued directives that also ground the types for search-and-rescue missions.

In a written statement, Airbus commented: "In light of the new findings from the AIBN's preliminary investigation report, Airbus Helicopters supports EASA's cautious approach. We continue to fully support EASA, our customers and the investigation by providing information in full transparency, while working with the wider industry to ensure safety." *–T.D.*

FAA rules on L.A. helo noise

▶ *Continued from page 16*

helicopter routes and operations."

However, safety was the paramount reason the FAA denied the LAAHNC's petitions. When it came to the Coalition's request to establish a minimum helicopter altitude of 2,000 feet agl, the FAA noted the peculiarities of the Basin's microclimates, topography and airspace congestion and complexity that combined to make the idea unworkable and unsafe. The FAA noted that the Basin's convergence of mountains, desert and ocean coastline create wide variations of climate within short distances, with locally unique weather patterns which often conflict with a pilot's decision to fly at lower VFR altitudes.

Complex Airspace

The FAA noted, "Southern California's airspace is extremely complex and has high-volume air traffic driven by multiple international, domestic and general aviation airports in close proximity to one another, military operations and flight training activity. There are 27 airports (15 public use, 11 private use and one private seaplane base) in Los Angeles County with 21 different airport sponsors. Additionally, there are 138 heliports registered with the FAA."

The FAA goes on to note that "many" of the helicopter operations in L.A. County are in Class G (uncontrolled) airspace. The FAA reminded the LAAHNC, "The FAA established a collaborative process which included your organization and local helicopter operators beginning in 2012 until the spring of 2015 that evaluated whether helicopters could safely fly at higher altitudes within Los Angeles County given its unique geographic, topographic and climate limitations.

"The volume and complexity of fixed-wing aircraft transitioning in various stages of flight (approach, departure, en route) prohibits the establishment of a county-wide minimum altitude of 2,000 feet above ground level."

The FAA went on to state, "Requiring helicopters to fly at higher altitudes would negatively impact the safety of the National Airspace System (NAS) by placing helicopters in conflict with other aircraft and would increase the chance of a midair collision."

The FAA similarly voiced safety concerns in denying the LAAHNC's petition to create a mandatory VFR offshore coastal helicopter route. "The FAA found the majority of the shoreline operations are conducted by single-engine helicopters, which are not equipped with float devices. Pilots [stay close] to the shoreline to conduct an autorotation in the event of emergency. The lateral distance a helicopter is capable of maneuvering during an autorotation is different for each aircraft type. Placing a mandatory distance offshore for helicopter operations would require [flying higher so the pilot can] safely conduct an autorotation. The volume and complexity of fixed-wing aircraft in Los Angeles County transitioning in various stages of flight (approach, departure, en route) prohibits helicopters from flying at higher altitudes."

In dismissing the LAAHNC's petition to impose a hover limit of five minutes per hour over any given location, the FAA noted that these operations tend to occur in uncontrolled airspace and the success of voluntary measures, such as issuing Advisory Notams for planned events where helicopter activity is likely to occur.

The LAAHNC also petitioned the FAA to mandate the pooling of media helicopters. While the FAA supports pooling as a best practice, it advised the Coalition that it lacks the authority to impose it. "Although the FAA cannot at this time conduct rulemaking for the specific petition requested, it has taken important steps that further voluntary action on the part of operators, residents and other stakeholders," the agency said. ❑

The FAA rejected petitions to limit air tour and electronic newsgathering helicopter operations over the Los Angeles basin.

NEWS UPDATE

Airbus Builds New Compound

A mock-up of a new high-speed compound helicopter has undergone windtunnel testing at an Airbus Helicopters facility. A demonstrator, dubbed LifeRCraft, is currently being built as part of the Clean Sky 2 European research program. A preliminary design review is expected at year-end and the first flight is scheduled for 2019. LifeRCraft is building on ground laid by Airbus's X3 demonstrator, which made its final flight in 2014.

CFI Testing Requirements Changing

With a couple of caveats, the FAA is eliminating its requirement in the practical test standard (PTS) for the helicopter CFI rating that autorotations continue to touchdown. But the leeway to eliminate the touchdown remains at the examiner's discretion. Also, the new standards allow elimination of the touchdown requirement only if the CFI applicant can provide documentation (a logbook endorsement from his instructor) showing he has earlier demonstrated competence with touchdown autorotations.

Wiking Orders Two H145s

Germany-based Wiking Helikopter Service has ordered two Airbus Helicopters H145 light twins in offshore configuration. The first will be delivered by year-end. Both rotorcraft will be used for the transfer of harbor pilots to ships and technicians to offshore wind farms, as well as rescue missions over the North Sea. The H145 in offshore configuration can seat eight passengers and is equipped with an emergency flotation system certified for Sea State 6, weather radar, an emergency egress lighting system and an automatically deployed emergency locator transmitter.

Era Conducts Milestone SAR Flight

Era Group recently completed its 1,000th search-and-rescue mission in the Gulf of Mexico. Era and partner Priority 1 Air Rescue began serving the Gulf with commercial air ambulance and search-and-rescue helicopters in 2010. It currently operates three SAR-equipped AW139s from bases in Houma, Louisiana, and Galveston, Texas, in support of the program.

JSSI Offers MD500/600 Coverage

Hourly aircraft maintenance program provider Jet Support Services (JSSI) recently announced airframe parts-only coverage for MD500 and MD600 series helicopters. JSSI can also include coverage for the helicopters' Rolls-Royce 250 engine. The company said an MD900-series airframe parts-only program is under development and will be available soon.

Airwolf TT Straps Get Life Extension

Airwolf Aerospace's tension-torsion (TT) straps for the Bell 204, 205, 210, 212 and UH-1 have received FAA approval for a 50-percent life extension to 36 months or 1,200 hours. Airwolf's coating for the straps enables them to achieve the extension.

S-92 Fleet Flies One Million Hours

The global fleet of 275 Sikorsky S-92s recently surpassed one million flight hours. The first S-92 was delivered in 2004. While most of the fleet serves the offshore oil-and-gas industry, the S-92 is also used for civil search and rescue and 11 nations use it for head-of-state transport. *—T.D., M.H.*

New combustor design simplifies Safran's Arrano

by Thierry Dubois

Safran Helicopter Engines (née Turbomeca) has designed a new kind of combustor for the Arrano turboshaft, thus allowing for better operability and a simpler arrangement, the engine manufacturer announced in May. Keeping the flow swirling is key, head of combustion department Claude Bérat told **AIN**. The 1,100- to 1,300-shp Arrano powers the in-development Airbus Helicopters H160 medium twin.

Safran's engineers in Bordes, southwest France, have managed to stabilize a flame in a swirling flow of mixed air and fuel in the combustor. Without such a swirling flow, the engine requires numerous fuel nozzles (20 on the Ardiden, a previous-generation engine) to reach a homogeneous temperature to protect the components from damage, Bérat explained.

The swirling mix flow, if the originating flame is steady, ensures swift and consistent flame propagation. Therefore, the engineers could reduce the number of fuel nozzles to nine. Only the main fuel nozzles remain and those normally used for start have been eliminated, simplifying the design.

The engine maker cites several additional advantages of the new combustor design. First, the design offers improved operability, according to the company. In May, "we validated engine start at a simulated altitude of 14,700 feet and a temperature of minus 40 degrees C," Bérat said.

In addition, relighting after an engine shutdown is expected to be easier, too. Combustor weight and cost, for a given power, have been halved if compared to a late-1980s engine such as the Arrius, according to Bérat.

A favorable feature of the turbomachinery's design is that the last compressor stator, just upstream from the combustor, has to "de-swirl" the airflow only partially so that when it enters the turbine it is already rotating. The result, said Bérat, is reduced power loss.

Safran's engineers have managed to stabilize the flame in a swirling gas flow, thus reducing the required number of fuel nozzles.

The latest generation of computing hardware and software helped a lot, he noted. Additive manufacturing (3-D printing) made it possible to create the fuel nozzles. "They would have been impossible to machine," Bérat explained. ❑

AIR EVAC SUES HEALTH INSURERS

In what could be a landmark case for the air ambulance industry, Air Evac EMS is suing Arkansas Blue Cross & Blue Shield (ABCBS) in U.S. District Court for what it claims is a pattern of underpayment of patient claims for helicopter EMS transport amounting to more than $10 million. The Air Evac suit is part of a pattern of helicopter EMS companies pushing back against health insurers who are either outright denying patient claims or reimbursing them at low rates, often below those set by Medicare, leaving patients with large unpaid balances and unable to pay. Last November Air Evac sued health insurer Medical Mutual of Ohio for $3.5 million on similar grounds.

The Arkansas case also charges that the actions of ABCBS are a violation of the Affordable Care Act as the insurer is denying compensation for an "essential health benefit." ABCBS pays air ambulance providers a flat rate of $5,000 per transport while the Medicare reimbursement rate in Arkansas is $4,877 plus $34 per mile, according to Air Evac. However, both ABCBS and Medical Mutual maintain that they are under no obligation to compensate Air Evac at any agreed-upon rate as they do not have a contract with the company and it is not one of their preferred providers. Air Evac said its average per-transport cost in Arkansas is $30,000 and that in Ohio in 2014 it topped $20,000. *–M.H.*

Facing NYC tour ban, operator looks to Yonkers

by Mark Huber

A plan by New York's Helicopter Flight Services (HFS) to offer air tours from barges anchored between a Yonkers sewage treatment plant and a Domino sugar refinery on the east bank of the Hudson River is drawing a chilly reception from residents and local politicians. Yonkers Mayor Mike Spano (D) has counseled HFS that he doesn't think a heliport is a good use for the proposed site, the city council is considering a ban, and some local residents were verbally abusive to HFS representatives at an informational meeting on the proposal in May.

HFS wants to relocate its air-tour operations to the site in response to operational caps imposed on all air-tour operators at New York City's Wall Street heliport that will slash flights there by 50 percent by January 1 next year. That deal will last only two years, after which further flight cuts or even a total air-tour ban could be imposed on operations from that popular location. Last September, as the political climate for New York City's air tour operators was rapidly deteriorating, HFS principal John Kjekstad formed Yonkers Heliport. HFS's plan is to provide van transportation from the Ludlow Street Station to the new heliport and run three to five flights per hour with Bell 407s and Airbus H130s between 9 a.m. and 9 p.m.

In a presentation to Yonkers' Ludlow Park Association in late May, HFS executives outlined the company's plan for the site, its operations and community relations. HFS pledged to work "in a partnership with the community" to minimize its operations' impact and to fly only over the Hudson west of mid-river. It further pledged to donate $1 per passenger, up to $20,000 per year, to the association; work with the association and the county to modernize the water treatment plant; work with the sugar refinery to offer joint land waterfront access for public outdoor space; and make the heliport available for EMS, law enforcement and the Department of Homeland Security.

The Yonkers city code currently permits heliports that satisfy certain conditions: approval of a special-use permit by the planning board and ratified by the city council after a public hearing. Other requirements are a good location to best serve present and potential helicopter traffic, minimum obstructions in the approach and departure path, minimum disturbances to the public from noise and dust and easy access to surface transportation. Rooftop helipads are prohibited. Additionally, Yonkers has a noise ordinance that a helicopter operator could find problematic. It defines a noise disturbance in part as: a sound-level reading taken at a residential property, arising from a commercial property, an industrial property, a public space or a public right-of-way, above 70 dBA during the time period commencing at 7 a.m. and ending at 10 p.m.; or a sound-level reading taken at a commercial or industrial property at any time, arising from any property source, above 70 dBA; or a sound plainly audible at a distance of 50 feet from its source. ❑

DAVID MCINTOSH

LEONARDO CLAIMS TOP SPOT ON MULTI-ENGINE VIP HELO MARKET

Leonardo Helicopters showed off a seven-passenger personal AW169 at EBACE as an example of its competence in that sector, a market where it claims the leading position. "We have 50 percent of the multi-engine corporate/VIP helicopter market," said Manuela Barbarossa, head of the VIP/corporate segment for the company (formerly known as AgustaWestland). Leonardo's fleet of VIP/corporate rotorcraft is estimated to number 800 worldwide.

In the AW169, a clean-sheet design certified 10 months ago, passengers do not have to use headsets to have a conversation, Barbarossa pointed out. "As for equipment, our customers are interested in everything they use at home or in their car. They see their helicopter as an extension of these," she went on. Therefore, Leonardo is offering iPad control for lighting, air conditioning and the map display.

The GrandNew light twin is said to be the most popular model in Leonardo's product range for VIP/corporate customers. Overall, "corporate/VIP helicopters represent about 20 percent of our sales," Barbarossa said. She mentioned Europe and North America as the primary markets. "Emerging markets like Russia and China will benefit from evolving [airspace and ownership] rules," she added. In the Middle East, regulations prevent individuals from owning a private helicopter, but some can be found under governmental registrations, she explained.

The economy has not helped recently, Barbarossa reflected. She singled out Brazil and particularly the city of São Paulo, famous for private helicopter commuting. But now, because of the recession, "people in São Paulo can't invest as much as they need to do." She emphasized that, despite the soft market, Leonardo is maintaining a close relationship with its traditional customers.

The Italian manufacturer is facing stiffer competition, since two new twins will be certified over the next couple of years. The Bell 525 Relentless will be a new contender in the heavy category, while Airbus has just unveiled a private version of the H160 medium twin. *–T.D.*

Bell is on track to certify the super-medium twin next year.

Bell 525 FBW system needs special approval

by Mark Huber

The FAA published notice May 27 that it is seeking special conditions for certification of Bell's 525 super-medium twin to address "a novel or unusual design feature associated with fly-by-wire flight control system (FBW FCS) functions that affect structural integrity of the rotorcraft." The agency noted that "the applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature" and that the "proposed special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards."

Specifically, the FAA noted that current regulations are inadequate to determine the effect of systems and system failures from the FBW FCS and related systems (stability augmentation, load alleviation, flutter control and fuel management) on the structural integrity of the aircraft and structural performance. Existing standards, according to the FAA, do not account for the fact that active flight control systems provide automatic responses to inputs from sources other than the pilots and that "certification of these systems requires issuing special conditions."

The FAA observed, "In the past, traditional rotorcraft flight control system designs have incorporated power-operated systems, stability or control augmentation with limited control authority, and autopilots…These systems are integrated into the primary flight controls and are given sufficient control authority to maneuver the rotorcraft up to its structural design limits… The FBW FCS advanced technology with its full authority necessitates additional requirements to account for the interaction of control systems and structures. The regulations defining the loads in 14 CFR Part 29 do not fully account for the effects of systems on structural performance. Automatic systems may be inoperative or they may operate in degraded mode with less than full system authority and associated built-in protection features.

"Therefore it is necessary to determine the structural factors of safety and operating margins such that the probability of structural failures due to the application of loads during FBW FCS malfunctions is not greater than that found with rotorcraft equipped with traditional flight control systems."

The FAA further points out, "Traditional flight control systems provide two states, either fully functioning or completely inoperative. These conditions are readily apparent to the flight crew. Newer active flight control systems have failure modes that allow the system to function in a degraded mode without full authority and associated built-in protection features. As these degraded modes are not readily apparent to the flight crew, monitoring systems are required to provide an annunciation of degraded system capability."

The FAA went on to publish a detailed list of special conditions for the 525. Significant among them: With the FBW FCS system, fully operative strength requirements of Part 29 need not be investigated beyond limit conditions "when it can be shown that the rotorcraft has design features that will not allow it to exceed those limit conditions." In evaluating failure conditions shown not to be extremely improbable, loads assume failures begin in 1g level flight and include pilot corrective actions.

The special conditions also provide that special periodic inspections, daily checks and preflight inspections may be used in lieu of failure-detection and -indication systems, but "must be limited to components that are not readily detectable by normal detection and indication systems and where service history shows that inspections will provide an adequate level of safety." ❑

Bristow hints at deferrals

OGP operator Bristow Group revealed punishing financial results for the quarter ended March 31 and hinted for the first time that it might be forced to cancel orders or at least defer some new helicopter deliveries and will turn back some leased helicopters. Quarterly revenues fell to $375 million from $418.8 million from the year-ago period and the company reported a loss of $25.25 million versus a profit of $15 million from the year-ago period.

The situation would have been much worse without a big quarterly year-over-year jump in revenue from Bristow's UK search and rescue (SAR) contract, to $62 million from $11 million, and its fixed-wing operations, to $53.5 million from $42 million, as the company saw oil and gas revenue decline 29 percent to $255 million from $360 million during the year-ago quarter. Over the last year, Bristow's stock has lost nearly 80 percent of its value; however, the company still has $104 million in cash reserves, liquidity gained through credit lines and aggressive and continuing cost-cutting. Following the release of the results, Bristow CEO Jonathan Baliff told analysts that he thinks the company is "kind of seeing the bottom" of the market.

"Fiscal 2016 was a difficult and challenging year. However, the March 2016 quarter results, especially the 20-percent increase in liquidity, demonstrate the success of our cost-reduction and diversification efforts," Baliff said. "The completion of UK SAR start-up activities, overall capital expenditure reduction and aircraft sales expected in Fiscal 2017 will strengthen our liquidity position as we lead through the downturn. In this environment, further reductions of our direct and general and administrative costs, combined with working with our OEM partners to defer additional capital expenditures into future years and lower maintenance costs, are all designed to provide additional financial flexibility necessary to successfully navigate through this downturn."

Bristow CFO Don Miller said the company continued to be pinched by the strong U.S. dollar, noting that foreign exchange rates adversely affected the company by $14.7 million in the last quarter and by $98.6 million for the year.

Baliff said Bristow's fleet of mainly owned Sikorsky S-92s is being used to compensate in markets adversely affected by the EASA-mandated grounding of the Airbus H225 series following a fatal crash in Norway on April 29. "We continue to use our mostly owned S-92 fleet in response to the grounded H225 fleet. In this challenging environment, we are seeing real success with clients signing new contracts." *–M.H.*

CHINA SIGNS $790M DEAL FOR 100 AIRBUS H135s

A Chinese consortium signed a $790 million, 10-year contract last month for 100 Airbus H135 light twins to be assembled in Qingdao, Shandong Province, beginning in 2018. The consortium is composed of China Aviation Supplies Holding (CAS), Qingdao United General Aviation Industrial Development (Qingdao United) and Citic Offshore Helicopter (COHC). A letter of intent for the deal was announced last year.

The agreement was signed June 13 in Beijing's Great Hall of People, in the presence of Chinese Premier Li Keqiang and German Chancellor Angela Merkel. The H135 has gained popularity in China in recent years, performing various parapublic, corporate and tourism missions. Worldwide, 1,200 H135s are in service and the fleet has logged three million flight hours.

"With the further opening up of the Chinese skies and growth in the civil and parapublic segments, China is gearing up to be the biggest market for helicopters in years to come," said Norbert Ducrot, head of Airbus Helicopters China and North Asia. The company forecasts a demand for up to 600 light twins in China over the next 20 years. *–M.H.*

A Chinese consortium has placed an order for 100 Airbus Helicopters to be assembled in Qingdao, Shandong Province, beginning in 2018. The deal is worth $790 million.

NEWS UPDATE

Gogo Joining Weather Co.'s Turbulence Pirep Network

Gogo Business Aviation and The Weather Company announced that Gogo will implement Weather's Turbulence Auto Pirep System, which allows Gogo-equipped aircraft to provide turbulence data for sharing with pilots and dispatchers.

The agreement means that Gogo will install the Taps software, which includes a turbulence-detection algorithm, on its airborne communication servers installed in customer business aircraft. The software uses inputs from aircraft avionics to "calculate and report turbulence intensity and transmit to the ground via Gogo's U.S.-based air-to-ground and global satellite communication network," according to The Weather Company. This real-time information can then be shared with dispatchers and pilots to help pilots avoid turbulence, but it will also help The Weather Company improve turbulence forecasts and its overall forecast model, the company noted.

Universal FMS Simplifies ADS-B Installations

A new software version for the Universal Avionics satellite-based augmentation system (SBAS) FMS eliminates the need to install a separate transponder failure annunciator for ADS-B OUT installations. Typically installers have added a light module in the instrument panel to annunciate ADS-B transponder failure, but the new FMS software includes the required failure messaging on the FMS display, and this will help reduce ADS-B installation costs.

The new FMS software is Software Control Number (SCN) 1001.1/1101.1/1101.1M, and it also "provides a growth path to localizer performance with vertical guidance (LPV), required navigation Performance (RNP) and, with the UniLink UL-800/801 communications management unit (CMU), controller-pilot datalink Communications (CPDLC) and CPDLC Departure Clearance (DCL), Future Air Navigation System (Fans) and Link 2000+," according to Universal Avionics.

The SCN supports four new Arinc input buses and four new discrete inputs, the company added. "The inputs are monitored for data indicating the state of ADS-B OUT or transponder failure....The status labels from an ATC/mode-S transponder system are monitored by the FMS and used to detect a failure in the system."

DAC STCs Displays for Older Models

Greenwich AeroGroup's DAC International received an FAA Part 25 approved model list (AML) STC for installation of Esterline's CMA-6800 LCD in a variety of airplane types. The CMA-6800 replaces the original Honeywell ED-800 cathode-ray tube displays, which are becoming more difficult and expensive to repair. The AML STC covers replacement of the ED-800 in the Hawker 800/800XP/1000, Challenger 601-3A/3R, Dash 8-100/200/300, CL-415 Superscooper, Citation 650, Falcon 900, Fokker 50 and Gulfstream III. More aircraft will be added in the next few months.

"This new product has many benefits," said DAC vice president and general manager Cisco Hernandez. "Among those are its form-fit-function replacement, higher reliability and its additional I/O and processor growth provisions for future mandates." *—Matt Thurber*

L-3 Lynx ADS-B system now in Caravans, t-props

by Matt Thurber

Dallas-based cargo air carrier Martinaire is equipping its fleet of 28 Cessna 208B Super Cargomaster turboprops with the L-3 Aviation Products Lynx NGT-9000 ADS-B transceiver. The NGT-9000 provides both ADS-B OUT and IN features, including FIS-B weather, Notams and airspace and TIS-B traffic information on its own touchscreen or on pilots' mobile devices, all in one self-contained, transponder-sized unit.

"We were looking for a single unit that could add weather and traffic to our cockpits while also satisfying the ADS-B mandate," said Alan Rusinowitz, executive vice president and COO of Martinaire Aviation. "The Lynx NGT-9000 specifically met our needs, giving us the flexibility to view traffic and weather on the panel-mounted unit, as well as Wi-Fi the data to the pilot's iPad."

The L-3 Lynx displays both traffic and weather on its own touchscreen or pilots' devices.

In addition, the FAA awarded Canada's Vector Aerospace an STC for an ADS-B solution using the L-3 Lynx NGT-9000 in the Airbus Helicopters AS332, Leonardo AW139 and Sikorsky S-76. The STC offers MFD/PFD interfaces for display of TIS-B and FIS-B ADS-B IN information on cockpit displays and optional Wi-Fi for mobile device display.

"We are thrilled to add this new STC capability to our long list of FAA-, TCCA- and EASA-certified STCs for Airbus Helicopters, Bell, Leonardo-Finmeccanica and Sikorsky aircraft," said Elvis Moniz, Vector vice president of business development, airframe and avionics solutions. "Our experience with this type of retrofit solution dates back to the FAA's Alaska Capstone program, which saw Vector work directly with the FAA to perform 450 Capstone installations—including ADS-B—on a variety of fixed-wing and rotary-wing aircraft between 2002 and 2005." ❑

Product Review

With D2 Bravo Titanium, Garmin watch series grows

by Matt Thurber

Garmin has released a new version of the D2 Bravo aviator watch, the D2 Bravo Titanium, with new features and capabilities such as a heart-rate monitor, titanium band and high-resolution color display, as well as flight plan and user waypoint transfer from the Garmin Pilot app to the new watch. The D2 Bravo Titanium retails for $899 (the D2 Bravo's price is $599).

Owners of the existing D2 Bravo can install a free software upgrade that adds display of TAFs (in addition to Metars), automated flight logging, new activities (golf, for one) and the flight plan and waypoint transfer capability. The update also allows D2 Bravo owners to display a new aviation-tailored customized watchface that offers an optional tail number display.

What sets the D2 Bravo Titanium apart from its older sibling is the redesigned case and the new carbon-coated hybrid titanium band. The first D2 comes with a thick leather band, which is a bit bulky for a watch that is already fairly hefty. The titanium band is a bit more subdued while still stylish and modern with a bit of an industrial flavor.

While the D2 Bravo Titanium delivers a lot of functionality when connected with a smartphone, including notifications, the latest color-coded Metars and TAFs and flight plan and waypoint transfer, I like that many of its features are available as a standalone device, unlike the Apple Watch. The D2's navigation and aviation functions are much deeper than any Apple Watch app that I've seen so far.

In-cockpit Uses

The D2 can be used anywhere because it has a worldwide airport database and offers support for 18 languages. If unable to transfer a flight plan from Garmin Pilot, D2 wearers can use the watch itself to create a flight plan or simply navigate direct to an airport. The watch's barometric altimeter is adjustable to the local altimeter setting, and pilots can set an oxygen reminder that will provide an alert when altitude (or cabin altitude in a pressurized airplane) exceeds 12,500 feet or when reaching or leaving a preselected altitude. Pilots can also set timed vibration alerts as reminders for regularly scheduled events such as switching fuel tanks.

The newest version of Garmin's D2 Watch features a titanium band.

Watch views when navigating include an HSI and moving map; instruments page showing baro altitude, speed, heading and vertical speed; nearest page with bearing, ETE and distance to the nearest airport and current heading; and a waypoint page for the selected or flight-planned destination, with bearing to, ETE, distance remaining to the destination and the current heading. Some of the data fields are customizable.

The D2 Bravo Titanium, like the original D2, has a useful timer with vibration and audible alerts (either one or both can be shut off). What I like about the timer is that it can be used to set the countdown time on an IFR approach. Of course setting a timer on the watch during a busy period of flight shouldn't be a priority, but if the destination approach is known ahead of time, it's worthwhile setting up the timer before the descent phase.

When wearing the Bravo Titanium, pilots can use it to log flights. The watch automatically begins recording when it detects a change in altitude on takeoff. Date, total time and route are recorded by the watch, and this data can be shared with the Garmin Pilot app and the flyGarmin website. ❑

Honeywell's future cockpit: mind and speech control

by Kerry Lynch

Honeywell Aerospace is researching a series of advanced technologies, from use of sensors that can tap into brainwaves to control basic aircraft maneuvers to speech-recognition equipment and synthetic-vision advancements, to create a cockpit environment in which the pilot could use any number of means to perform a mission. Bob Witwer, v-p of advanced technology for Honeywell Aerospace, said the company's goal is to "give pilots what they need, only what they need and when they need it."

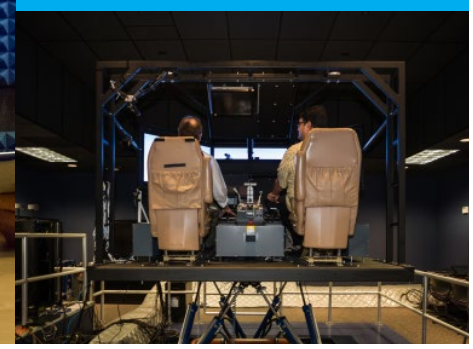
The effort is examining a series of inputs from visual, aural, manual control and automatic control to, possibly one day, mind control. These options must be intuitive, unambiguous and easy to understand, Witwer said. The idea is to "design the modality to match the mission," he said. Witwer cited as an example the proliferation of touchscreens, which he said is a welcome advancement, but they can be difficult to use in turbulence. If the hands are busy, he suggested, speech-recognition capabilities might be a better option.

Honeywell recently opened some of its advanced technology labs to give reporters a glimpse at some of the research under way to create this cockpit environment. Some of the research projects coming out of the labs either are already in service or are mature and close to moving into production and marketing. Others are in the early stages, and it might be years before they reach the market, and if they reach the market they might be in different forms.

One of the more far-reaching avenues of research is the neurotechnology demonstration. In this lab Honeywell demonstrated real-time neural control of an aircraft simulator. The company has also demonstrated the use of neural control in a King Air, using the inputs to command basic pitch and roll functions.

This demonstration used sensors attached to the inside of a helmet or some other head covering that can detect electrical impulses in the brain and send them to the avionics. The operator looks at nine arrow directions (such as up, down, up to right), focusing on one. That sends a signal for the simulator, or the King Air, to move in that direction.

Honeywell Aerospace scientist Santosh Mathan said this research might open possibilities in the study of human factors, such as brain response during loss of control, to training, or to performing basic functions in the cockpit such as pulling up a certain map. The research has applications outside aerospace, such as how the brain functions after a stroke or chemotherapy. Honeywell has been partnering or is in discussions about the research with a number of entities, from the U.S. Defense Advanced Research Projects Agency to universities.



In its advanced technology labs Honeywell is continuing development of products already in the cockpit and looking to systems for the future. First, it is further developing combined vision and touchscreen controls, top and bottom right, in its sim lab, and working on neural control and speech recognition in other labs, bottom.

Workload Reduction

Another of the company's labs is focusing on oral processes. The speech-recognition lab is studying not only possibilities for voice command, but also transcriptions of ATC dialog to augment those communications. The transcriptions would provide quick reference of commands, particularly in critical phases of flight when workload introduces the potential for distraction. First detailed during NBAA's annual meeting last fall, the ATC research has been under way for three or four years. The research must iron out differences in language, dialect and accents. As for the aural command, which is tested in a sound room that can simulate the sound of a cockpit in flight (for demonstration purposes researchers used the typical background noise of a Falcon 900), Honeywell sees opportunities to enable the pilot to use infrequently used commands or call up deeply buried menus.

Honeywell's flight simulator lab continues to advance the use of synthetic vision and combined vision to improve situational awareness in poor weather. Some of these technologies will be folded into Honeywell's SmartView suite. A synthetic visual aid for taxiing is mature to the point that it is nearly ready to move from research to production. The display will depict a "parasail" view of an airport runway, showing important markings and runway identifiers that can be hard to see in poor weather. The display will also pop up a virtual barrier when the aircraft taxis to a hold-short point and drop the barrier when the aircraft has been released.

Another lab simulates cockpit motion that has been used to improve touchscreen technology. The lab can test pilot responses and even measure muscle input to track fatigue. It can also track where a pilot looks when confronted with various tasks, helping with human-factors research. By evaluating the range of responses, it paints a picture of how "everything flows together" in the broader cockpit environment. ❑

FAA OFFERING REBATES TO 'KICK START' ADS-B EQUIPAGE

With the 2020 ADS-B deadline now 41 months away, the FAA is rolling out a $500 rebate incentive program to encourage earlier equipage for up to 20,000 operators of piston singles. Aircraft that fly in controlled airspace must be equipped with ADS-B OUT by midnight on Dec. 31, 2019. The FAA estimates that the requirement will affect as many as 160,000 aircraft, the vast majority of which are piston singles.

Equipage has been steadily picking up but is still complete on only a fraction of the affected aircraft. "We're hoping that these low prices combined with the FAA's $500 rebate will encourage aircraft operators to get off the sidelines and take advantage of all the benefits ADS-B has to offer," said Transportation Secretary Anthony Foxx during last month's announcement.

Fewer than 20,000 general aviation aircraft, or between 12 and 20 percent of the anticipated affected fleet, were ADS-B compliant by May 1. "It is essential [the general aviation] community get into compliance with our NextGen requirements by 2020. We are sending a signal today that we are serious about this and are putting our money where our mouth is."

The FAA will offer the rebates first-come, first-served for one year or until all 20,000 rebates are claimed. The program is expected to begin this fall, said FAA Deputy Administrator Michael Whitaker. The rebates will be available to offset cost to install compliant ADS-B OUT equipment, but will not be available for software upgrades on aircraft already equipped. Nor will they be available for new aircraft, Whitaker said. —*K.L.*

NEWS UPDATE

SSJ100s Delivered to CityJet

Irish regional airline CityJet took delivery of Western Europe's first Sukhoi SSJ100 during a ceremony held in Venice, Italy, in late May at the headquarters of the program's Western sales and aftermarket support partner, SuperJet International. The airline has agreed to lease 15 SSJ100s and holds delivery options for another 16. Sukhoi and SuperJet International—51-percent owned by Alenia Aermacchi and the balance by Sukhoi Holdings—value the deal at more than $1 billion, including options and aftersales services.

Dublin-based CityJet expects to receive three SSJ100s this year, with the remainder starting to arrive next year. The SSJ100 achieved European Aviation Safety Agency (EASA) certification in 2012. Superjet International configured the CityJet aircraft in a 98-seat cabin layout.

Mitsubishi Adds MRJ to Flight Test

The second Mitsubishi MRJ90 (FTA-2) took to the air for its first flight on May 31 from Nagoya Airport in Japan, launching the latest phase in a flight-test program expected to cover 2,500 hours of flying by five prototypes. Mitsubishi Aircraft and Mitsubishi Heavy Industries (MHI) reported that FTA-2 confirmed its basic characteristics and functionality in airspace off the Pacific Coast. The companies plan to use FTA-2 primarily to confirm the model's performance specifications, they added.

Mitsubishi Aircraft and MHI hope to advance the start of flight-testing of the first MRJ90 at Grant County International Airport at Moses Lake in Washington State from the fourth quarter of this year to some time in the summer, raising the possibility that it could gain certification as much as two months earlier than the official delivery target of mid-2018.

All told, Mitsubishi plans to ferry four of the five flight-test aircraft to the U.S., while the fifth—painted in the livery of launch customer ANA—performs autopilot testing in Japan.

IATA Calls for Revenue Repatriation

The International Air Transport Association (IATA) in late May called on governments to respect international agreements requiring them to ensure airlines can repatriate their revenues. IATA identified Venezuela and Nigeria as two of the worst offenders. Venezuela, for example, has blocked $3.78 billion of airline revenue over the past 16 months.

IATA monitors blocked funds globally, the sum of which exceeds $5 billion. In Venezuela, currency controls implemented in 2003 require government approval to repatriate funds. By 2013, approvals hadn't kept pace with the amount of funds requiring repatriation and significant airline revenue accumulated in Venezuela. IATA said the situation became critical last year, when the government approved only one request to repatriate funds. Similarly, it has granted only one request to repatriate funds this year.

Latin American carrier Latam and Germany's Lufthansa recently suspended all flights to and from Venezuela specifically because of difficulties repatriating funds from ticket sales.

In Nigeria, total airline funds blocked from repatriation now near $600 million. Repatriation "issues" arose in the second half of last year, when demand for foreign currency in the country outpaced supply and the country's banks couldn't service currency repatriations. *—Gregory Polek*

Russia's MC-21 rolls out in Irkutsk

by Gregory Polek

United Aircraft subsidiary Irkut rolled out the first MC-21 narrowbody early last month from its factory in Irkutsk in eastern Siberia. The milestone, reached some six months later than last scheduled, nevertheless marked what the Russian company considers a vindication of sorts for a program some in the West have disparaged as an overly ambitious attempt to compete with the likes of the Boeing 737 and Airbus A320.

In attendance at the ceremony, Russian Prime Minister Dmitry Medvedev spoke of the prestige the project has brought to the country, as well as its importance to helping move its economy forward. He also congratulated Irkut's employees for their role in shaping the future of Russia's return to prominence in commercial aircraft manufacturing.

The grand unveiling re-establishes a project timeline for the Irkut MC-21 that by last December appeared less than completely firm, given the failure to roll out an assembled airframe as promised by that time. Last August Irkut reported it had mated two fuselage sections of the first MC-21 prototype, and re-affirmed 2018 as the target for type certification. In early December, the governor of Russia's Irkutsk region inspected the Irkutsk aviation plant (IAZ), where executives showed him a "complete fuselage with all sections having been joined." The prototype's composite wing consoles arrived soon afterward, in time for the revised rollout target of this year's second quarter.

The MC-21 narrowbody makes its first public appearance at the Irkut factory in Siberia.

VLADIMIR KARNOZOV

First Flight Next Year

However, during the rollout Medvedev referenced plans for first flight "within a year," and United Aircraft officials acknowledged that a previously quoted target for the end of 2016 might prove optimistic unless all goes exactly to plan.

Speaking to reporters after the ceremony, Irkut vice president of marketing Kirill Budaev referenced the potential to replace some of the Western suppliers with Russian companies, but he conceded the need for potential new domestic suppliers to develop to Western standards before the OEM would consider any such move. "We are trying to keep a balance," he said. "For sure we have an interest in both [Western and Russian suppliers]. We need to satisfy international airlines and they need international suppliers for sure. And we need to satisfy the Russian aviation industry because we need to force them to develop. We expect that sooner or later, local Russian manufacturers will be at least at the same level as international ones."

Irkut will also need the help of international suppliers to provide customer support networks, added Budaev. "We don't need to build a new [support] infrastructure," he insisted. "In the MC-21 [program], there are a lot of international suppliers, so they'll provide their own networks for customer support." In fact, Irkut has already signed a memorandum of understanding with Lufthansa Technik for MRO support.

Perhaps the program's most prominent Western supplier, Pratt & Whitney, has now shipped three PW1400G geared turbofans out of an order for 100 engines, a pair of which will power the MC-21 on its first flight. An alternative powerplant—in the form of the domestically designed PD14 turbofan—completed testing in a thermal barometric chamber that emulated atmospheric conditions for flight at altitudes of up to 37,000 feet. The successful completion of that testing, announced on December 9, paved the way for flight-tests using an Ilyushin Il-76 test bed, on which a PD14 replaced one of its original D30KP turbofans. ❑

CAUTIOUS OPTIMISM PREVAILS AT IATA AGM

Speaking early last month at the International Air Transport Association's annual general meeting in Dublin, outgoing IATA director general Tony Tyler issued a somewhat mixed message about the state of an industry expecting to turn a net profit of $39.4 billion this year, marking the second year in a row airlines make an aggregate return in excess of the cost of capital. Although he called the performance a significant achievement after decades of "capital destruction," he also characterized it as the bare minimum of what investors expect.

"On average, airlines will make $10.42 for each passenger carried. In Dublin, that's enough to buy four double espressos at Starbucks," Tyler quipped. "Put another way, for every $100 in sales that Starbucks makes, their net profit is over $11. But airlines will make only $5.60."

Tyler's comments come just a few days after IATA reported that traffic demand for April rose by just 4.6 percent over the same month last year—its slowest pace since January 2015. It marked the second straight month of sharply slower growth since February's gain of 8.6 percent. April capacity as measured by available seat kilometers was up by 4.9 percent, resulting in a drop in load factor of 0.3 percentage points, to 79.1 percent.

Even absent the April terrorist attack on Brussels Airport, traffic would have grown by just 5 percent, said IATA. "The disruptive impacts of the Brussels terror attacks likely will be short-lived," said Tyler. "There are some longer-term clouds over the pace of demand growth. The stimulus from lower oil prices appears to be tapering off. And the global economic situation is subdued. Demand is still growing, but we may be shifting down a gear."

Despite what Tyler called generally adverse economic conditions, however, times are good for the air transport industry overall, he added. Consumers, for example, enjoy "great deals" and lots of choice; investors have begun to see "reasonable" rewards for the capital they risk and airlines have begun to pay down debt. Although Tyler said it will take several years of solid profitability before airlines can repair most balance sheets profitably, "simply put, we are beginning to be a normal business, as well as a force for good," he noted.

While IATA would like to believe the gathering of the world's airlines in Dublin reflects a high level of industry solidarity, it can't erase competitive "issues" such as trade disputes between some North American and European carriers and the three big airlines from the Persian Gulf. In fact, said Tyler, IATA plays no role in arbitrating such disputes among its members. "These are the province of governments," he concluded. *—G.P.*

Airbus focused on 'protecting' A350

by Ian Goold

Entering service on June 1, the first Cathay Pacific Airways Airbus A350-900 twin-aisle twinjet is the 24th example so far delivered to six operators as the manufacturer works to meet a target of 50 deliveries by year-end. With about 40 such widebodies now in final assembly in Toulouse, France, the effort ranks alongside Airbus's plans to accelerate production of A320 single-aisle twinjets as the company's two principal challenges, according to COO Tom Williams.

Executive vice president Didier Evrard, who last year succeeded Williams in overseeing programs, has put in place a so-called "protect the [A350] ramp-up" project. He said that the first A350-1000 variant—the 59th A350—is on schedule. The first three aircraft have reached final assembly and mechanics have attached the new six-wheel landing-gear bogies to the first.

Elsewhere among its widebody programs, Airbus has begun considering a heavier option of the A330-900neo aimed at making the re-engined version of the A330-300 more competitive against the Boeing 787. COO for customers John Leahy said that at the current 242-metric-ton maximum operating weight, introduced for Delta Air Lines two years ago, the 287-seat A330-900 Neo falls almost 1,300 nm shy of the 7,830-nm range of a 283-passenger 787-9.

The executive reported that Airbus is studying a weight of 245 metric tons "or higher" for the heavier variant, which would retain the A330's Category B airport rating, compared with the Category F standard applied to the Boeing 777 (or Category E for 777X variants equipped with folding wingtips to reduce their ramp footprint). Leahy said Airbus is looking at the higher weight option so that airlines can carry additional fuel or more cargo. Structural subassemblies and equipment for the A330-900neo remain "on track" to enter final assembly from July to September, ahead of scheduled first flight, testing and certification in time for entry into service in "late 2017," according to Evrard.

Separately, Airbus confirmed that it continues to delay completion of re-engined A320neo narrowbodies as it awaits updated PW1100G geared turbofans from U.S. supplier Pratt & Whitney. ❑

The first two Leap-powered A320neos accumulated 1,000 hours in the air during 350 flights.

LEAP POWERED A320NEO WINS EASA/FAA CERTIFICATION

The CFM Leap-1A-powered Airbus A320neo received type certification from the European Aviation Safety Agency (EASA) and Federal Aviation Administration (FAA), allowing for first delivery to Turkey's Pegasus Airlines soon, Airbus announced in late May. The award follows by six months the initial airworthiness certificate issued by the EASA and FAA for the A320neo powered by Pratt & Whitney PW1100G geared turbofans. Airbus delivered the first of that option to Lufthansa Airlines on January 20, after original launch customer Qatar Airways balked at early operating restrictions related to time between engine starts.

The two Leap-powered aircraft assigned to the flight-test campaign have now accumulated 1,000 flight hours during 350 flights, including 150 flight hours with the same aircraft in an airline-like environment to ensure operational maturity at entry into service. Certification of the remaining aircraft/engine variants with Leap engines will follow in the "coming months," said Airbus. Once Airbus completes all flight-testing, the Neo development fleet will have achieved a combined total of 3,000 flight hours.

Airbus chose the Leap-1A as an option for the A320neo in December 2010. The engine flew for the first time on the A320neo on May 19 last year; the second airplane joined the flight-test program last September. This past February the Leap-1A became the first engine to power the A321neo, now undergoing flight-tests.

"This key milestone for the A320neo program, and its second engine option—the specially developed Leap-1A—is a double seal of approval by the two major international governing bodies and comes after the A320neo family had successfully accomplished a rigorous program of certification trials," commented Airbus president and CEO Fabrice Brégier. "We look forward to the entry into service of Leap-powered models in the very near future." *–G.P.*

JetBlue to equip Airbuses for space-based ADS-B

by Bill Carey

JetBlue Airways will equip its Airbus A320/A321s with the capability to signal their oceanic position when it begins fleet-wide cabin interior modifications next month. The carrier has also specified that A321s it has ordered be equipped for data communications between pilots and controllers.

Jeff Martin, JetBlue executive vice president for operations, said the Airbus fleet will be provisioned for automatic dependent surveillance-broadcast (ADS-B) OUT position reporting to comply with the FAA's 2020 equipage mandate, as well as space-based ADS-B, which is not now required. The FAA system depends on a terrestrial network of ground radio stations; space-based ADS-B is hosted on satellites and provides coverage over oceanic and remote areas outside the coverage of other surveillance.

Speaking on June 1 at the RTCA Global Aviation Symposium in Washington, D.C., Martin mentioned the continuing search for an Egyptair A320 in the Mediterranean Sea and a Malaysia Airlines Boeing 777 in the Indian Ocean in arguing the benefit of a space-based system for tracking aircraft. "If you look at what's going on in the world right now as we're out searching for two aircraft, space-based ADS-B is important," he said. "I think a void needs to be filled not only in the U.S. but worldwide."

JetBlue operates 130 Airbus A320s and 29 A321s as well as 60 Embraer E190/195s. Next month the carrier will begin cycling the Airbus fleet through an 18-month "cabin restyling" program to install new seats, interiors and passenger televisions. It will also use that opportunity to install ADS-B OUT as well as satellite-based ADS-B capability and satellite communications. Multi-mode navigation receivers will be tuned for improved "GPS fidelity," Martin said. Thirty-seven JetBlue aircraft are already equipped for ADS-B OUT and satcom.

The carrier has decided to invest now to meet the ADS-B mandate of the FAA's NextGen modernization effort as well as possible future requirements, Martin said. It expects to complete the avionics installations by the first quarter of 2019.

After the panel presentation, Martin elaborated on JetBlue's decision-making process. "We have the mandate and the opportunity with the airplanes coming out of service. It only makes sense for us to go ahead and equip the aircraft with the anticipation of that benefit to come," he told reporters. "I wanted to get ahead on the supply side. I wanted to be sure that our fleet was going to be configured, because I fear if airlines and people wait until 2019 to 2020 there's going to be a massive backlog. I've had this discussion with my peers at other airlines. Many of us are starting early out of concern for supply."

Regarding JetBlue's plan to equip its Airbus fleet for space-based ADS-B, Martin said: "We're just equipping the aircraft if that capability should exist in the U.S. That was one of the requirements when we decided to spec the airplane. I said I do not want to be shortsighted, so let's go ahead and make sure that the ADS-B equipment that we are installing has that capability. I can't speculate if the FAA will adopt space-based ADS-B, but we want to be prepared."

Space-based ADS-B provider Aireon, a joint venture of Iridium Communications and Nav Canada, was an exhibitor at the RTCA conference, and announced that manufacturer Harris has completed production of all 81 ADS-B payloads that will be hosted on new Iridium Next satellites. An Aireon representative said the company is currently marketing the system to air navigation service providers for tracking purposes. It will eventually offer a fleet-management service to airlines.

JetBlue has also specified that A321s it has ordered come equipped for text messaging between pilots and controllers, a capability being developed under the FAA's Data Comm program. Retrofitting older aircraft for data communications is more complicated, and JetBlue is still analyzing the business case for installing the capability on its Embraer fleet, Martin said.

"The dollar will follow benefit," he said. "I've seen the FAA move so quickly on Data Comm—and then you look at the trials at Newark. The controllers didn't want the trial to stop because they enjoyed the capability so much. To me that was the point that I went to the boardroom and said 'OK, it's now time to invest' because I believe the benefit is firm." ❑

JetBlue will provision Airbus A320s for the FAA's 2020 ADS-B OUT mandate and other capabilities.

RUAG PAINTS CHALLENGER 350

Ruag Aviation's facility in Munich, Germany, recently performed the first full repaint of a Challenger 350 in Europe. Ordered by Windrose Air Jet Charter for an undisclosed client, the Bombardier super-midsize was repainted with a personalized design scheme.

Windrose's client required a combination of fine artwork and bold graphics for the new aircraft. Ruag used Bombardier-certified paint and finishes to cover the aircraft, including the interior surface of the passenger door. The client received daily progress reports with photographs and written documentation from Ruag's painting consultants.

"Aircraft owners are largely concerned with aircraft resale value," said Reinhard Imhoff, Ruag sales manager for exterior services. "Full repainting and finishing services for aircraft exteriors are necessary for maintenance, durability and value preservation and are performed at set intervals or at the moment of resale."

Switzerland-based Ruag Aviation provides maintenance, repair and overhaul services, as well as cabin interiors and system upgrades. The company is an authorized service center for Airbus Helicopters, Bell Helicopter, Bombardier, Cirrus, Textron (Cessna), Diamond, Dassault, Embraer, Leonardo-Finmeccanica, Piaggio, Sikorsky, Pilatus, Piper and Mooney.

VECTOR AEROSPACE OPENS CANADIAN TURBOPROP TEST CELL

Vector Aerospace has opened another engine test cell at its Summerside facility in Prince Edward Island, Canada. The multimillion-dollar facility, funded by a partnership with provincial and federal governments, can support turboprop engines producing up to 5,000 shp. It joins three existing test stands at Summerside, two dedicated to turboprops and one to turbofans.

The new cell will expand Vector's local test capacity on turboprops supported from the Summerside overhaul facility, such as the Pratt & Whitney Canada PT6A and PW100 series, minimizing turn-around times and supporting further market share growth.

The Summerside facility employs 450 workers and is marking its 25th anniversary of providing engine MRO services.

EMBRAER'S SOROCABA FACILITY OK'd TO SERVICE U.S. AIRCRAFT

The FAA has certified Embraer Executive Jets' service center in Sorocaba, near São Paulo, Brazil, for maintenance of the company's business jets. The facility already holds approval from the European Aviation Safety Agency and Brazil's ANAC.

The 216,000-sq-ft Embraer facility at Sorocaba Bertram Luiz Leupolz Airport offers services for the Phenom, Legacy and Lineage lines, as well as accommodations and lounges for passengers and crew, hangaring and aircraft ground services for all types of business aircraft. The facility's two hangars can accommodate up to 40 jets simultaneously.

ACADEMY 147 OFFERS TRAINING AT NEW MUNICH FACILITY

Malta-based Academy 147 has opened an 11,722-sq-ft training center in Munich, Germany, that will complement the company's existing training facility in Malta. Academy 147 started offering EASA Part 147 approved maintenance training courses in 2014 and now holds EASA and GCAA 147 approvals. At present, the company is approved to offer B1 and/or B2 theoretical and practical elements, as well as general familiarization training on business aircraft from Bombardier, Gulfstream, Dassault Falcon and Hawker.

The company touts its location as a benefit for Europe-based clients, who might traditionally have traveled to the U.S. for training. "Operationally, we have developed a wonderful team as diverse as can be. We speak multiple languages and hail from many different cultural backgrounds. This really reflects the nature of the aviation industry."

In addition, said managing director Andy Trinchero, "We have a 'hands-on' approach to training. We don't use artificial training environments. When you come to our type courses, you can expect to work with real tools in a real maintenance environment."

Inside the new Vector Aerospace test cell (t to r): Steve Tully, director of supply management, contracts and real estate, Jazz Aviation; Declan O'Shea, president and CEO of Vector Aerospace; the Honourable J. Heath MacDonald, Minister of Economic Development and Tourism, PEI Government; Jeff Poirier, president of Vector Engine Services Atlantic division; and Satheeshkumar Kumarasingam, senior v-p of commercial services for Pratt & Whitney Canada.

FREE ONLINE COURSE COVERS HUMAN FACTORS IN MAINTENANCE

The Aviation Institute of Maintenance (AIM) has launched a free online course in aviation safety. Recognizing that 80 percent of all aviation incidents and injuries stem from human error, oversight, fatigue and other human-related factors, AIM intends to combat such incidents by offering widespread instruction and guidance on minimizing risk.

In addition to the free Human Factors course, AIM has also made available an advanced online professional certification course, "Minimizing the Risk of Incident and Injury Due to Human Factors." This certification course provides an understanding of the "dirty dozen," the 12 most common human-related risk factors for aviation incidents. This course draws from the material in the introductory curriculum and allows the trainee to apply knowledge and experience to become more aware of why accidents happen and how to avoid them. The instructor-led certification process costs $49 and awards graduates a certificate from the Aviation Institute of Maintenance.

STANDARDAERO ADDS ARUBA AUTHORIZATION

StandardAero Business Aviation has been approved to provide aircraft and engine services in Aruba, expanding the company's international footprint and investments to 40 countries. The Aruba certification applies to StandardAero's MRO facility at Houston International Airport (IAH). The U.S.-based company has renewed 13 international certifications to date this year, in various countries in Europe, the Middle East, Africa and Asia.

"We aim to be the global MRO leader in the business aviation industry," said company president Marc McGowan. "Expanding and maintaining our international certifications and authorizations is critical for our customers who operate and travel both domestically and internationally."

HELI-ONE TO MAINTAIN S-76 FOR SULTAN OF JOHOR

Helicopter MRO Heli-One has secured a contract to upgrade two Sikorsky S-76s for His Majesty, the Sultan of Johor of Malaysia. The contract covers the design, certification and installation of a glass cockpit with Universal EFI-890H advanced flight displays and a satellite-based augmentation system (SBAS)-compatible UNS-1Fw flight management system.

Heli-One will also be installing a new interior and external paint and will perform all maintenance due on the helicopters. It will work with Aloft Aero Architects on the modification project. Heli-One will also provide flight crew and maintenance technician training for the new equipment.

TAG AVIATION OFFERS MOBILE REPAIR TEAM NETWORK

TAG Aviation now operates a mobile repair team (MRT) and can provide AOG support services anywhere from its seven European maintenance centers within hours of a reported issue. To expedite assistance for AOG events, TAG's MRT coordinator can be contacted on a centralized telephone number (+ 41 22 717 00 55) to make all the necessary arrangements and dispatch the services of the nearest mobile repair team.

The company has two heavy maintenance centers and a network of approved MRO line stations in Europe as well as Asia and Africa. TAG Maintenance Services has certification to work on 50 types of aircraft. The company offers airframe, avionics, troubleshooting and ramp services as well as 10 specialist workshops, such as paint shop, interior refurbishment and nondestructive testing.

"Our mobile repair team is able to provide a rapid response, with qualified experts on hand who have the same technical capabilities, authorization and quality systems as we employ in our repair centers," said Philippe Rabier, maintenance sales director at TAG Aviation Europe.

WEST STAR AVIATION TO EXPAND CHATTANOOGA FACILITY

West Star Aviation will be expanding its Chattanooga facility to provide a maintenance hangar and a paint facility similar to the one the company opened at its facility in Grand Junction, Colo. last year. The new 45,000-sq-ft facility can accommodate aircraft such as the Global Express, G550 and Legacy 650. Ground breaking on the designated

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AMAZING SERVICE FACILITY

Jet Aviation St. Louis, 625,000 square feet in ten buildings stretching more than half a mile

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JET AVIATION
A GENERAL DYNAMICS COMPANY

 ▶ Continued from page 66

13 acres allocated for expansion is set for the fourth quarter, with anticipated completion one year later.

In addition to its Chattanooga and Grand Junction facilities, West Star operates in East Alton, Ill.

VIKING NAMES TWIN OTTER SERVICE CENTER IN RUSSIA

Viking Air of Victoria, British Columbia, has appointed AeroGeo of Krasnoyarsk, Russia, a factory-endorsed service center (FESC) for the Twin Otter 400 and legacy de Havilland Canada support network. It is the first Russia-based facility to achieve that designation. Over the past six months, AeroGeo has provided Twin Otter maintenance as Viking Twin Otter 400s arrive in the Krasnoyarsk Krai region of Russia.

The FESC program develops partnerships worldwide with specialized industry professionals to provide factory-recognized service and warranty repairs in-country for both the new Viking Twin Otter 400 and legacy de Havilland Canada fleet.

AeroGeo holds maintenance certificates for 17 different aircraft types and provides service for 300 regular customers.

Alexander Mamaev, general director of AeroGeo (left), and Dominique Spragg, Viking v-p of strategic planning, pictured with FESC certificate in front of Viking Twin Otter 400 MSN 925 in Yaroslav, Russia.

SATCOM DIRECT RECEIVES INITIAL STC FOR WI-FI HUB

Satcom Direct received the initial FAA supplemental type certificate (STC) that allows installation of its SD Wi-Fi Hub on Cessna Citation CJ3s. Additional STCs are in progress for the Hub, the standalone router and Wi-Fi designed for small to midsize business jets and enhancement to the Satcom Direct Router (SDR) for larger aircraft. The SD Wi-Fi Hub serves as the gateway for all voice and data communications on the aircraft. At 1.6 pounds, the Hub is the smallest and lightest router in aviation, according to Satcom Direct.

"Meeting the connectivity needs for customers with airframes of all sizes was the driver for the development of the SD Wi-Fi hub. Receiving the first STC paves the way for the availability of the product to the marketplace," said Ken Bantoft, chief technology officer for SD.

The company is working with its dealers and MROs to expand the availability of STCs for other aircraft.

SAFRAN OPENS HELICOPTER ENGINE FACILITY IN SINGAPORE

Safran Helicopter Engines has opened a regional headquarters dedicated to engine support in the Singapore Seletar Aerospace Park. With the 37,670-sq-ft facility, Safran Helicopter Engines Asia triples its industrial capacity to support customers' turboshafts in the region. It integrates a new maintenance center qualified for the Arrius, Arriel and Makila, a training center for maintenance courses and a 4,300-sq-ft warehouse.

Safran Helicopter Engines Asia supports 1,000 engines in 18 countries, among them Singapore, Malaysia, Indonesia, the Philippines, South Korea, Taiwan and the Indian subcontinent, and employs 65 people.

"This new facility represents Safran's first major investment in Seletar Aerospace Park and is a significant addition to the growing rotorcraft cluster at the park," said Lim Kok Kiang, assistant managing director of the Singapore Economic Development Board.

BELL HELICOPTER EXPANDS MAINTENANCE IN ASIA-PACIFIC

Bell Helicopter's facility in Singapore recently completed 5,000-hour inspections and customization for two Bell 412EPs for a private customer in Australia. "Our Singapore facility continues to drive growth in heavy maintenance, repair and overhaul for customers throughout the region," said Mike Greene, general manager for Bell Helicopter's Singapore facility. "This particular effort was an important achievement and we have similar work ongoing. We continue to analyze and increase capabilities in Singapore to ensure Bell Helicopter can offer the most modern and robust services to meet the long-term needs of our customers."

The Bell Helicopter service center in Singapore supports aircraft delivery in addition to complete aircraft refurbishment, customization and maintenance, repair and overhaul. The facility offers customers a convenient location for new aircraft acceptance, parts distribution and maintenance training in Asia-Pacific.

Bell Helicopter has civil aviation certifications in Singapore (CAAS), Indonesia (DGCA), the Philippines (CAAP), Thailand (DGCA) and Australia (CASA). "We are working on additional certifications to support Bell helicopters across Asia-Pacific," added Greene.

Jet Aviation's Moscow facility is located next to the private aviation terminal at Vnukovo-3.

FAA OKs JET AVIATION MOSCOW AS REPAIR STATION

The Jet Aviation facility at Moscow Vnukovo Airport has received repair station approval from the FAA. With this approval, Jet Aviation's team in Russia can provide scheduled and unscheduled maintenance, airframe and engine repairs, avionics modifications, inspections and defect rectifications on U.S.-registered business aircraft made by Bombardier, Dassault Falcon, Embraer, Gulfstream and Textron.

Jet Aviation provides 24/7 line maintenance, defect rectification and AOG services to operators at Vnukovo, which is the main business aviation airport for the Russian capital. In particular, the company supports AOG events throughout the Russian region.

It is also a line maintenance, AOG and authorized warranty line service facility for Bombardier aircraft,and an authorized line service facility for Gulfstream and Embraer Executive Jets. The facility holds approvals from the EASA, FAA, Aruba DCA, Cayman CAA and Bermuda DCA.

MYP&WC POWER ROLLED OUT FOR BROAD USER BASE

Pratt & Whitney Canada (P&WC) has begun a broad rollout of its MyP&WC Power portal, which provides customers access to the P&WC products, services and information most relevant to them. The portal already has 3,000 users, but with the broad rollout, P&WC expects that number could reach 50,000 by year-end.

"Every aspect of our new service portal is designed for customer convenience and making it easier to connect and access a range of information services," said Satheeshkumar Kumarasingam, v-p of commercial services for P&WC.

The portal is tailored to meet the needs of both fleet owners and individual aircraft operators and has an e-commerce capability to manage transactions. The broad deployment follows positive feedback from a customer survey in March and beta testing of 400 customers in early April. "Customer feedback to date has been highly positive, and with the portal's powerful e-commerce capabilities, we are confident we could see upwards of 80,000 users take advantage of it in the long term," Kumarasingam said.

Among the new users is European Citation Mustang fleet operator GlobeAir.

EXECUJET ENHANCES MX SUPPORT IN THE MIDDLE EAST AND INDIA

ExecuJet Middle East is extending maintenance capabilities at its line station at Dubai Al Maktoum International and at its recently established Indian MRO facility at Indira Gandhi International Airport in New Delhi. ExecuJet's line station at Al Maktoum is manned 12 hours a day, seven days a week, providing full line maintenance and ground support equipment for business aircraft.

The company's expansion into India earlier this year, with a new FBO and MRO facility, has also achieved initial line and base maintenance capabilities. The DGCA 145 approval authorizes ExecuJet's New Delhi facility to carry out and certify maintenance of the Citation 560XL/XLS, GIV, G200 and Hawker 700/800/900. The MRO is also approved by Rolls-Royce, GE Aviation, Honeywell Aerospace and Rockwell Collins.

SOUTH FLORIDA MECHANIC PLEADS GUILTY TO FRAUD

Hilario Hernandez, owner and chief inspector of Max Avionics, an FAA-authorized aircraft repair station in Miami, has pleaded guilty in U.S. District Court, Miami for fraudulently certifying that aircraft parts were approved for return to service. According to the indictment, Max Avionics and Hernandez accepted aircraft parts from various customers to conduct repairs and return them to service.

However, a number of those aircraft parts were not on the company's FAA-approved capability list authorizing it to perform those repairs. Despite not having this authorization, Hernandez completed the maintenance release forms, fraudulently certifying that those repaired parts were ready to be installed on an aircraft.

Prosecutors also allege that Hernandez made false statements to FAA inspectors in furtherance of these violations. In an interview with **AIN**, Hernandez neither denied nor confirmed guilt but referred to a letter he sent to the FAA explaining he entered into the plea agreement to ensure that his company would not be shut down. ❑

First new X-plane to fly next year

by Kerry Lynch

NASA, which earlier this year announced ambitious plans to resurrect the X-plane program in its quest to research advanced aeronautics, has unveiled the first of those vehicles, the X-57, which will be called Maxwell.

In February NASA revealed the return of the X-plane demonstration vehicle program as part of its New Aviation Horizons research, saying, "It's a shout-out to NASA's century-old heritage in using experimental aircraft to test advanced technologies and revolutionary designs, and to reduce the time it takes for the tech to be adopted by industry and moved into the marketplace."

The agency is asking Congress for a 24-percent hike in its aeronautics research budget to fund the projects, which will investigate both subsonic and supersonic technologies. In a speech before the Institute of Aeronautics and Astronautics last month, NASA Administrator Bolden said the agency expects there will be five mostly large-scale X-planes over the next decade that will flight-test new technologies and systems as well as "novel aircraft and engine configurations."

Short- and Medium-term Projects

Three of the X-planes will be used to demonstrate possible technologies and configurations to reduce fuel burn, emissions and noise, Bolden said. The agency is considering technologies such as very high-aspect-ratio wings for boosting efficiency; new composite structures to support non-circular shapes like the hybrid wing body; advanced integration of airframe and propulsion to reduce drag; and boundary layer ingestion concepts to reduce drag, he added.

Another large-scale X-plane to come later in the program will study hybrid-electric propulsion and aircraft integration concepts. Bolden estimates that airplane would fly in the mid-2020s. A fifth X-plane will be used for supersonic research.

Noting that the agency is "eager to move ahead," NASA plans to fly Maxwell next year, kicking off a four-year flight demonstrator plan.

Maxwell is being developed from a modified Tecnam P2006T twin-engine aircraft. The original wing and piston engines will be replaced by a high-aspect-ratio wing carrying 14 embedded electric motors. Twelve of the motors will be on the leading edge and used for takeoff and landing, while a larger motor will be placed on each wingtip for use at cruise altitude, NASA said. Maxwell will be powered by batteries, which NASA said will reduce noise and eliminate both carbon emissions and the penalty for cruise at higher speed.

NASA has also begun preliminary design work on the large-scale X-plane to study supersonic technologies, he said, calling that vehicle the Quiet Supersonic Technology demonstrator, or QueSST. "With QueSST we're trying to design and build an aircraft that flies at supersonic speeds without the annoying sonic boom of current aircraft," he said. "We plan to provide data to federal and international regulators that could lead to new noise standards accommodating overland commercial supersonic flight."❑

CUSTOMS COMES TO HOUSTON-AREA GATEWAY

Starting around the middle of this month, the former Lone Star Executive Airport (CXO), now Conroe-North Houston Regional Airport, will offer U.S. Customs service from a newly constructed $2.4 million CBP facility. The 3,200-sq-ft building is located on the ramp next to the Galaxy FBO. Construction–funded by a public/private partnership consisting of Montgomery County, Conroe Industrial Development Council, FBO-operator Black Forest Ventures, The Woodlands Economic Development Partnership, and the Shenandoah Municipal Development District–began last September.

The service will incur a user fee and be staffed by U.S. Customs during regular hours of 10 a.m. to 6 p.m. Monday through Friday and available after hours on demand. County-owned CXO, 46 miles outside Houston, has a 7,500-foot main runway. The newly added customs service will allow long-range business jets to fly direct from Central and South America, Canada and Europe, bypassing the congested metro-Houston airspace.

JET AVIATION LOOKS WESTWARD

Jet Aviation has released details about the FBO it plans to build from scratch on California's Van Nuys Airport. The facility–scheduled for completion by the end of 2018–will have a 10,000-sq-ft environmentally friendly Leed Silver-certified passenger terminal along with a pair of 40,000-sq-ft hangars with accompanying shops and offices.

In January, Jet Aviation was awarded a 30-year lease for a 17-acre property at the Los Angeles-area airport. The company's Van Nuys FBO will offer domestic and international handling, conference rooms, crew lounge, business center, flight-planning room and 24/7 guarded access to the facility and ramp. The location will be Jet Aviation's eighth in the U.S. and its first west of Texas. The company will begin providing FBO services from an interim facility over the next few months.

"We are delighted to expand our FBO network to include Van Nuys Airport and the West Coast market," said David Paddock, the company's senior vice president and general manager of U.S. aircraft services. "This expansion meets our customers' needs and we look forward to contributing to the local community."

CALIFORNIA FBO TO EXPAND

APP Jet Center has broken ground on a major expansion and renovation of its San Francisco-area location at Hayward Executive Airport. Slated for completion by year-end, the $5 million project will see the construction of an additional 20,000-sq-ft hangar capable of sheltering the latest big business jets, along with a new 3,000-sq-ft passenger terminal. It will also include renovation of the facility's existing 12,000-sq-ft hangar and office space to which the new structure will be attached. "Hangar space is in high demand at Hayward," said Thom Harrow, CEO of parent company APP Properties. "We look forward to meeting that demand with this development and offering the best service and facilities to our clients."

As part of an expansion and renovation project scheduled for completion this year, APP Jet Center at Hayward Executive Airport will get a new 3,000-sq-ft passenger terminal.

SIGNATURE ADDS SOUTH AFRICAN AFFILIATE

Lanseria Jet Center has become the latest FBO to join the Signature Select program. The location, one of three service providers at Johannesburg-area Lanseria International Airport, will maintain its own name and ownership while participating in Signature's worldwide network, which now numbers some 200 locations. Once its current refurbishment is complete, the location will offer a private passenger lounge with separate Wi-Fi-equipped meeting rooms, wine and refreshments, concierge, a dedicated crew lounge with private Wi-Fi, flight planning and weather services, secure car park and a private crew bus for airport transfers. Onsite line maintenance, aircraft detailing, water and lavatory services and fuel coordination will also be available. The non-slot-controlled airport is open 24/7 with on-site customs and immigration service.

NATA WEB MAP HIGHLIGHTS FBO TRAINING

The National Air Transportation Association (NATA) has introduced a web-based tool to help aircraft operators locate FBOs that are NATA Safety 1st trained and/or registered under the International Standard for Business Aviation Handling (IS-BAH). NATA created the FBO Status Map to supplement the existing processes that operators use when selecting an FBO. It is searchable by airport ID, company name and address. "Safety is a vital consideration in the flight-planning process," said NATA president and CEO Thomas Hendricks, adding that the map is a free and easy way to locate participants in the two programs anywhere in the world. "Safety 1st and IS-BAH…help ensure ground handlers are using industry best practices and gold-standard training," noted Michael France, NATA's managing director of safety and training. "Now aircraft operators can verify the status of potential handlers from their tablets, PCs or smartphones in seconds."

SHANGHAI HAWKER PACIFIC EYES EXPANSION AFTER RECORD YEAR

On the heels of a 20-percent year-over-year gain in activity last year, Shanghai Hawker Pacific Business Aviation Centre (SHPBAC)–a joint venture between Hawker Pacific and the Shanghai Airport Authority–announced that it has received approval from the airport authority to add a hangar at Hongqiao International Airport, which will double its aircraft maintenance and storage capacity. The hangar construction site recently passed its environmental evaluation by the city government. This clears the way for the work to continue developing the site. According to SHPBAC general manager Carey Matthews, the $8 million, 48,440-sq-ft structure will occupy a space to the south of the FBO's existing 43,060-sq-ft hangar. With completion expected in 2018, the new structure will accommodate up to eight large-cabin business jets and will give SHPBAC the most expansive capabilities in the country.

"This represents the largest investment in infrastructure to support business aviation in China," said Matthews. SHPBAC, which has a traditional FBO at Hongqiao and a small satellite facility at Pudong International Airport, handled more than 5,500 business aircraft movements last year, and that rising trend has continued thus far through 2016, according to the company.

The company also announced that plans are under way to develop a new FBO at Pudong, which currently receives approximately a third of Shanghai's business aviation traffic. Space for a substantial facility at the airport has already been allocated, said Matthews, who would also like to see two maintenance hangars at the planned FBO.

STERILIS TAKES OUT THE INTERNATIONAL TRASH

The problem FBOs face in dealing with trash from international flights has a new solution, with the approval of a compact, self-contained system by the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (Aphis). According to Aphis regulations, all waste from international flights (except Canada) must be treated within 72 hours of touchdown to prevent the introduction or spread of invasive species. Sterilis, a Massachusetts-based medical appliance company, has developed a photocopier-size device, known as the Sterilis Solution, that combines a steam sterilizer with a grinder, allowing companies to dispose of the treated international waste with the regular trash. "While waste generated from international flights at FBOs can be relatively small, the industry standard in use for decades has been retaining the services of traditional waste haulers who transport international waste to regional incinerators," said Sterilis CEO Bob Winskowicz. According to the privately held manufacturer, use of the system will eliminate the "72-hour pressure-point timeline," along with noncompliance fines, costly hauling and off-site processing. The device costs $54,000 up front, or approximately $1,000 a month for a five-year purchase lease.

Sterilis is offering a device that allows operators to sterilize trash from international flights so that they can dispose of it with regular trash.

MOROCCO TO WELCOME FBOs

The Moroccan National Airports Authority has awarded exclusive tenders to Jetex and Swissport Executive Aviation to establish the first FBOs in the North African country. The two companies will share private aircraft ground handling duties at Casablanca Mohammad V International, Marrakech Menara and Rabat Salé Airports, while Jetex was named the sole provider at the resort destinations of Agadir-Al Massira and Dakhla and Swissport was tapped for Tangier. "Marrakech is number one for business jet movement in Morocco," Jetex president and CEO Adel Mardini told **AIN**, adding that construction is expected to begin there by the end of summer. "There are 4,000 movements per year; that's why we have a plan to make a big investment in this airport."

The ramp at Legacy Aviation Services at Oklahoma's Clarence E. Page Municipal Airport has been expanded, enabling the facility to accommodate business jets larger than Citations.

"Business aviation in Morocco has strong growth potential," said Mark Skinner, Swissport's senior v-p for ground handling in the Middle East and Africa. "We are proud to support Morocco's airports in developing state-of-the-art FBOs that will put the country in a regional and African leadership role."

CLEVELAND FACES FAA FINES FOR LAX SNOW CLEARANCE

The city of Cleveland, Ohio, has agreed to pay $200,000 in fines to settle several FAA enforcement issues relating to instances of failure to remove snow and ice from the runways at Cleveland Hopkins International Airport. Last September, the agency leveled more than $700,000 in penalties against the city for failing to maintain a safe airport during winter weather. FAA regulations require airports with commercial service to have sufficient and qualified personnel and equipment on hand to carry out runway clearing during severe weather, and the FAA alleges that on numerous occasions in 2014 and 2015 managers at the airport did not do this.

Under the terms of the settlement, the agency agreed to waive the remaining $535,000 in fines if the city adheres to the following conditions: maintaining appropriate staffing numbers, with reports to the FAA twice a year through 2020; documentation of staffing allocated per shift for each winter event; procurement of new and replacement snow removal equipment by 2019; construction of a snow removal equipment storage building by the end of next year; and the establishment of specific requirements for executive management oversight of the snow and ice control plan in the airport's certification manual by this October.

OKLAHOMA AIRPORT ROLLS OUT WELCOME MAT FOR LARGER MODELS

To provide better handling for larger private aircraft, the Oklahoma City Airport Authority has allocated more ramp space to Legacy Aviation Services, the lone services provider at Clarence E. Page Municipal Airport (RCE). The addition doubles the FBO's existing ramp to 40,000 sq ft and allows it to accommodate several midsize to large-cabin business jets. The addition comes after recent renovation of Legacy's 2,500-sq-ft terminal, which included new flooring, furniture, refurbished bathrooms and the addition of Wi-Fi.

FRENCH FBO CHAIN MAKES MAJOR PURCHASE

Sky Valet, the FBO and ground-handling network owned by Aéroports de la Côte d'Azur, has expanded its business by acquiring Portuguese service provider Jetbase. The move gives Sky Valet FBOs at all the main Portuguese airports such as Lisbon, Porto, Faro, Cascais and Beja along with ground handling operations on various islands (Madeira, The Azores and Cape Verde). It also includes handling businesses in Mozambique and Angola. Combined, Jetbase facilities see 4,000 movements a year, while Sky Valet typically logs 58,000 movements at its 18 locations, among them Paris Le Bourget, Cannes, Madrid and Barcelona. ❑

CHARTER NEWS NOTES

- **FAI Asset Management has acquired two Global Expresses and two Learjet 60s**, which it is leasing to FAI Aviation Group. The Learjets are flying international air-ambulance trips, and the Globals will join the FAI fleet in the third quarter for charters and medevac missions. FAI Aviation now operates 20 Bombardier jets and expects the fleet to log about 14,000 hours by year-end.
- Texas-based **Wing Aviation has added a Legacy 600 to its fleet**, based at the company's Conroe headquarters. The Legacy seats up to 13 passengers in a three-zone cabin and can fly up to 3,650 nm.
- Maltese charter operator **Emperor Aviation added another Global, an XRS**, to its fleet, which is active in the Russian market. The XRS is based at Domodedovo Business Aviation Center in Moscow, and it is operated for a private owner.
- **The Jet Aviation fleet has grown to nearly 300 aircraft**, with the recent addition of two G650s, one G550 and an Airbus based in EMEA and Asia, and two Falcon 2000s, one S-76 and a Global Express in the U.S.
- B. Coleman Aviation company **Coleman Jet placed a Challenger 601-3A/ER into service**, based in Gary, Ind.
- **Crystal AirCruises chose Fly Comlux to operate its 777-LR**. The aircraft is undergoing completion and will enter service next year.
- Miami-based **Executive Air Services has added five aircraft** to its managed fleet this year. These include two charter jets, a Learjet 45 based in Miami and a floating G550.
- **Sun Air Jets** now **offers a California-based Global 6000 for charter**. ■

FBO PROFILE: Cleveland Jet Center

The FBO is home to 17 turbine-powered aircraft ranging from a TBM 700 to a pair of Challenger 300s.

OHIO FBO LOOKS TO MAKE ITS MARK DURING RNC CONVENTION

With the Republican National Convention (RNC) set to descend on Cleveland later this month, local FBOs are hoping to seize the opportunity to shine, among them the Cleveland Jet Center (CJC), the lone services provider at Cuyahoga County Airport.

The location has come a long way since early 2012 when it was placed into receivership, the result of a "perfect storm" of shaky finances, unrealistic expectations, questionable management and, for a company that opened for business in 2008, bad timing. Faced with mounting debt, the management distanced itself from CJC, retreated to a separate hangar on the airfield, and attempted to establish another separate FBO, which in turn failed a few months later.

CJC operated under temporary court-ordered management until it was acquired later that year by a local Cleveland businessman who discovered that even though the facility was only six years old, it and its equipment were in disarray, evidence of its shoestring budget. "We had to invest a significant amount of capital in the equipment that was there and the resources that we needed to serve our customers reliably," said Aaron Thayer, the location's general manager. So far he estimates the company has spent some $2.5 million on improvements.

While the ownership, management and staff of the facility changed, its name did not, and according to Thayer that first year was spent assuring customers, "We're not *that* company."

Since then, the UVAir FBO Network location has rebounded, seeing 10-percent growth year-over-year for the past four years. CJC pumped 1.3 million gallons of fuel last year, despite most of the flight departments on the field owning their own fuel farms. The location has 45,000 sq ft of heated hangar space, which can accommodate the latest big business jets.

Occupying the ground floor of a three-story building, which also contains tenant offices, the FBO's terminal was renovated last year and expanded to 10,000 sq ft with the movement of a tenant to an upper floor. Among its amenities are a passenger lounge, concierge service, a pair of A/V-equipped conference rooms seating 12 and eight, a café with complimentary snacks and drinks, a pilots' lounge equipped with four leather-clad massage recliners, two snooze rooms, WSI flight planning and a 1,000-sq-ft exercise center with men's and women's showers. The facility is open from 6 a.m. until 11 p.m., with after-hours callout service available.

Ready for Traffic Influx

Preparation for the RNC began two years ago when Cleveland was announced as the host of the gathering, and Thayer noted some "unconventional" ways he and his staff have prepared for it, including visiting the former Tampa International Jet Center FBO (now Sheltair Tampa), which hosted event traffic in 2012, and speaking with its staff about how they handled the flocks of aircraft. In April Thayer and his staff volunteered at the Augusta Regional Airport FBO to help manage the crush of traffic for the Masters Golf tournament. "I guess controlled chaos would be the best way to explain 3,000 arrivals over the course of a week," he told **AIN**.

While CJC has 100,000 sq ft of ramp space, generally enough for 20 aircraft, the company has agreements with all the tenants and stakeholders at the airport to have enough space during the event to park up to 150 aircraft, a number that could certainly be in the realm of possibility given Cuyahoga, 11 miles from downtown, will be the only Cleveland airport that will operate without a TFR during the RNC. "Any GA aircraft headed to Burke [Lakefront Airport] or [Cleveland] Hopkins [International Airport] from July 17 to 22 are going to have to land at either Youngstown or Akron-Canton and clear TSA before being approved," said Thayer.

The company is looking at the RNC to make itself known on a grand scale. "There are too many people coming into Cleveland that just simply don't know about our FBO and what we do," said Thayer. "We don't want to be the best kept secret in Cleveland any longer."–*C.E.*

PRELIMINARY REPORTS

REDUCED VISIBILITY IN ALASKA HELO FATAL

Airbus Helicopters AS350B2, near Skagway, Alaska, May 6, 2016–The commercial pilot died when his helicopter struck snow-covered terrain four miles southeast of its destination in marginal day VMC. The Part 135 on-demand charter flight originated from the operator's heliport in Skagway at 6:40 p.m. local time and was operating under a VFR flight plan. The helicopter was returning to the heliport when the accident happened at 6:55 p.m.

According to the preliminary report, after dropping off a passenger and 12-dog sledding team at a remote camp on the Denver Glacier, the helicopter flew toward a previously used aerial return route to the southwest before turning north. A second helicopter was dispatched after the accident aircraft was classified as overdue, and crews found the wreckage near a frozen glacial lake in steep mountainous terrain two miles northeast of the dog sledding camp, resting on its left side with the tail boom separated.

Reported visibility along the aerial return route was a quarter mile, and to the north of the dog sledding camp visibility was reported as about a half mile. At 6:53 p.m. the nearest official weather observation station at Skagway Airport (PAGY) reported conditions as wind from 210 degrees at 19 knots, gusting to 28 knots; visibility 10 sm; few clouds at 8,000 feet; temperature 53 degrees F and dew point 37 degrees F; altimeter 29.81 in Hg.

PILOT REGAINS CONTROL AFTER LOSS OF CONSCIOUSNESS

Cessna Citation I/SP, near Texarkana, Ark., May 23, 2016–A loss of cabin pressure at FL430 in the night sky led the pilot to lose consciousness, and the jet entered an uncontrolled descent. The pilot regained consciousness and control of the airplane at 7,000 feet msl and was able to land without further incident. The pilot was not injured. The flight had departed from Perryville Municipal Airport (K02) in Perryville, Mo., and was bound for San Antonio International Airport (SAT) in Texas.

Post-flight examination of the airframe revealed substantial damage to both wings from the excessive airframe loading during the descent and recovery, and inspection of the pressurization system revealed the primary pressurization duct into the cabin was detached from its connection to the water separator. The duct's metal retaining clamp was present and intact, with its retaining screw in place, and was found resting around the metal duct leading to the separator. ❑

FACTUAL REPORT

CITATION PITCH TRIM JAMMED ON TAKEOFF

Cessna Citation S/II, Tampa, Fla., Oct. 4, 2014–The aircraft had just departed Tampa International Airport (TPA) for a short flight to Gainesville, Fla., in day VMC. The copilot was flying the aircraft from the right seat. At 400 feet agl at V_2 plus 10 knots, the crew retracted the flaps and turned to the right for the published departure procedure, at which time the copilot reported that the controls were stiff and pushing back against his inputs.

The captain twice advised the copilot to trim the forces away, and he saw the copilots arms were "fully extended" pushing the yoke forward to maintain a stable climb attitude. Efforts to use electric and manual pitch trim to correct the anomaly were unsuccessful, as were hitting the trim disconnect switch and pulling the trim circuit breaker, both standard procedure in the event of a trim runaway condition. The secondary pitch trim remained frozen in the takeoff position.

The crew declared an emergency, and with careful throttle and control inputs they were able to bring the speed down and turn back to the airport. After lowering the flaps to the landing position and extending the gear, the crew reported the aircraft had become more controllable in pitch, and they successfully flew a visual traffic pattern back to an uneventful landing on Runway 19L at TPA.

Post-flight examination revealed that with no power on the airplane, and using normal hand pressure, the manual elevator pitch trim would move no more than an inch. When released, the trim popped back to the same position. Nose-down movement felt like it was binding, while nose-up trim appeared normal. The trim moved sluggishly with electrical power on and electric pitch trim activated.

Attempting to isolate the issue, investigators removed, cleaned and lubed the left screw of the left elevator trim tab actuator assembly. When this piece was reinstalled, further inspection revealed the primary and secondary sprockets were separated from the left internal screw (part number [P/N] 5565450-45). The affected left elevator trim tab actuator assembly (P/N 5565450-79, S/N 0378-80) with the fractured screw was then retained for examination by the NTSB Materials Laboratory, which found that the two-sprocket assembly shaft was jammed inside the actuator and could not be rotated manually.

The lab determined that flat roller bearings were missing from both the actuator assembly and actuator housing, and investigators found visible corrosion on the flanges and ends of both assembly shafts. The two-sprocket assembly was disassembled, and the separated end of the mating shaft was found in two pieces between the sprockets. Inspection of these items with a stereo zoom microscope showed the fractures through the shaft end of the internal screw had occurred at the holes for the stake pin, with evidence of overstress on areas that did not have mechanical damage.

The left elevator trim tab actuator assembly is an on-condition item, and had last been installed new on the aircraft on Aug. 8, 1990, at a total airframe time of 1,545.1 hours. There was no record of part removal, overhaul or replacement since that time; a Phase 2 inspection of the assembly, required every 300 hours or 24 months, was last performed on March 7, 2014, at recorded total airframe time of 7,908 hours, with 8,105 hours recorded at the time of the incident.

Since 1995, ten FAA Service Difficulty Reports have been submitted for the part number of the elevator trim tab actuator assembly. Three of those reports were associated with pitch trim, and one of those reports indicated the sprocket separated from the internal screw after separation of the pin that secures the sprocket to the internal screw.

The second report indicated that water was found in the actuator housings following inoperative manual and electric pitch trim, and the third report indicated that following a jammed elevator trim, the actuator was worn and the chain on the actuator was very loose and noted to bind when nose-up trim was selected.

While the NTSB noted that none of the reports filed since 1995 mentioned a fractured internal screw, such failures were identified in two reports filed on the same part number before 1995. ■

FINAL REPORTS

CAUSE OF FCU BEARING FAILURE UNDETERMINED IN TEXAS EMS ACCIDENT

Airbus Helicopters AS350B2, near Texarkana, Texas, June 23, 2014–Failure of two fuel control unit (FCU) drive bearings led to uncommanded engine acceleration and overspeed and a hard landing for an EagleMed medevac helicopter two years ago, but NTSB investigators could not determine why those bearings failed.

According to the Board's probable cause report, the Part 135 emergency medical services flight had departed Idabel, Okla., at 1:20 p.m. local time bound for Texarkana in day VMC. The helicopter was cruising at 1,000 feet agl when the commercial pilot noticed the rotor rpm had rapidly increased, and the high rotor speed alarm sounded. The pilot attempted an autorotation to a nearby field after he was unable to reduce the rotor speed, and the helicopter was substantially damaged in the run-on collision with the ground. The main rotors partially severed the helicopter's tail boom, and the front of the left skid was damaged. The pilot and two flight crewmembers were not injured and were able, without assistance, to extract the patient on board.

Disassembly of the FCU revealed the two drive bearings that maintain drive integrity between the FCU and the fuel pump had failed and no longer provided axial or radial positioning of the FCU drive shaft. The splined fuel pump to FCU coupler spun freely on the FCU drive shaft, leading to excessive wear that degraded the driveshaft to the point that it could no longer provide positive drive to the FCU. The FCU interpreted this condition as an underspeed condition, leading it to command more power from the engine.

Metallurgical testing of the FCU drive bearings did not reveal why they had failed. Engine manufacturer Honeywell adjusted the FCU bearing replacement schedule for the LTS101-700-D from a one-time replacement interval to replacement every 600 hours.

DYNAMIC ROLLOVER EVENT PROMPTED RE-EVALUATION OF OPERATOR'S PROCEDURES

Airbus Helicopters AS350B2, near Key Lake Airport, Saskatchewan, Jan. 21, 2016–An unanticipated increase in cable tension during electrical transmission line stringing operations set off a chain of events that felled an AStar operated by Airspan Helicopters and seriously injured the sole-occupant pilot, according to a final report issued by the Transportation Safety Board of Canada (TSB).

Stringing operations entailed pulling feeder cable through a series of electrical transmission towers, each approximately 125 feet agl, using a 37-foot-long "needle." The pilot had completed the first 10 towers on which the flight was working without incident, but while threading the 11th tower in day VMC the needle lunged and abruptly stopped, possibly because it contacted the tower or because the feeder cable snagged something on the ground.

Investigators determined that this abrupt rise in cable tension, combined with "a slight drift of the aircraft" in a crosswind, led to an uncommanded roll and rotation to the left. The pilot jettisoned the cable and attempted to arrest the descent, but within three to five seconds of the initial lunge, the helicopter struck the ground. There was no post-impact fire, and the pilot was able to exit the wreckage and await rescuers notified by the operator's satellite-based search-and-rescue system.

The TSB asserts that the company's prior training procedures did not suitably prepare pilots for abnormal flight conditions, and that other normal checks and procedures were often not followed. The report cited inadequate ground monitoring and failure to wear shoulder harnesses. Investigators could not determine if an electrical emergency cable disconnect system had been activated for the accident flight; the pilot used a mechanical disconnect to jettison the cable.

After the accident, Airspan temporarily suspended AS350 line stringing operations and reviewed and amended its standard operating procedures, particularly pre-flight checks, stringing operations and feeder cable-pulling procedures. The company also hired a third-party consultant to revise its safety management system (SMS); although an SMS is not currently required by Transport Canada for operations such as Airspan's, the issue is high on the Board's "Watchlist" of safety-related requests. ■

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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ICAO emissions

▶ Continued from page 1

rules for monitoring, reporting, compliance and the use of emissions units," the industry statement said. "Unless ICAO adopts standards and guidance in these areas on a global level, both governments and industry will be faced with regulatory fragmentation, creating unnecessary costs, administrative burden and unacceptable risks of market distortion.

"Understandably, there are questions about the cost of such a global offsetting mechanism to the economy at large and how this might affect connectivity around the world. Indeed, the absence of such a globally agreed mechanism will lead to a costly and cumbersome patchwork of different policy measures, adversely affecting economic development by reducing connectivity, trade and tourism."

Business Aviation Doing Its Part

Among those signing the statement was Kurt Edwards, director general for the International Business Aviation Council. During the Global Sustainable Aviation Forum, Edwards also outlined the business aviation community's position. As the states work to establish a global MBM, he said, "the industry's demonstrated willingness to contribute as well as its roles as generator and facilitator of global economic activity must be kept in the forefront of ICAO's efforts. The business aviation community is doing its part to contribute."

He added that the community would be willing to participate in a global MBM initiative "that is administratively simple, recognizes the diverse range of international aircraft operators, and is fair."

As these deliberations continue, the business aviation community will continue to watch closely, European Business Aviation Association CEO Fabio Gamba told attendees at the opening general session of EBACE. This year, he commented, "will be the year of an [emissions] scheme. We don't know how, we don't know when and we don't know who yet, but we do know this is coming and we need to prepare ourselves in the best possible way."

He added that under the leadership of IBAC, the business aviation community "will work hard to put forward solutions that are equitable, proportionate and fair."

NBAA president and CEO Ed Bolen echoed those sentiments, calling emissions one of the most significant issues of this year, and said the associations together are working with manufacturers, operators and regulators to ensure policy leaders "understand the unique aspects of business aviation." ❑

Bizav to the rescue

▶ Continued from page 32

can't chance him in that germ-infested environment.

"I am trying desperately to see if there is anyone out there who would donate a mid-range aircraft to take us from Atlantic City Airport to New Orleans on June 5 and, on the 7th, from New Orleans back to Atlantic City. It would be my Mom and me and Dad and his aide. I am desperate for him to have this acknowledgement. He so deserves it."

Within minutes, offers of donations began popping up on the forum ("I would certainly donate to such an awesome cause"…"Count me in"…"Same here. I can't offer an airplane but would be happy to contribute"…"I can contribute happily. We all owe your Dad and his generation and all other veterans"). Susan guessed a charter would cost $40,000 but some respondents said it could cost half that. The pledges kept coming, and support kept snowballing. On May 24 the Veterans Airlift Command (VAC) called Susan with the news that it would be dispatching a Citation CJ4 (owned and flown by Jerald "Jed" Molleston of Houston) for the round trip. VAC provides free air transportation to post-9/11 combat wounded and their families for medical and other compassionate purposes through a national network of volunteer aircraft owners and pilots. The organization made an exception for WWII vet Friedenberg, and Susan asked those who had pledged financial support for a charter to donate the money instead to VAC.

Jerald Molleston, right, flew the Friedenbergs from Atlantic City to New Orleans, allowing Bernard Friedenberg to travel to the WWII Museum in New Orleans to be recognized for his service.

In the end, Sgt. Bernard I. Friedenberg received an Honor Guard at Atlantic City Airport (Brian Curtis of Venture Jets suggested the idea and NJ State Senator Jim Whalen made it happen) and another Honor Guard at New Orleans Lakefront (initiated by Dick Bares, manager of flight operations for a construction company in Denver). FBOs at each airport waived fees, and Air Culinaire donated catering for the flight home from Lakefront. All in all, a call to action resoundingly well answered. ❑

Compliance Countdown by Gordon Gilbert

Within 6 Months

▶ **Aug. 25, 2016**

European Safety Standards for Private Operators

Europe's new rules for so-called "non-commercial operations with complex motor-powered aircraft" will affect all private operations with large business turbine airplanes and helicopters. Between now and August 25, which is the final deadline for implementation, owners must develop safety management systems and take other required steps to bring their aircraft and operations to a level of compliance that is "up to the safety standards of commercial operators."

▶ **Aug. 31, 2016**

Revamp of European Aeronautical Information Services

Improving the accuracy of the content, dissemination and management of aeronautical information services in Europe is the goal of a Notice of Proposed Amendment from the European Aviation Safety Agency. The specific objectives of the NPA are to ensure that aeronautical information is originated, assembled, edited, formatted, published and finally provided to end users at the highest level of quality for all phases of flight; and guarantee alignment with the upcoming major amendment to the aeronautical information standards of ICAO Annex 15. Comments are due by Aug. 31, 2016.

▶ **Dec. 1, 2016** NEW

Overtime Eligibility Rules Change

New Labor Department regulations raise the minimum annual salary necessary to qualify for overtime eligibility to $47,476 from $23,660 when the new rules take effect on Dec. 1, 2016. For so-called highly compensated employees, the minimum salary level to be considered for overtime will rise to $134,004 from $100,000. Most Part 121 and Part 135 operators are exempt from the overtime pay provisions, according to NBAA. Most Part 91 operators, however, are not exempt under this provision and must either comply or establish that their employees meet a different exemption. NBAA has prepared a resource covering the overtime regulations for corporate flight departments and other business aircraft operators.

Within 12 Months

▶ **Jan. 1, 2017 and Jan. 1, 2018**

Russia Requires Glonass Equipment

Non-Russian-built aircraft, including those registered abroad, put onto a Russian operator's certificate, weighing more than 12,500 pounds mtow and used for commercial transportation will be required to install Glonass satellite navigation equipment by Jan. 1, 2017. The mandate is Jan. 1, 2018 for general aviation aircraft. The Russian Federation is imposing new requirements on non-Russian certified operators, and it says it does not intend to prohibit the use of other GPS constellations in Russian airspace.

▶ **Feb. 2, 2017**

Australian ADS-B Mandate

The Civil Aviation Safety Authority of Australia is implementing new regulations and aircraft equipment mandates to align the nation's operations with global standards set by ICAO. The new rules contain a number of equipment mandates that culminate on Feb. 2, 2017. After that date, IFR-rated pilots and aircraft must comply with ADS-B equipment and operational requirements to fly in Australia.

▶ **April 24, 2017**

Part 135 Rotorcraft Radio Altimeters

Under new Part 135.160, rotorcraft must be equipped with an operable FAA-approved radio altimeter, or an FAA-approved device that incorporates a radio altimeter, after April 24, 2017. Deviations from this requirement may be authorized for helicopters in which radio altimeters cannot physically be installed in the cockpit. The request for deviation authority is applicable to rotorcraft with an mtow no greater than 2,950 pounds.

Beyond 12 Months

▶ **Jan 1, 2018** NEW

Deadline for European 8.33-kHz Spacing

Starting Jan. 1, 2018, aircraft might not be able to operate in any EU member states' controlled airspace unless they are equipped with communications systems that have 8.33-kHz voice-channel spacing capability. Eurocontrol says extending 8.33 kHz below FL195 down to ground level is important, as "Europe has a known shortage of voice communication frequencies." The 8.33-kHz requirement for higher altitudes in controlled airspace has been in effect for some time. According to Eurocontrol, the consequences should this shortage of com frequencies not be addressed are "significant: there will be more air traffic delays; it will be harder to implement safety improvements; and we will lose flexibility in introducing operational enhancements."

▶ **Nov. 8, 2018**

ICAO Adopts 15-min. Position Reporting

The International Civil Aviation Organization Council adopted a tracking standard for certain international flights that requires crews to report their aircraft's position at least every 15 minutes. The new requirement will be formalized as Amendment 39 to Annex 6–*Operation of Aircraft*, Part I. The new standard is the outcome of recommendations stemming from the disappearance of Malaysia Airlines MH370 while en route from Kuala Lumpur to Beijing, China, on March 8, 2014.

▶ **Jan. 1, 2020**

U.S. ADS-B OUT Mandate

ADS-B OUT equipment must be operational starting Jan. 1, 2020 in aircraft that fly in the U.S. under IFR and where transponders are required, namely class A, B and C airspace.

▶ **February 2020**

European Controller-Pilot Datalink Com

Europe won't require aircraft operators to equip for controller-pilot datalink communications (CPDLC) until February 2020, to accommodate technical problems. The European Commission expects the entity managing the Single European Sky ATM Research effort will recommend remedial actions for ground infrastructure issues next year. Additionally, EC figures showed that only 40 percent of operators would have been ready to use CPDLC by the original deadline of February 5 this year. ❑

Rodger Renaud was promoted to president of *West Star Aviation*. Renaud, who has 36 years of aviation experience with companies such as Rockwell International and Midcoast Aviation, most recently was COO for West Star.

Howard Millar was appointed COO of *Stellwagen Group*, the holding company that includes Dublin, Ireland-based Aviation Finance and Seraph Aviation Management. Millar will also serve as CEO of a newly formed subsidiary, Stellwagen Capital.

Nomad Aviation appointed **Pascal Mauerhofer** CFO. Mauerhofer joined Switzerland-based Nomad Aviation from Fiduria, of Berne, Switzerland, where he served as partner and member of the management board.

Tim Maystrik has joined *Universal Weather and Aviation* as senior v-p, business development. Maystrik previously spent 30 years with Air Routing International and two years with Rockwell Collins.

Heidi Wood has joined *L-3 Communications* as v-p and chief analytics officer. Wood previously served with Spirit AeroSystems, where she was responsible for strategy, mergers and acquisitions and investor relations.

Gulfstream Aerospace promoted **Colin Miller** to v-p of flight operations. Miller has been an experimental test pilot with Gulfstream since 2013.

TAG Aviation Europe has expanded its charter sales team. **Florent Sériès**, v-p of sales and marketing, has added responsibility for all of TAG Aviation's sales activities in addition to his charter responsibilities. **Andrew Hodgson**, formerly aviation director at TCS World Travel, was appointed sales director for charter services in Europe. **Andrew Jurd** returns to the organization as charter manager for the UK, after serving with Starflight Aviation. **Sergio Saz**, who has 20 years of aviation experience with Gestair Aviation, Executive Airlines and TAG, will lead charter sales in Spain.

Ruag Aviation appointed **David Ricklin** general manager at the company's business aviation maintenance facility and fixed-base operation in Geneva, Switzerland. Ricklin most recently served as director of maintenance operations/leader Bombardier EMEA for Jet Aviation Basel.

Mooney International named **Dirk Vander Zee** v-p for sales and marketing.

HeliOffshore, the global association for safety in the offshore helicopter industry, appointed **Andrea Cicero** to its board. Cicero, COO of Babcock's mission critical services division, succeeds Bill Tame, who is CEO of Babcock's international division.

Bombardier Business Aircraft president **David Coleal** and Greenwich AeroGroup president and CEO **Jim Ziegler** have stepped in to lead committees for the *General Aviation Manufacturers Association*. Coleal will lead GAMA's environment committee, succeeding **Ed Dolanski**, the former president and CEO of Aviall who chaired the committee for two years. Ziegler is taking the reins of GAMA's security issues committee from **Mark Van Tine**, who is retiring from Jeppesen this month. Van Tine has steered the committee since 2009, when he was also chairman of GAMA. GAMA also added Austria-based **BRP Powertrain-Rotax** as a new member. BRP Powertrain produces Rotax engines for ultralight and light aircraft.

Chris Colbath was promoted to director of maintenance of *Dumont Aviation's* maintenance, repair and overhaul facility at Central Illinois Regional Airport in Bloomington, Ill. Colbath previously has served as a lead technician at Dumont's location at New Castle Airport in Delaware and transferred to assist with the opening of the Bloomington facility. Dumont also promoted **Darrin Price** to general manager of maintenance. Price will continue to oversee operations at the New Castle facility and manage the new interior shop. In addition, the company's charter unit named **Bill Allen** COO.

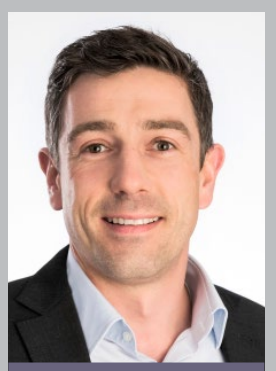
NBAA added **Dan Williams** to its board of directors. Williams is v-p of aviation and global travel for Wal-Mart Stores, where he has served since 2000.

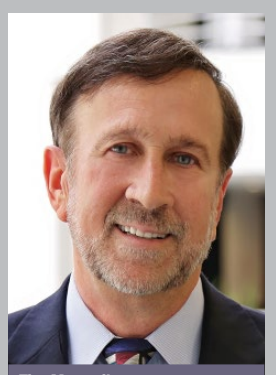
Jet Aviation named **Christophe Chicandard** regional sales director for Asia-Pacific.

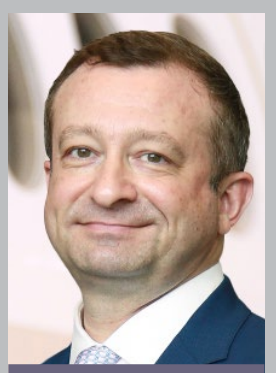
Trevor Probst joined *Constant Aviation* as the Embraer Phenom 100/300 program manager.

Jet Aviation Basel appointed **David Peterson** director of completions sales. Peterson most recently served as Boeing BBJ's VIP completions center rep for North Africa and Europe, including Russia. ❑


Rodger Renaud


Pascal Mauerhofer


Tim Maystrik


Christophe Chicandard


David Peterson

Final Flight

J. Kenneth Forester, 94, founder of Teterboro, N.J.-based Meridian, died June 1. Known as "Ken Sr." to distinguish him from his son, who later joined the family business, Forester had a half-century career as a pilot, maintenance technician and executive in aviation services.

Forester's aviation career began in December 1941, following the attack on Pearl Harbor. He joined the U.S. Army Air Corps and earned a private pilot certificate a year later. He became an engineering test pilot in 1943 and flew fighters, bombers and transports over the next three years.

After the war, he founded Mallard Air Service, serving as a charter, maintenance base and distributor for the Republic Seabee and North American Navion. Forester later sold Navions at Teterboro Airport before founding Meridian's predecessor company, initially known as General Aviation Company, in 1958.

His son Ken took over the management of the company in 1974, and in 1986 it became a Million Air franchise. The company was rebranded as Meridian in 2006, when it reverted to being an independently owned and operated entity.

Forester was inducted into the New Jersey Aviation Hall of Fame in 2008 and was awarded the Charles Taylor Master Mechanic award in 2002. ■

Awards & Honors

• NBAA named **Marne Burghoffer** as this year's recipient of the Dale "Potsy" McBurney Aviation Scholarship. The scholarship benefits business aviation professionals seeking opportunities to advance their careers. Burghoffer is a freelance corporate cabin attendant based in New York, with experience on Bombardier, Gulfstream and Embraer aircraft. She plans to use the scholarship for culinary and cabin safety training courses.

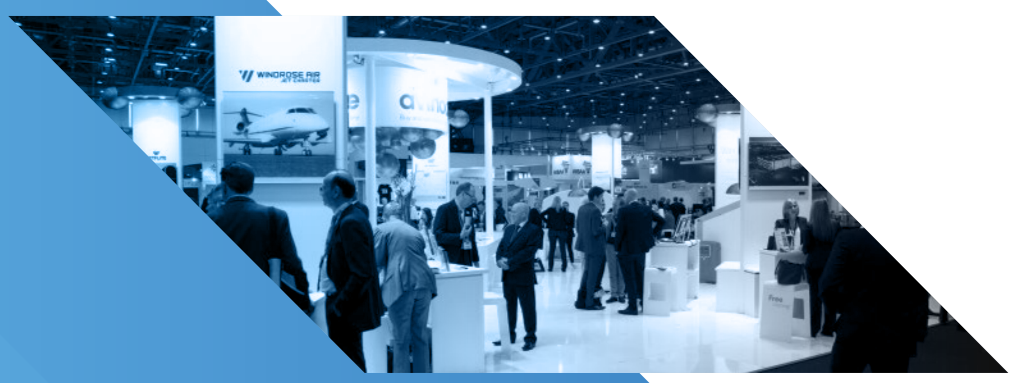
• Longtime industry advocate **Doug Schwartz** received the Flight Safety Foundation's (FSF) Business Aviation Meritorious Service Award. The award honored Schwartz for "his more than 40 years of commitment and contributions to aviation safety, and for his tireless efforts to advance safety and save lives within the operations of his employers and beyond."

Currently manager of global aviation services at ConocoPhillips, he has also served as v-p of flight operations at TAG Aviation and director of aviation for AT&T, along with having a 25-year career with FlightSafety International. He has been actively involved in the business aviation community and aviation safety, serving on the NBAA board since 2004 and past chairman of NBAA's safety committee. He also serves on FSF's board of governors. He is credited as a pioneer in the development of crew resource management, and was instrumental in introducing the first CRM programs tailored for business aviation.

• Daher, in concert with the Experimental Aircraft Association, is awarding internships under an international scholarship program to **Kristin Sandager** of Albert Lea, Minn., and **Dalton Nonweiler** of Tulsa, Okla. The students will spend five weeks at Daher's Tarbes facility in France followed by a week at the EAA Air Academy in Oshkosh.

Sandager is a junior at Embry-Riddle Aeronautical University in Prescott, Ariz., where she is majoring in mechanical engineering with a focus on robotics. Nonweiler is a freshman at Washington University in St. Louis, Mo., with a major in mechanical engineering and a minor in aerospace engineering focusing on aeroshape and performance.

• **Rich Martindell**, v-p of course content and experience at King Schools, was named as the FAA 2016 Safety Team Representative of the Year. The recognition will be awarded as part of the General Aviation Awards program during EAA AirVenture in July at Oshkosh, Wis. At King Schools Martindell maintains 90 courses that range from sport pilot to airline transport pilot, including ground school, practical test preparation, refresher courses and topical flight training courses. A former U.S. Air Force fighter pilot, he also has been the lead representative of the FAA Safety Team in San Diego and frequently speaks at EAA chapters, flight schools, flying clubs and airport businesses. He is also a member of the San Diego Airports Aviation Advisory Committee. ■



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JULY

◆ ● **FARNBOROUGH INTERNATIONAL AIRSHOW**…July 11-16, Farnborough Airport, UK. Info: +44 (0) 1252 532 8000; www.farnboroughinternational.org.

FLIGHTWORX PART NCC WORKSHOP… July 21, Flightworx HQ, London Stansted Airport. Info: +44(0)1279 668005; www.flightworx.aero.

▲ **EAA AIRVENTURE**…July 25-31, Wittman Regional Airport, Oshkosh, WI. Info: www.eaa.org.

AUGUST

LATIN AMERICAN BUSINESS AVIATION CONFERENCE & EXHIBITION… August 30-September 1, São Paulo, Brazil. Info: www.abag.org.br.

AEA LATIN AMERICA CONNECT CONFERENCE August 25 - 26, Bogota, Colombia. Info: 816-347-8400; www.aea.net/connect.

◆ Indicates events at which **AIN** will publish on-site issues or distribute special reports.
▲ Indicates events for which **AIN** will provide special online coverage or e-newsletter.
● Indicates events at which **AIN** will broadcast AINtv.com.

SEPTEMBER

MBAA 5th ANNUAL SCHOLARSHIP GOLF TOURNAMENT…September 8, The International Golf Club, Bolton, MA. Info: (978) 779-1380; www.theinternational.com.

AEA U.S. WEST CONNECT CONFERENCE… September 8-9, Anaheim, CA. Info: (816) 347-8400; www.aea.net/connect.

JETNET IQ SUMMIT…September 13-14, Le Parker Meridien Hotel, New York, NY. Info: (972) 439-2069; www.jetnet.com.

21st ANNUAL INTERNATIONAL AVIATION FORECAST SUMMIT…September 18-20, Olympic Valley, CA. Info: (303) 674-2000; www.aviationforecastsummit.com.

AEA U.S. EAST CONNECT CONFERENCE… September 21 - 22, Fort Lauderdale, FL. Info: 816-347-8400; www.aea.net/connect.

BOMBARDIER SAFETY STANDDOWN… September 27-29, Hyatt Regency Hotel, Wichita, KS. Info: (316) 946-7876; www.safetystanddown.com.

OCTOBER

AEA U.S. CENTRAL CONNECT CONFERENCE… October 5 - 6, Kansas City, MO. Info: (816) 347-8400; www.aea.net/connect.

ISTANBUL AIRSHOW…October 6-9, Istanbul, Turkey. Info: +90 (312) 446 1294; www.istanbulairshow.com.

6TH ANNUAL OFFSHORE AIRCRAFT REGISTRATION…October 10-11, Bermuda. Info: +1 305 767 4707; www.aeropodium.com/oar.html.

HELITECH INTERNATIONAL HELICOPTER EXPO & CONFERENCE…October 11-13, Amsterdam RAI, Holland. Info: +44 (0)20 8271 2155; www.helitechevents.com.

AIROPS EUROPE…October 12-13, Cannes, France. Info: +32 2 766 0070; www.ebaa.org/en/news-publications/news/airops-europe-12-13-october-2016-cannes.aspx.

INTERNATIONAL AIRPORT GSE EXPO… October 18-20, Rio All-Suite Hotel & Casino Las Vegas, NV. Info: (800) 547-7377; www.gseexpo.com.

AEA CANADA CONNECT CONFERENCE… October 19- 20, Calgary, Alberta. Info: (816) 347-8400; www.aea.net/connect.

NBAA TAX, REGULATORY & RISK MANAGEMENT CONFERENCE…October 30-31, Orange County Convention Center, Orlando, FL. Info: (202) 783-9000; www.nbaa.org.

54th ANNUAL SAFE SYMPOSIUM…October 31-November 2, Dayton Convention Center, Dayton, OH. Info: (541) 895-3012; www.safeassociation.com.

NOVEMBER

◆ ● **NBAA BUSINESS AVIATION CONVENTION & EXHIBITION**…November 1-3, Orange County Convention Center, Orlando, FL. Info: (202) 783-9000; www.nbaa.org.

AEA SOUTH PACIFIC CONNECT CONFERENCE… November 14-15, Melbourne, Australia, Info: 816-347-8400; www.aea.net/connect.

CIAM 2016 11th INTERNATIONAL TRADE SHOW AND CONGRESS…November 30-December 2, JW Marriott Cancun Resort & Spa, Cancun, Mexico. Info: (+52 1) 777 317-64-45; www.expo-ciam.com.

DECEMBER

◆ **MEBAA SHOW**…December 6-8, Dubai, Dubai World Central, United Arab Emirates. Info: www.mebaa.aero.

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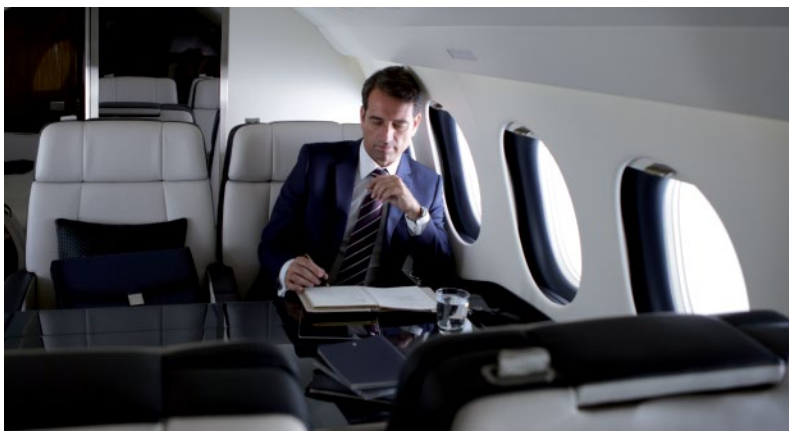

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